



Hornsea Project Four

Applicant's Responses to the ExA's First Written Questions

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1 Introduction

- 1.1.1.1 Following the issue of First Written Questions by the Examining Authority (ExA) outlined in the Rule 8 Letter of 28 February 2022 to Orsted Hornsea Project Four Limited (the Applicant) and other Interested Parties, the Applicant has responded to each question addressed to the Applicant in the sections below.
- 1.1.1.2 A glossary of terms can be found in [G1.45: Overarching Glossary \(REP1-067\)](#) and an acronyms list can be found in [G1.1: Overarching Acronyms List \(REP1-037\)](#).

2 Broad, General and Cross-Topic

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| BGC.1.1 | Applicant East Riding of Yorkshire Council (ERYC) Hull City Council (HCC) | <p>Development Plan policies</p> <p>Please provide to the Examination full copies of any Development Plan policies that you have referred to in any of your submissions. Should you refer to any additional Development Plan policies at any time in your future submissions (for example in a Local Impact Report) then, if they have not already been provided, please also submit copies of these into the Examination. Have there been any relevant updates to the statutory Development Plan since the compilation of the application documents? Are the local planning authorities content with the Applicant's policy analysis?</p> | <p>Reference to the East Riding of Yorkshire Council (ERYC) Development Plan is stated in both A1.2: Planning and Policy (APP-008) and F1.1: Planning Statement (APP-229) with individual policies presented in the relevant Environmental Statement technical chapters.</p> <p>Due to the potential effects from traffic and transport within the Hull City Council area, relevant Development Plan policies are set out in the Traffic and Transport Environmental Statement Chapter (A3.7: Traffic and Transport (APP-031)) and Air Quality Environmental Statement Chapter (A3.9: Air Quality (APP-033)).</p> <p>The Applicant has undertaken a review of the statutory Local Development Plans and no changes have been identified since the application documents were drafted.</p> <p>Copies of the specific Local Development Plan policies referred to in the Environmental Statement are included in G2.18: Summary of Development Plan Policies, submitted at Deadline 2.</p> |
| BGC.1.2 | ERYC HCC | <p>Neighbourhood Plans</p> <p>Can you confirm whether there are any relevant made or emerging neighbourhood plans that the ExA should be aware of? If there are can you: i. Provide details, confirm their status and - if they are emerging - the expected timescales for their completion. ii. Provide a copy of the made plan or a copy of the latest draft. iii. Indicate what weight you consider the ExA should give to these documents.</p> | |

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| BGC.1.3 | Applicant ERYC | <p>National Policy Statements consultation</p> <p>In September 2021, as part of a review of the energy National Policy Statements (NPS), the Government published draft National Policy Statements NPS EN-1 to EN-5 for consultation. Do these change the analysis of policy set out in the application documents, particularly the Planning Statement and the Environmental Statement (ES)? If so, are revised versions required for the Examination?</p> | <p>The needs case associated with Hornsea Four reflects the updated NPSs, as presented in the Statement of Need (APP-234) and Planning Statement (APP-229).</p> <p>An audit of the updated NPSs that are relevant to offshore wind farms has been undertaken for all offshore and offshore ES chapters. It can be confirmed that whilst there are minor proposed updates or amendments (some of which are non-material, some of which are already accounted for in DCO application submission documents), no proposed updates require material amendments to DCO application documents. The Applicant does not therefore consider it necessary to submit a full comparison document or an updated Planning Statement or Environmental Statement.</p> <p>In respect of offshore additions to the draft NPSs, paragraph 2.29.2 of draft NPS EN-3 states that “provisions to define the final ‘as built’ parameters” should be included in the consent. This is accounted for in Requirement 24 of the draft DCO. In respect of amendments to the draft NPSs relating to the Offshore Transmission Network Review, the Applicant refers to its response to question BGC.1.1.10.</p> <p>In respect of onshore, there are no new additions that require work above and beyond that presented in the application documents.</p> |
| BGC.1.4 | Applicant ERYC | <p>National Planning Policy Framework 2021</p> <p>Applicant: The current National Planning Policy Framework (NPPF) was published reasonably close to the submission of the application. Where applicable, have all of the submitted documents taken account of the current NPPF and, if not, are any updates to the documents necessary?</p> <p>ERYC: Do you consider there to be any implications for the application arising from the July 2021 revision of the NPPF?</p> | <p>Paragraph 2.3.4.1 of A.1.2: Planning and Policy Context (APP-008) confirms that the application is based on the revised NPPF published in February 2019 and updated in July 2021.</p> |

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| BGC.1.5 | Applicant ERYC | <p>The Environment Act 2021</p> <p>The Environment Act passed into law on 9 November 2021. While many of its provisions await detail and implementation, does this have any implications for the application documentation submitted for the Proposed Development?</p> | <p>As set out in the Applicant’s response to the relevant representation by the Environment Agency (reference RR-010-R of REP1-038), the provisions in the Environment Act 2021 relating to nationally significant infrastructure projects are not yet in force and are unlikely to become mandatory until 2025 (i.e. after the DCO Application has been determined). The Applicant does not therefore consider that the Environment Act 2021 has any implications for the application documents submitted for the Proposed Development. If this situation changes prior to the end of the Examination (for example, following the outcome of the current Defra consultation on BNG due to close on 11 April 2022), the Applicant will update the Examining Authority accordingly.</p> |
| BGC.1.6 | Applicant ERYC Any Interested Party | <p>Central Government Policy and Guidance</p> <p>Are you aware of any other updates or changes to Government Policy or Guidance relevant to the determination of this application that have occurred since it was submitted? If yes what are these changes and what are the implications, if any, for the application?</p> | <p>The Applicant acknowledges that the following Central Government Policy and Guidance has been published since the Hornsea Four application was made in September 2021 which the Applicant considers to be relevant to Hornsea Four:</p> <ul style="list-style-type: none"> • Net Zero Strategy: Build Back Greener. This strategy sets out policies and proposals for decarbonising all sectors of the UK economy to meet the net zero target by 2050. It confirmed support for 40GW of offshore wind by 2030 as a key policy, underlining the importance of this sector in contributing to Net Zero. • Additionally, a commitment to decarbonise the UK’s electricity system by 2035, was confirmed in the first week of October 2021 by the Government, to help boost the country’s efforts in achieving its net zero ambitions. The commitment focusses on building a secure, home-grown energy sector that reduces reliance on fossil fuels and exposure to volatile global wholesale energy prices. The commitment brings forward by 15 years the government’s plans to fully decarbonised the power system by 2050, as set out in the Energy White Paper, and builds on the Prime Minister’s 10 Point Plan for a Green Industrial Revolution to secure a future clean electricity supply generated in the UK. |

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| | | | <ul style="list-style-type: none"> The Environment Agency published an update to 'Preparing a flood risk assessment - standing advice' on 8 February 2022. This provides basic information for developers on the requirements for a flood risk assessment. The Applicant recognises the publication of this guidance. However, the complex nature of Hornsea Project Four is such that the standing advice is superseded by the requirement to undertake more detailed consultation with the Environment Agency and Lead Local Flood Authority with regards to the scope of the flood risk assessment. 'Flood risk assessments: climate change allowances' was updated by the Environment Agency on 6 October 2021. This was a minor update to provide clarification on the consideration of management catchments with regards to peak river flow allowances. Due to the scale of Hornsea Project Four, this has been considered inherently within the assessment of flood risk. The updated guidance does not alter the climate change allowances presented in the July 2021 update of the same publication, which has been considered in G2.17: Position Paper on Hydrology and Flood Risk - Assessment of Modelled Water Levels for Onshore Substation and Attenuation Feature, which accompanies the Deadline 2 submission. |
| BGC.1.7 | ERYC HCC | <p>Updates on development</p> <p>Please provide an update on any planning applications that have been submitted, or consents that have been granted, since the Application was submitted that could either affect the Proposed Development or be affected by the Proposed Development and whether these would affect the conclusions reached in the ES</p> | |
| BGC.1.8 | ERYC Applicant | <p>Update on application for 21/04416/STPLF</p> <p>On the Unaccompanied Site Inspection (USI) [EV-002] at Creyke Beck Substation, the ExA observed a site notice for an application for "alterations to subsurface cable corridor connected to Dogger</p> | <p>The Applicant has reviewed the application (21/04416/STPLF) made on behalf of the developer for the Dogger Bank Offshore Wind Farm project and confirms that the onshore cable route adjustment subject to this application is outwith the Hornsea Four Order Limits and is minor in nature. The Applicant can confirm that this application does not alter the impact assessment or the documents</p> |

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| | | <p>Bank Offshore Wind Farm" (your ref: 21/04416/STPLF).</p> <p>ERYC: Can you provide further details on this application including whether it has been determined or the timeframe for determination?</p> <p>Applicant and ERYC: Advise whether there are any implications for the Proposed Development as a result of this application?</p> | <p>submitted for the Hornsea Four application and therefore there are no implications for Hornsea Four.</p> |
| BGC.1.9 | Applicant | <p>Marine Plans</p> <p>The Marine Management Organisation's (MMO's) Relevant Representation [RR-020] requests the Applicant to demonstrate consideration of whether the Proposed Development adheres to the relevant marine plans and policies for the area (the East Inshore and Offshore Marine Plans, and the Northeast Offshore Marine Plan where the Proposed Development overlaps), preferably in a single, coherent document rather than as separate references throughout the application documents. The MMO suggests that the Applicant fails to explain how the project complies with the above marine plans and which policies have been scoped in or out along with justification. It provides a template and suggested references for a revised marine policy review. What is the Applicant's response? Would a re-analysis change the outcome of the policy review and whether the Proposed Development is policy compliant in this respect? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has provided a Marine Plan policy review in respect of the East and North-East plan areas, in a single document, as part of the Applicant's response to Deadline 1 (G1.40: Marine Plan Policy Review (REP1-062)). The Applicant considers that the Hornsea Four DCO Application is fully compliant with the applicable policies.</p> |

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| BGC.1.10 | Applicant | <p>Offshore Transmission Network Review</p> <p>Has the Applicant considered the Department for Business, Energy and Industrial Strategy (BEIS)/ Ofgem Offshore Transmission Network Review (https://www.gov.uk/government/groups/offshore-transmission-network-review)? If not, why not? If it did, has it influenced the design of the Proposed Development in any way? Has the Applicant identified any opportunities for a more co-ordinated approach to the design and delivery of the transmission infrastructure of this Proposed Development and other projects in the same region? Are any of the Secretary of State's observations on the offshore transmission network review in the Norfolk Boreas and Norfolk Vanguard Development Consent Order (DCO) decision letters relevant in this respect?</p> | <p>In respect of the identification of opportunities, the Applicant has engaged with National Grid Interconnector Holding regarding potential interaction between Hornsea Four and Continental Link; a position statement has been drafted and is submitted at Deadline 2 (G1.11: Position Statement between Hornsea Project Four and National Grid Interconnector Holdings Ltd).</p> <p>The rationale adopted by the Secretary of State to consent the transmission infrastructure for Norfolk Boreas and Norfolk Vanguard, notwithstanding the ongoing Offshore Transmission Network Review is applicable to the Examination and decision for Hornsea Four. As recognised by the Secretary of State in those decision letters, the designated version of NPS EN-3 states:</p> <p><i>"When considering grid connection issues, the IPC should be mindful of the constraints of the regulatory regime for offshore transmission networks"</i> (paragraph 2.6.36).</p> <p>NPS EN-1 also states:</p> <p><i>"Applicants for consent for offshore wind farms will have to work within the regulatory regime for offshore transmission networks established by Ofgem"</i> (2.6.34).</p> <p>These statements are repeated in the draft revisions to NPS EN-3 which state:</p> <p><i>"Applicants for consent for offshore wind farms will have to work within the regulatory regime for offshore transmission networks established by Ofgem"</i> (2.22.18); and</p> <p><i>"When considering grid connection issues, the Secretary of State should be mindful of the requirements of the regulatory regime for offshore transmission networks"</i> (2.23.1).</p> |
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| | | | <p>Policy therefore advocates an approach to decision-making which reflects the realities of the regulatory regime operable at the relevant time, which is essential to ensure their timely delivery. The offshore transmission infrastructure for Hornsea Four has been developed in accordance with the existing regulatory regime and should be assessed on that basis, and in light of the relevant policies referred to above.</p> <p>In summary, the Applicant agrees with and adopts for Hornsea Four the following statements made by the Secretary of State for Norfolk Boreas (at paragraph 4.229 of the decision letter) and Norfolk Vanguard (at paragraph 4.17 of the decision letter):</p> <p><i>“The proposed onshore transmission element complies with the current policy and regulatory regime, and the OTNR does not require live applications to be deferred pending its outcome... He [the Secretary of State] does not consider that his decision should be deferred or that the onshore elements should be refused pending the outcome of the OTNR. The Secretary of State has therefore decided to accord limited weight to the OTNR against granting the Development.”</i></p> |
| BGC.1.1.11 | Applicant | <p>Interaction between Dogger Bank Creyke Beck DCO (DBCBC DCO) and the application</p> <p>Parts of the DBCBC DCO Order limits and the application Order limits would overlap. Would the Applicant please provide:</p> <ul style="list-style-type: none"> i. A plan showing the overlapping Order limits or signpost where in the application documents this can be found. ii. Further detail of how the two DCOs would potentially interact, including any conflict between the two | <p>The Applicant submits at Deadline 2 a plan showing the overlapping Order limits between Dogger Bank Creyke Beck DCO and the application (see G2.12: Interaction Between Hornsea Four and Dogger Bank Creyke Beck DCO Order Limits).</p> <p>In respect of overlapping Order Limits in the marine environment, the Applicant confirms disposal sites will be split to accommodate the Dogger Bank A&B ECC (intertidal and offshore). This will be done by excluding the Dogger Bank A&B disposal sites from the defined disposal sites for the Proposed Development. The draft DCO marine disposal sites will be updated at Deadline 2 accordingly (see RR-020-3.3.16 at Deadline 1 in G1.9: Applicant’s comments on Relevant Representations (REP1-038)). In respect of overlapping Order Limits onshore, it is noted that the projects interact at the existing Creyke Beck National Grid Electricity Transmission (NGET) substation and the Dogger Bank construction access road along Park Lane.</p> |

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| | | | <p>The Applicant confirms there is no potential for this overlap to cause adverse implications on either projects due to the type of overlap and the timing of each project’s construction programme, which are not envisaged to overlap.</p> |
| BGC.1.12 | Applicant | <p>Environmental enhancements</p> <p>Tables 5 and 6 of the Outline Enhancement Statement [APP-249] and commitments Co194, Co196 and Co198 outline a number of social and environmental enhancements. How is Co198 to be developed and secured, as it covers a range of enhancement commitments in different domains (which “include but are not limited to; provision of historic signage at landfall; improvements to Public Rights of Ways (PRoWs); wider biodiversity, hydrological and social enhancement measures”)? How are these enhancement measures to be funded? For example, will separate budgets be allocated for each of the enhancement measures or will all the enhancements be competing for the same pot of money? If it is the latter, then how will the funding for competing interests (for example between creation of a water attenuation feature, onshore cable corridor hedgerow planting, biodiversity and Public Rights of Way improvements) be determined?</p> | <p>The enhancement measures outlined in F2.14: Outline Enhancement Strategy (APP-249) will be funded by the Applicant as part of the project’s construction budget. Budgets will not be specified or allocated for individual measures and different measures will not be at risk due to “<i>competing interests</i>”. All measures presented will be progressed with equal opportunity – it is the intention of the Applicant to progress all measures set-out in the outline plan. It is acknowledged, however, that the implementation of such measures will be dependent on feasibility and the opportunity to provide tangible benefits. This will be determined through landowner correspondence and agreements with ERYC during the post-consent stages of Hornsea Four.</p> <p>The Applicant clarifies that the enhancement measures as set out in F2.14: Outline Enhancement Strategy (APP-249) are not relied upon by the assessments in the Environmental Statement. The enhancement measures are presented with the intention to provide environmental and societal benefit to the immediate local area post-construction, over and above the nationwide scale benefits Hornsea Four provides.</p> |
| BGC.1.13 | Applicant | <p>Clarification of land description at landfall</p> <p>In the Book of Reference [AS-002] the land referenced 3A on the Land Plans is described as “beach” and the land referenced 3, lying to the seaward of Mean High Water (MHW), is described as “of Mean High of Foreshore”. Could the Applicant: i. Review these descriptions and confirm if the land 3A references the land extending from MHW to the</p> | <p>i) The Applicant has reviewed and can confirm that plot 3A is the land extending from Mean High Water Springs to the cliff face location (as delineated by the Ordnance Survey). This also applies to plots 2A, 4A and 6A.</p> <p>ii) The Applicant has reviewed the definition and believe that “foreshore” is an accurate description of the land between the Mean High Water Springs and the Low High Water Springs, as well</p> |

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| | | <p>cliff face/ coastline. ii. Advise if the term “foreshore” would also be appropriately used for such land (3A, above MHW), or advise if there is a more precise term that should be used for consistent reference to this part of the beach, extending from MHW to the cliff face/ coastline. iii. Confirm if there is a PRoW over this land, 3A plus 2A, 4A and 6A (all above MHW and referenced as being in the ownership of Glendon Estates).</p> | <p>as between the Mean High Water Springs and the cliff face. The descriptions of these plots at the foreshore have therefore been updated in the version of E1.3: Book of Reference (AS-002) submitted at deadline 2.</p> <p>iii) The Applicant can confirm that D1.7.1: Public Rights of Way (PRoW) Plan (APP-215) shows Barmston Footpath No.4 runs along the western edge of plot 10 from south to north, before turning east adjacent to the northern edge of that same plot. It then crosses west to east through land plots 3A and 2A at the very northern edge of both plots to reach the beach. There is no PRoW contained in plots 4A and 6A.</p> |
| BGC.1.14 | Applicant ERYC | <p>Plans for solar farm on land adjacent to proposed onshore substation (OnSS)</p> <p>Please could the Applicant provide:</p> <p>i. Confirmation or signposting to exactly where the land referenced as Albanwise Solar Farm Ref 21/02335/STPLF is located.</p> <p>ii. Comment on any implications for the cumulative effects assessment in relation to the ES [APP-030 Table 6.1] that "No existing or proposed developments have been identified that could be affected by Hornsea Four".</p> <p>iii. Update on discussions with the landowner regarding co-operation between the two development projects during construction and operation. Could ERYC provide an update on the progress of this application, which is listed in the Landscape and Visual Impact Assessment (LVIA) [APP-028] as undetermined. If the application has not yet been determined provide an indication of the timeframe for determination.</p> | <p>i) The Albanwise Solar Farm would be located to the north of plots 310 and 315 to 319 (inclusive) and north of the freehold acquisition plots 320 and 334 as shown in D1.3.1: Land Plan – Onshore (APP-210). For information the Applicant has included the approved plan from planning application reference 21/02335/STPLF at Appendix G2.16.</p> <p>ii) The Applicant has been in close correspondence with the landowner and promoter of the Albanwise Solar Farm for several years. This has resulted in agreement on the co-location of project infrastructure to enable to two projects to co-exist. As such, the statement quoted in Table 6.1 of A3.6: Land Use and Agriculture (APP-030) remains valid.</p> <p>iii) As detailed in the E1.2: Statement of Reasons (APP-227), in September 2021 an agreement was entered into between the Applicant and the landowner and promoter of the Albanwise Solar Farm to govern the interactions between the two projects during construction and operation. On 6th January 2022 planning</p> |

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| | | | permission was granted by ERYC for the proposed solar farm, subject to conditions (application reference 21/02335/STPLF). |
| BGC.1.15 | Applicant | <p>Carbon Impact Assessment</p> <p>During consultation for the redetermination of the Norfolk Vanguard project, the Secretary of State (SoS) highlighted the desirability of a carbon footprint and impact assessment that considered embedded carbon and greenhouse gases from the extraction, refinement and manufacture of elements of the project, along with the emissions from the construction (including trenching and excavation of arable land and loss of greenhouse gas absorption capacity from farming, plants and trees), operation, maintenance and decommissioning. Could the Applicant signpost any assessment work of this nature that has been undertaken and does the Applicant intend to provide anything further in this respect?</p> | The Applicant has noted the request for a Carbon Impact Assessment and will submit the report at Deadline 3. |
| BGC.1.16 | Applicant | <p>Other consents and permits</p> <p>Application document [APP-233] confirms that other consents, licences and permits would be required for the Proposed Development. Can you:</p> <ol style="list-style-type: none"> i. Provide an update on progress with obtaining these consents, licences and permits. ii. Include a section providing an update on these consents, licences and permits in any emerging Statements of Common Ground (SoCG) that are being drafted with the relevant consenting authorities. | <p>F1.5: Consents Management Plan (APP-233) details all additional consents, licences and permits with anticipated application dates for the proposed development. The Applicant confirms that all additional consents, licences and permits described in this document will be applied post award of development consent. The Applicant therefore does not currently anticipate including this detail in the Statements of Common Ground with the relevant consenting authorities unless this position changes during the examination period.</p> <p>In respect of onshore European Protected Species, it can be noted that letters of no impediment (LONI) were received from Natural England pre-application for water vole and great crested newts, as identified in F3.5: Statement of Common Ground between Hornsea Project Four and Natural England: Onshore Matters (APP-258).</p> |

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| BGC.1.17 | Applicant | <p>Joint Position Statements</p> <p>In the Preliminary Meeting held on 22 February 2022 [EV-003 to EV-005], you advised that you were preparing Joint Position Statements (JPS) rather than SoCG with a number of parties, for example with Drax Power Limited. Can you:</p> <ul style="list-style-type: none"> · explain what the legal status of a JPS is; · state what benefit a JPS has over a SoCG given the definition of a SoCG provided by the Infrastructure Planning (Examination Procedure) Rules 2010; and · set out what weight should be given to a JPS. | <p>There is no legal or substantive difference between a JPS and a SoCG. The matter is purely one of terminology and document structure.</p> <p>A JPS follows a different format from SoCGs to allow each party to identify the issues pertinent to their commercial interests and to determine the level of detail to put before the ExA pending the conclusion of commercial discussions (much of which are confidential and so inappropriate to rehearse in a “traditional” SoCG-type manner). A JPS will be updated in the same way as a SoCG throughout Examination, as discussions between the parties progress and narrow.</p> <p>The definition of “statement of common ground” in Rule 2 of the Infrastructure Planning (Examination Procedure) Rules 2010 is:</p> <p><i>“a written statement prepared jointly by the applicant and any interested party, which contains agreed factual information about the application”</i></p> <p>This definition applies equally to a JPS, which as noted above is a SoCG in all other than terminology and structure/format. The legal status of a JPS and a SoCG is therefore the same and weight should be afforded equally to the different forms of written statements.</p> <p>The Applicant wishes to clarify that it will not be submitting a JPS or a SoCG with Drax Power Limited. As noted in the Preliminary Meeting, and as accepted by the Examining Authority in section 4 of its Rule 8 letter, the Applicant is progressing a joint written statement in relation to the Northern Endurance Partnership with BP Exploration Operating Company Limited only, as bp is the appointed operator of the relevant carbon storage licence. This joint written statement was submitted as document G1.29: Position Statement between Hornsea Project Four and BP Exploration Operating Company (BP) (REP1-057) of the Applicant’s Deadline 1 submission.</p> |
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3 Commercial Fishing and Fisheries

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| CF .1.1 | National Federation of Fishermen's Organisations (NFFO) and Holderness Fishing Industry Group (HFIG) | <p>Likely effects of rock berm cable protection of cable crossing east of Smithic Bank</p> <p>Please comment on the predicted or potential effects on fishing and fisheries [APP-018 and APP-015] at the specific location east of Smithic Bank where cable crossings of the Dogger Bank A and B Offshore Wind Farm (OWF) export cables are proposed to be protected by a rock berm that could reduce water depth by up to 14% [APP-067, para 4.6.4.2]. How effective do you consider the proposed mitigation would be?</p> | |
| CF .1.2 | Applicant and Marine Management Organisation (MMO) | <p>Cumulative effect of potential Marine Conservation Zone (MCZ) potting restrictions</p> <p>Please comment in detail on the representation [AS-026] from the NFFO that it cannot agree with the assessed likely 'minor' magnitude of impact on UK potting fleets of the inclusion of MCZs in the ES Chapter 6 consideration of cumulative effects, [APP-018, section 6.12.2.18]</p> <p>because the prohibition of bottom-contacting fishing in MCZs has potential to affect potting activity that should be taken account of in the assessment of cumulative impact for this</p> | <p>In relation to potential management measures within MCZs, see the Applicant's response to the NFFO's representation at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)), specifically the response to AS-026-E.</p> <p>The Applicant would like to draw attention to paragraph 6.12.2.32 and 6.12.2.3.34 of A2.6: Commercial Fisheries (APP-018) which explains that the moderate adverse cumulative impact to mobile fleets due to reduced access (due to management measures within MPAs) leads to a moderate adverse impact of displacement for the UK potting fleet. The prohibition of bottom-contact gear within MPAs and subsequent displacement effect on the UK potting fleet is therefore considered within the assessment. The conclusions of the ES therefore remain unchanged.</p> |

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| | | <p>Proposed Development. If it were to be included what implications would this have for the conclusions drawn in the ES?</p> <p>(If not fully addressed in the Applicant's Deadline 1 responses to Relevant Representations.</p> <p>Cross-reference may also be made to relevant responses to ExQ1 Marine Ecology.)</p> | |
| CF.1.3 | Applicant | <p>Assessment of impact on shellfish receptors</p> <p>Respond to the following MMO comments [RR-020] on the ES chapter on Fish and Shellfish Ecology [APP-015]:</p> <p>i. Section 3.11.1.7 needs clarification on the assessment of local impact and effects of loss of scallop ground during construction [RR-020, para 3.5.6].</p> <p>ii. Section 3.11.1.16 "reads as though fishers have the option of fishing in grounds much further away which is neither practical nor economically viable" [RR-020, para 3.5.9].</p> <p>(If not fully addressed in the Applicant's Deadline 1 responses to Relevant Representations; cross-reference may also be made to relevant responses to ExQ1 Marine Ecology)</p> | <p>i. Please see the Applicant's response to the MMO's representation at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)), specifically the response to RR-020-3.5.6.</p> <p>ii. Please see the Applicant's response to the MMO's representation at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)), specifically the response to RR-020-3.5.9.</p> |
| CF.1.4 | Applicant | <p>Assessment of impact on access to fishing grounds for potting fishery</p> <p>The representation [AS-026] from the NFFO comments that the degree of displacement of fishing activity from relatively nearshore OWFs should not be extrapolated to assess effects</p> | <p>Please see the Applicant's response to the NFFO's representation at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)), specifically the response to AS-026-C.</p> |

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| | | <p>from an OWF much further offshore, stating “To make distant trips economically viable, potting boats must deploy longer strings of pots, which require more room: making the interturbine distances crucial.” Would the Applicant please comment in detail on the NFFO disagreement with the assessment in ES [APP-018, section 6.11.2] of the magnitude of the effect on potting fishery as minor (therefore of slight adverse significance). (If not fully addressed in the Applicant’s Deadline 1 response to Relevant Representations; cross-reference may also be made to relevant responses to ExQ1 Marine Ecology)</p> | |
| CF.1.5 | Applicant | <p>Data collection methods for assessment of potting activity baseline</p> <p>Please respond in detail to the representation [AS-025] from HFIG that criticises the data collection method used for assessing the baseline for commercial potting activity on the basis that “VMS data only presented vessels that were over 15 m in overall length which actually represents a very small proportion of the fleet which is predominantly between 10 m and 12 m in length ” and that “under-representation of the size, intensity, and extent of the fishery ... leads to a flawed assumption that displaced vessels can fish in otherwise unfished areas”.</p> <p>(If not fully addressed in the Applicant's Deadline 1 responses to Representations;</p> | <p>Please see the Applicant’s response to HFIG’s representation at Deadline 1 (G1.9: Applicant’s comments on Relevant Representations (REP1-038)), specifically the response to AS-025-J.</p> |

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| | | crossreference may also be made to relevant responses to ExQ1 Marine Ecology) | |
| CF.1.6 | Applicant | <p>Catch figures for lobster and brown crab</p> <p>The representation [AS-025] from the HFIG presents catch figures for the year 2020 for lobster and brown crab. Do these figures represent any significant difference to the dataset applied in the ES and if they do would this alter the assessment of degree of significance of likely effects of the Proposed Development on commercial fisheries?</p> <p>(If not fully addressed in the Applicant's Deadline 1 responses to Representations; crossreference may also be made to relevant responses to ExQ1 Marine Ecology)</p> | <p>The 2020 catch figures presented in HFIG's representation (AS-025) are not significantly different to the 2019 figures on which the ES assessment is based upon (as presented in A5.6.1: Commercial Fisheries Technical Report (APP-080)).</p> <p>A data series of 2015 to 2019 was analysed: the average annual tonnages landed from the ECC study area was 650 tonnes of lobster and 5,000 tonnes of brown crab. As such, there is there is not a significant difference in the values quoted by HFIG in their representation (AS-025 - 338 tonnes of lobster and 1,900 tonnes of crab in 2020) and those used in the assessment, therefore there is no change in the assessment conclusions presented in the ES.</p> |
| CF.1.7 | Applicant | <p>Residual cumulative adverse effects on certain fleets</p> <p>In the ES [APP-018] the cumulative effect of reduced access to, or exclusion from, fishing grounds is assessed as residual moderate adverse for certain fleets with certain OWFs (eg Moray East, Dogger ABC and Sofia). Has further mitigation has been considered to reduce this cumulative effect and if considered, why has it not been proposed to reduce the residual effect?</p> | <p>The Applicant notes that the moderate residual impacts highlighted by the Examining Authority (and presented in Table 6.18 of A2.6: Commercial Fisheries (APP-018)) relate to the outcomes of the cumulative assessments undertaken as part of the impact assessments for those specific developments rather than representing the outcomes of the Hornsea Four assessment. Where moderate impacts are defined by the developers, these either remain unmitigated as residual moderate impacts (e.g. Moray East) or are mitigated through evidence based disruption and cooperation agreements (Hornsea Three, NnG, Dudgeon Extension and Sheringham Shoal Extension).</p> <p>When all plans, projects and designated Marine Protected Areas (MPAs) identified for the Hornsea Four cumulative assessment (Table 6.17 A2.6: Commercial Fisheries (APP-018)) are taken into account in the Tier 1 assessment, the maximum sensitivity of receptors in the area is medium and the magnitude has been assessed as moderate for mobile demersal trawling fleets and minor for all other fleets. As such, the significance of effect from the reduced access, or exclusion from established grounds from the installation of Hornsea Four</p> |

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| | | | <p>cumulatively is moderate adverse for mobile demersal trawling fleets, which is significant in EIA terms, and slight adverse for all other fleets, which is not significant in EIA terms. The limited activity of demersal trawling fleets across Hornsea Four resulted in slight adverse effects to these metiers for Hornsea Four in isolation; the inclusion of MPAs into the cumulative assessment has led to this moderate adverse assessment for demersal trawling fleets. The effect of the MPAs is unmitigable by the project and this impact would remain significant without the de minimis cumulative contribution from Hornsea Four.</p> |
| CF.1.8 | Applicant | <p>Cumulative Impact on UK potting with Endurance and Scotland England Green Link 2 (SEGL2) projects</p> <p>The ES [APP-018] assesses a moderate adverse cumulative effect for UK potting together with the Endurance Carbon Capture Storage (CCS) project and SEGL2 which assessment "takes account of high uncertainty related to the impact to commercial fisheries and Tier 3 projects, which have not yet been assessed by the Endurance or SEGL2 projects". Please explain what has been assumed in making this assessment in view of that uncertainty and clarify whether this assessed cumulative moderate adverse effect on the UK potting fleet would be residual after further mitigation.</p> | <p>As set out in paragraph 6.12.2.26 of A2.6: Commercial Fisheries (APP-018), at the time of writing, no planning application has been submitted in relation to the offshore elements of either the Northern Endurance Partnership project or the Scotland to England Green Link – SEGL2 (formerly Eastern Green Link) and as such, detailed information was not available in order to complete a detailed assessment on the cumulative impact of Hornsea Four and these projects on commercial fisheries. The Applicant acknowledges this high level of uncertainty associated with these other projects and notes that this level of uncertainty has been built into the assessment on a precautionary basis. Relevant details from the offshore elements of these projects will be considered within the assessment if made available during Examination. Notwithstanding this, the Applicant is committed to ongoing communication and discussion with the Endurance and SEGL2 project developers. The Applicant will seek to collaborate with these projects in order to develop a consistent approach in fisheries liaison, coexistence and mitigation. Further details on mitigation related to the Endurance project is set out in the Applicant response to INF.1.2. As such, the Applicant considers that the combination of cooperation, fisheries liaison, coexistence, mitigation and commercial agreements will result in a residual significance that would be not significant in EIA terms.</p> <p>Furthermore, it is assumed that there would be a level of reduced access and displacement to the potting fleet caused by Northern Endurance Partnership project (alone) and the Scotland to England Green Link – SEGL2 (alone) that would require further mitigation by those individual projects.</p> |

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| CF.1.09 | Applicant | <p>SOCC with the local potting fleet</p> <p>Is it the Applicant's intending to enter into a SoCG with the UK potting fleet via a collective organisation or to notify to the Examination agreements reached with individual fishers? [APP244, para 5.1.1.2.]</p> | <p>The Applicant continues to engage with The Holderness Fishing Industry Group (HFIG) and the National Federation of Fishermen's Organisations (NFFO) through the SoCG process (see G1.21: Statement of Common Ground between Hornsea Four, HFIG and NFFO (REP1-049)).</p> |
| CF.1.10 | Applicant | <p>Potting activity density mapping</p> <p>Please explain why potting is apparently excluded from activity density mapping [RR-020, para 3.5.8]; if it were to be included what implications would this have for the conclusions drawn in the ES?</p> | <p>Please see the Applicant's response to RR-020-3.5.8 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)). The Applicant notes that data limitations (such as lack of density mapping for potting) were managed by ensuring accurate interpretation of the data and clear understanding of its scope, together with cross-referencing between data sources and consultation with the fishing industry (primarily NFFO and HFIG but also other organisations set out in Table 6.4 of A2.6: Commercial Fisheries (APP-018)). As data form only part of the evidence base, the limitations identified are not considered to significantly affect the certainty or reliability of the impact assessments in Section 6.11 of A2.6: Commercial Fisheries (APP-018).</p> |
| CF.1.11 | Applicant | <p>Definition of 'other countries' in ES Volume A2 Chapter 7</p> <p>Can you clarify if the statement "vessels registered to other countries do not operate across the Hornsea Four array area, the offshore ECC and the wider former Hornsea Zone" means from countries other than those specifically listed in this ES chapter [APP-018, paras 6.15.1.1 and 6.16.1.2].</p> | <p>The Applicant can confirm that the 'other countries' referred to in paragraph 6.15.1.11 of A2.6: Commercial Fisheries (APP-018) refer to countries other than those specifically listed earlier in the paragraph (countries other than the UK, Netherlands, France, Belgium, Denmark, Germany, Sweden, and Norway).</p> |
| CF.1.12 | Applicant | <p>Outline Fisheries Coexistence Liaison Plan</p> <p>The implementation of a Fisheries Coexistence and Liaison Plan (FCLP) [APP-244] is intended to be secured through the DCO/ Deemed Marine Licences (DMLs), but the Outline FCLP is not</p> | <p>The Applicant confirms this was an error. The draft DCO has been updated to list the F2.9: Outline Fisheries Coexistence and Liaison Plan (APP-244) as a certified document in Schedule 15 of the updated draft DCO submitted at Deadline 2.</p> |

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| | | <p>currently listed in Schedule 15 of the draft DCO [APP-203] as a document to be certified. Can you explain whether the Outline FCLP should be included within Schedule 15 or explain how commitments 95 and 180 in the Commitments Register [APP-50] are secured in the absence of this?</p> | |
| CF.1.13 | Applicant | <p>Additional detail in the Outline FCLP</p> <p>Please respond to the MMO requests in [RR-020] for additional detail in the Outline FCLP [APP244]:</p> <ul style="list-style-type: none"> i. More descriptive roles and responsibilities. ii. A table (at minimum) to be included to advise when information would be shared at the construction, operation and maintenance stages. iii. Specific communications responsibilities for the Fisheries Liaison Officer (FLO) in regard to safety considerations connected with potential gear snagging on cable protection/ rock armour. iv. FCLP to require timely notification fishers of intended works to enable fishers to move gear with allowance of additional time in adverse weather conditions. v. FLO to consult with local industry when the timetable of works is known so that “real-time advice” can be provided. vi. Clarification for all parties that “the MMO will not act as arbitrator and will not be involved in discussions on the need for, or amount of, compensation being issued”. | <p>The Applicant has made the requested amendments in an updated version of F2.9: Outline Fisheries Coexistence and Liaison Plan (Clean) Revision: B (REP1-033) which was submitted at Deadline 1. Additionally, the Applicant responses to the MMO’s representation (RR-020-4.6.1 - RR 020-4.6.7) are presented in G1.9: Applicant’s comments on Relevant Representations (REP1-038) which was also submitted at Deadline 1.</p> |

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| | | (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | |
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4 Compulsory Acquisition and Temporary Possession

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| CA.1.1 | Applicant | <p>Update table</p> <p>In the Rule 6 letter [PD-005] the ExA requested an updated table to be regularly provided on the progress of negotiations for Compulsory Acquisition (CA) and the freehold of land, of new rights over existing land and Temporary Possession (TP) of land. Confirm acceptance of this request.</p> | <p>The Applicant will provide regular updates to the ExA on progress of negotiations in line with the Rule 6 letter at Deadlines 2, 4, 5, 6 and 7. A Compulsory Acquisition Schedule has been submitted at G2.5: Applicants Compulsory Acquisition Schedule (CA Schedule). E1.2.1: Statement of Reasons: Update on negotiations with landowners, occupiers, Statutory Undertakers and other utilities has also been submitted at deadline 2.</p> |
| CA.1.2 | Applicant | <p>Compliance with Department for Levelling Up, Housing and Communities (DCLG) Guidance</p> <p>Please advise whether the Book of Reference (BoR) [AS-002] is fully compliant with DCLG Guidance.</p> | <p>The Applicant considers E1.3: Book of Reference (AS-002) to be compliant with DCLG Guidance.</p> |
| CA.1.3 | Applicant | <p>Category 3 Parties</p> <p>i. Provide further detail/ justification of how you have identified Category 3 parties for the purposes of the BoR [AS-002]. ii. Are there 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 [AS-002]? This could include, but not be limited to,</p> | <p>i) The Applicant applied a multidisciplinary approach to the initial identification of potential Category 3 parties. It engaged expert land agents and land referencers Dalcour Maclaren to advise on what could constitute a relevant claim, to undertake diligent enquiries on its behalf to establish where a claim might arise, to assess the construction and operation of the project as described in the application documentation and conclude the properties potentially impacted and the likelihood of success of any claims.</p> |

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| | <p>those that have provided representations on, or have interests in:</p> <ul style="list-style-type: none"> o noise, vibration, smell, fumes, smoke or artificial lighting;the effect of construction or operation of the Proposed Development on property values or rental incomes; o concerns about subsidence or settlement; o claims that someone would need to be temporarily or permanently relocated; o impacts on a business; o loss of rights, eg to a parking space or access to a private property; o concerns about project financing; o claims that there are viable alternatives; or o blight. | <p>The primary cause for any relevant claim during the construction period was determined to be noise emanating from construction activities along the cable corridor, the use of temporary construction compounds and the construction activities at the OnSS and EBI site. A worst-case scenario for noise was used as a baseline for the assessment and therefore impact thresholds for night and weekend working were used as the basis for review. As there would be no operational impacts from the underground onshore export cables, the potential for relevant claims to arise in relation to the operation of the development is limited to properties in proximity to the OnSS and EBI.</p> <p>A precautionary approach was taken to include a number of residential properties in the vicinity of the proposed OnSS and EBI as potential claimants. The Applicant reviewed all the technical data available and assessed each property in the vicinity of the OnSS and EBI on an individual basis. This resulted in all residential properties within 500m being included, as well as several other properties that might be affected.</p> <p>Using the above approach, the Applicant identified 46 parties with interests outside of the Order land who would, or might be entitled to, make a relevant claim and those parties are listed in Part 2 of E1.3: Book of Reference (AS-002).</p> <p>It should be noted that only three parties (from two properties) that were identified by the Applicant have submitted a relevant representation (RR-013, RR-017 and RR-019).</p> <p>ii) The Applicant undertook adequate diligent enquiry to identify the parties in Part 2 of E1.3: Book of Reference (AS-002) who would, or might be entitled to, make a relevant claim. The Applicant does not consider there are any further parties who need to be included.</p> |
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| CA.1.4 | Affected Persons Interested Parties | <p>Known inaccuracies</p> <p>Are any Affected Persons or Interested Parties aware of any inaccuracies in the BoR [AS-002], Statement of Reasons [APP-227] or Land Plans [APP-210]? If so, please set out what these are and provide the correct details.</p> | |
| CA.1.5 | Applicant | <p>Diligent enquiry into land interests</p> <p>Could you summarise where you have not yet been able to identify any persons having an interest in the land, including any rights over unregistered land?</p> <p>What further steps will you be taking to identify any unknown rights during the Examination?</p> | <p>The Applicant can confirm that there are no plots where they have not been able to identify some form of legal or beneficial interest in the land. There are a number of unregistered plots where the Applicant has identified the owner(s) or the reputed owner(s) through diligent enquiry.</p> <p>The Applicant conducted diligent enquiry as described at Appendix A of E1.2: Statement of Reasons (APP-227) and for plots where unknown interests had been identified during Section 42 Consultation and at Section 56 Notification stage, site notices were erected and maintained. The Applicant will continue to undertake enquiries, including through contact with adjoining owners and their agents, and will continue to maintain E1.3: Book of Reference (AS-002) through Examination should any parties make themselves known.</p> |
| CA.1.6 | Applicant Statutory Undertakers | <p>Protective Provisions</p> <p>The BoR [AS-002] includes a number of Statutory Undertakers with interests in land and equipment that would be affected by Compulsory Acquisition (CA)/ Temporary Possession (TP):</p> <p>Applicant:</p> <p>i. Provide a progress report on negotiations with each of the Statutory Undertakers listed in</p> | <p>i) Please see E1.2.1: Statement of Reasons: Update on negotiations with landowners, occupiers, Statutory Undertakers and other utilities submitted at deadline 2.</p> <p>ii) Please see i) above.</p> <p>iii) There have been no additional Statutory Undertakers identified since the submission of the application.</p> |

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| | | <p>the BoR, with an estimate of the timescale for securing agreement with them.</p> <p>ii. State whether there are any envisaged impediments to the securing of such agreements.</p> <p>iii. State whether any additional Statutory Undertakers have been identified since the submission of the BoR and whether the latest version of the BoR includes any recently identified Statutory Undertakers.</p> <p>A number of Statutory Undertakers [RR-001, RR-025, RR-026 and RR-042] have raised concerns regarding the current drafting of the Protective Provision within the draft DCO [APP203].</p> <p>Statutory Undertakers: Either provide copies of preferred wording or if you have provided it, signpost where it can be found and explain why you don't want the wording as currently drafted to be used.</p> | |
| CA.1.7 | Applicant | <p>Statutory Undertakers</p> <p>Where a representation is made by a Statutory Undertaker under s127 of the Planning Act 2008 (PA2008) and it has not been withdrawn by the close of the Examination, the SoS would be unable to authorise powers relating to the statutory undertaker's land unless satisfied of specified matters set out in s127. If the representation is not withdrawn by the end of the Examination confirmation would be needed that the "experience" test would be met.</p> | <p>As set out in the Applicant's response to question CA.1.6, negotiations are ongoing with each of the Statutory Undertakers and the Applicant remains confident that agreement will be reached prior to the close of the Examination and that the Statutory Undertakers' objections will be withdrawn.</p> <p>As set out in E1.2: Statement of Reasons, Appendix C Summary of Negotiations with Statutory Undertakers and other Utilities (APP-227) the Applicant considers the Protective Provisions contained in C1.1: Draft DCO including Draft DML (REP1-002) provide adequate protection for Statutory Undertakers and ensure that the land and property can be acquired without serious detriment to the carrying on of the relevant Statutory Undertaker's undertaking. If required,</p> |

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| | | <p>The SoS would also be unable to authorise removal or repositioning of apparatus unless satisfied that the extinguishment or removal would be necessary for the purposes of carrying out the development to which the Order would relate in accordance with s138 of the PA2008. Justification would be needed to show that extinguishment or removal would be necessary. Can you indicate when, if the objections from Statutory Undertakers are not withdrawn, this information would be submitted into the Examination.</p> | <p>the Applicant can provide further details to support its position at Deadline 7 to accompany its final draft DCO.</p> |
| CA.1.8 | Applicant Network Rail | <p>Network Rail – Plot 176</p> <p>Network Rail [RR-001] advocates that plot 176 forms part of the operational Yorkshire Coast Line and that the CA of this plot would cause serious detriment to its undertaking. Network Rail has highlighted a number of criteria that would need to be met for withdrawal of objection.</p> <p>Can you provide an update on these discussions and whether agreement is likely to be reached before the close of the Examination?</p> | <p>Please see the Applicant’s response to RR-001 at G1.9: Applicants Responses to Relevant Representations (REP1-038).</p> <p>Discussions between the Applicant and Network Rail are ongoing in relation to a voluntary land agreement over Plot 176. A meeting between the Applicant and Network Rail is planned for the end of March 2022 to discuss the outstanding points relating to the voluntary land agreement, and the Applicant is confident that agreement will be reached before the close of the examination.</p> <p>The legal representatives for both parties have been in discussions over a Framework Agreement and Protective Provisions which will safeguard Network Rail’s infrastructure and protect their statutory undertaking. These are largely in agreed form subject to completion of the land agreement and clarification of Network Rail’s position on the Applicant’s use of the level crossings which may result in additional amendments to the Framework Agreement and Protective Provisions.</p> <p>Meetings and discussions have been taking place between the Applicant’s Legal and Consents teams and Network Rail regarding the use of the level crossings and protection of Network Rail’s infrastructure and although there is further information is to be provided by both parties in due course, the Applicant</p> |

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| | | | considers it likely that an agreement will be reached before the close of Examination. |
| CA.1.9 | Applicant | <p>Land at Creyke Beck</p> <p>National Grid Electricity Transmission (NGET) [RR-025] has queried the extent of the proposed Order limits at the proposed substation site given that NGET would build a convertor station adjacent to the existing substation at Creyke Beck for the benefit of the Applicant. Can you explain why the amount of land being sought would be needed to enable delivery of the Proposed Development?</p> | Please see the Applicant's response to RR-025 at G1.9: Applicants Responses to Relevant Representations (REP1-038) . |
| CA.1.10 | Applicant Environment Agency | <p>Update on Environment Agency Land</p> <p>The Environment Agency advised [RR-010] that it was reviewing the proposed land acquisition in relation to its assets and whether it would cause problems from an operational perspective.</p> <p>The BoR [AS-002] lists three plots around Watton Beck (plots 158, 159 and 160) where the Environment Agency owns the land, and the Applicant is seeking the permanent acquisition of new rights and the imposition of restrictions. Can you provide an update as to whether these plots have been reviewed? If they have what was the outcome and if they haven't when will that review occur? (If not fully addressed in the</p> | <p>The Applicant has been continuing discussions with the Environment Agency (EA) to ensure that both the Applicant's project and the EA's operational use of the plots can co-exist.</p> <p>The current Protective Provisions for the benefit of the EA (included in Part 5 of Schedule 9 to C1.1: Draft DCO including Draft DML (REP1-002) require the Applicant to submit plans to the EA in advance of commencing any specified works for approval (paragraphs 2(1) and (2)). The EA can give its consent subject to reasonable requirements for the protection of the drainage work (paragraph 2(3)). The EA can require the undertaker to construct temporary or permanent protective works which includes the provision of strengthening banks or embankments (paragraph 3). Any such protective works must be carried out to the satisfaction of the EA (paragraph 4(1)). Paragraph 6 states that if the efficacy of any drainage work is impaired or damaged by the specified works then the undertaker must make good such impairment or damage. Paragraph 10 provides an indemnity to the EA for any costs or losses incurred as a result of the specified works.</p> |

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| | | Applicant's Deadline 1 response to Relevant Representations.) (You may wish to combine this with your response to question OWE.1.4.) | The Applicant therefore considers that the approval mechanism and indemnity in the Protective Provisions ensure that there will not be any detriment to the EA from an operational perspective. |
| CA.1.11 | Applicant | <p>Choice of technology</p> <p>The Statement of Reasons [APP-227, Para 1.2.1.3] advises that the Proposed Development may use High Voltage Alternating Current (HVAC) or High Voltage Direct Current (HVDC) transmission or could use a combination of both technologies in separate electrical systems. This would have significant implications for CA/ TP as for example during construction the onshore cable corridor would have a typical width of 80m if HVAC technology is used and 60m if HVDC technology is used, reducing to 60m and 40m width for permanent rights respectively [APP-225]. A number of other recent wind farm projects, for example East Anglia ONE North and Norfolk Vanguard, have specified the use of either a HVAC or a HVDC electrical system for the onshore cabling from the outset. Given that the amount of land required would vary quite considerably depending upon the technology used and could give rise to blight claims can you justify from a CA perspective why you have yet to decide as to whether HVAC or HVDC would be your preferred option and/ or advise whether a decision on which technology would be used will be made during the Examination? (You may wish to combine the answer to this question with the response to PDS.1.1.).</p> | <p>Please see the Applicant's response to PSD.1.1 which outlines the Applicant's position on why it is necessary to retain flexibility to use either High Voltage Alternating Current (HVAC) or High Voltage Direct Current (HVDC). The Applicant does not anticipate being able to make a decision on the type of transmission technology to be used for Hornsea Four before the end of Examination.</p> <p>Whilst the extent of land over which rights and temporary possession powers are being sought may differ depending on the transmission technology used, due to the linear nature of the scheme, the Applicant believes that the choice of technology would not significantly alter the number of landowners or occupiers impacted. Furthermore, it is not simply the case that a different technology would result in a consistently narrower width of cable corridor for the entire Order limits. The temporary possession and permanent rights acquired would be based on micro siting, the terms of existing land agreements, attempts to avoid any obstacles in the subsoil and at surface level and through endeavours to ensure normal agricultural working could continue (including avoidance of severed or unworkable areas).</p> <p>As set out in E1.1.1: Funding Statement – Dalcour Maclaren Letter (APP-225), the Applicant considers there to be no likelihood of blight claims being received regardless of the type of transmission technology used.</p> <p>The Applicant would highlight that it has entered into voluntary agreements, or documentation is in an agreed form and awaiting signature or completion, with 84.3% of landowners and 96.0% of occupiers for the onshore export cable route and this is with respect to the full land take required and width sought in the Order limits.</p> |

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| CA.1.12 | Applicant | <p>Location of haul road for construction of cable route</p> <p>In Table 4.36 of ES Vol A1. Chapter 4 [APP-010] you state that the maximum haul road width could be up to 10m and that would include hard standing, soil storage and fencing. However, in the indicative layout depicted in Figure 4.20 of [APP-010] you show a centrally positioned haul road with soil storage areas and temporary fencing located away from the haul road.</p> <p>Please clarify this and can you confirm if all proposed passing places would be included within the 10m width?</p> | <p>Within Table 4.36 of A1.4: Project Description [REP1-004] two-line values are stated for the potential width of the haul road along with the rationale behind the associated widths. The first line item for the haul road width states 10m which includes the hard standing (haul road), soil storage and fencing, this width would be applicable for the temporary off easement access tracks that are required outside of our 80m working width. These access tracks are identified as works No 9a within D1.4.2: Works Plan Onshore [APP-212] and would not be representative of Figure 4.20 of A1.4: Project Description [REP1-004]. Passing places would be included within the 10m width. The second value associated with the haul road states the actual haul road construction width would be 6m with an increase to 7m for passing places, this would be applicable to works area No 9a (temporary access tracks) and works area No6 as shown in D1.4.2: Works Plan Onshore [APP-212] and would be representative as depicted as in Figure 4.20 of A1.4: Project Description [REP1-004] where the soil storage and fencing are stored and positioned to facilitate the overall cable route construction works.</p> |
| CA.1.13 | ERYC | <p>Reasonable alternatives/ necessity</p> <p>Is the ERYC in its role as the Local Planning Authority and the Highway Authority aware of:</p> <ul style="list-style-type: none"> i. Any reasonable alternatives to CA or TP sought by the Applicant? ii. Any areas of land or rights that the Applicant is seeking the powers to acquire that they consider would not be needed? | |
| CA.1.14 | Affected Persons | <p>Affected Persons' issues and concerns</p> <p>Do any Affected Persons have any concerns that they have not yet raised about the legitimacy, proportionality or necessity of the CA or TP powers sought by the Applicant that would affect land that they own or have an interest in?</p> | |
| CA.1.15 | Applicant | <p>The Equalities Act 2010</p> <p>Could you:</p> | <p>G2.8: Equalities Impact Assessment has been prepared by the Applicant and accompanies the Deadline 2 submission.</p> |

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| | | <p>i. Clarify how you have had regard to the Equalities Act 2010 in relation to the powers sought?</p> <p>ii. Have any Affected Persons been identified as having protected characteristics? If so, what regard has been given to them?</p> | |
| CA.1.1.16 | Applicant | <p>Availability of funding</p> <p>The Applicant is reminded that the Department for Communities and Local Government (as it then was) Guidance related to procedures for CA (September 2013) states that; "Applicants should be able to demonstrate that adequate funding is likely to be available to enable compulsory acquisition within the statutory period following the Order being made, and that the resource implications of a possible acquisition resulting from a blight notice has been taken account of".</p> <p>i. The Funding Statement [APP-224, para 1.3.1.1] indicates that the current estimated cost of the scheme in August 2021 would be £5-8 billion of which £76.859 million would be associated with the acquisition of land/ rights in land [APP-224, para 1.3.1.4]. How robust is this figure and given the Examination is due to close in August 2022 does this need to be updated and if not, why not?</p> <p>ii. Paragraph 1.4.1.2 of the Funding Statement indicates that the funding mechanism for the</p> | <p>i) The cost estimate set out in the E1.1: Funding Statement (APP-224) was correct at the time of submission however the Applicant recognises, considering recent global events and their impact on commodity prices, these figures may fluctuate. The Applicant therefore suggests that an updated Funding Statement be provided at Deadline 7 to align with the latest commodity prices and market changes before the close of examination. Regardless, through the funding methods outlined in E1.1: Funding Statement (APP-224) the Applicant has demonstrated that adequate funds will be available, and appropriate guarantees put in place, to finance the Project.</p> <p>ii) Although the precise funding mechanism for the Project has not been formally agreed, it has the potential to be via a mixture of funding from the Project Company's parent company combined with project financing from external investors, secured against the revenue streams of the future wind farm. This mixed model has been successfully deployed on Ørsted projects in the past, such as the Race Bank project (573 MW, 50% of the project divested for £1.6 billion), Walney Extension project (659 MW, 50% of the project divested for £2 billion) and Hornsea One project (1,218 MW, 50% of the project divested for £3.5 billion). Ørsted has also indicated that it expects its business activities to generate sufficient cashflows in order to finance planned portfolio investments. As a result, it may be possible for the Project to be financed without the need for any external financing initiatives. The Applicant is not currently in a position to confirm which methodology will be adopted and will not be in a position to do so before the end of Examination.</p> |

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| | <p>Proposed Development has not been formally agreed and then sets out a number of possible options. Has any further work been done to confirm which option is likely to be progressed?</p> <p>iii. On the final page of the funding statement [APP-224] there appears to be a question from another Examination can you provide details of which application this relates to and why it is relevant to the funding of the Proposed Development?</p> <p>iv. The property cost estimate table on page 15 of the Dalcour Maclaren letter [APP-224] assigns a figure of £32.733 million (net value) to compensate for the loss of development value. Given the majority of the cable route would run through a predominantly rural area with how was this figure reached?</p> <p>v. Can the figures in the property cost estimate table be checked as the net value (£m) and total (£m) column totals and the acquisition of freehold land and third-party professional fees total (£m) rows do not appear to add up based on the figures contained within the table. As a consequence, the total cost estimate would appear to be approx. £2m less than the figure shown in the table.</p> <p>vi. The Ørsted Annual Report [APP-225] is dated 3 February 2021, when will the next annual report be published and are you intending to submit a copy into the Examination?</p> | <p>iii) This was a typographical error and has been corrected. An updated version of E1.1: Funding Statement (APP-224) has been submitted at Deadline 2.</p> <p>iv) The figure in E1.1.1: Funding Statement – Dalcour Maclaren Letter (APP-225) relating to loss of development value was reached through the assessment of planned developments which a few affected parties have notified Dalcour Maclaren of during the negotiation process for voluntary agreements. In assessing compensation for loss of development value, the value of the mines and minerals were also assessed over the lifetime of the project as Mineral Safeguarding Areas and Areas of Search for Sand and Gravel are populous. An expert Mines and Minerals Surveyor, who practices in the East Riding of Yorkshire, was instructed to undertake the development losses assessment, a cautious approach was taken to assessing the losses and included losses associated with developments which are not expected be crystallised during the lifetime of the Project.</p> <p>v) The Applicant and Dalcour Maclaren have reviewed the cost estimate table and acknowledge that as a result of a rounding error the total columns and total row had minor errors. However, the total estimate of property cost was not in the region of £2m less than the figure shown in the original table. A corrected version of E1.1.1: Funding Statement – Dalcour Maclaren Letter (APP-225) has been submitted at Deadline 2.</p> <p>The latest Ørsted Annual Report for 2021 has been submitted at Deadline 2 as an additional Annex 1.3 to E1.1: Funding Statement (APP-224).</p> |
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| CA.1.17 | Applicant | <p>Crown land</p> <p>Consent is required for any provision in the DCO which would relate to Crown land or rights benefiting the Crown in accordance with s135(2) of the PA2008. Among other things this includes consent for any TP sought over Crown land.</p> <p>i. Part 4 of the BoR lists six plots where the Crown is the owner of the land. The description of each of these plots includes the tailpiece (excluding all interests of the Crown). Can you provide a further explanation for the inclusion of this wording and what it implies for the purposes of s135 of the PA2008?</p> <p>ii. The Statement of Reasons [Para 1.5.1.6, APP-227] advises that you are in discussions with the Crown Estate Commissioners (being the appropriate Crown authority) in order to obtain their consent to the inclusion of these provisions as required under s135 of the PA2008. Can you provide an update on where these discussions are and whether agreement will be reached before the close of the Examination?</p> <p>iii. Can you confirm whether any land that would be subject to escheat is included within the Order limits?</p> | <p>i) The tailpiece set out in E1.3: Book of Reference (AS-002) (“excluding all interests of the Crown”) has been included to clarify that the Applicant is not seeking to acquire any interests belonging to the Crown. The Applicant is seeking to acquire interests in Crown land that are held by persons other than the Crown and therefore consent from the relevant Crown Authority (in this case the Crown Estate Commissioners) will be required pursuant to clause 135(1) of the PA 2008.</p> <p>ii) Discussions with the Crown Estate Commissioners are ongoing and the Applicant is confident that agreement will be reached prior to the close of the Examination.</p> <p>The Applicant as part of their diligent enquiries has not identified any land or interests which at the present time are subject to escheat within the Order limits. Throughout the process, the Applicant has had frequent engagement with all parties. To date, any Executors of an estate have finalised any affairs and are now the legal owners of the land. Should any parties pass away prior to the close of the Examination, these updates will be reflected in E1.3: Book of Reference (AS-002) submitted at Deadline 7 and the Applicant will engage with any appointed Executors.</p> |
| CA.1.18 | Applicant The Crown Estate BP Endurance | <p>Burbo Bank DCO and the implications for Part 4 of the BoR [AS-002]</p> <p>Applicant:</p> <p>Part 4 of the Book of Reference [AS-002] and the land plans [APP-210] only detail the</p> | <p>Regulation 7 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (“APFP Regulations”) sets out the requirements for the Book of Reference. Part 1 of E1.3: Book of Reference (AS-002) includes any land which it is proposed shall be subject to powers of compulsory acquisition, rights to use land or rights to carry out protective works to buildings. The</p> |

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| | <p>onshore interests of the Crown Estate. Conclusions reached by the SoS in the Burbo Bank decision supported a recommendation from the ExA in that case, that where the sole interest of the Crown Estate in land forming part of the sea bed is in the area proposed to be granted to the OWF undertaker, the Crown interest in the sea bed need not be listed in Part 4 of the Book Reference. Given that there is an overlap between the licences granted by the Crown Estate for Hornsea 4 and those for the Endurance Aquifer, the circumstances applicable in the Burbo Bank decision would not appear to apply here. Please explain why Part 4 of the BoR does not itemise both of the offshore affected Crown interests?</p> <p>Can you explain what is the purpose and legal status of the Crown Land – Onshore and Offshore Plans [APP-221] ?</p> <p>BP Endurance and The Crown Estate:</p> <p>What is your understanding of the implications of the Burbo Bank decision for this Application? Do you consider that different circumstances apply in this case ie the BoR and land plans should be updated to identify the different interests in the Crown land that is the seabed?</p> | <p>Applicant is only seeking powers of compulsory acquisition, rights to use land or rights to carry out protective works over land landward of the Mean Low Water Springs. In Part 4 of E1.3: Book of Reference (AS-002), the Applicant has set out any Crown interests in the land identified in Part 1.</p> <p>Regulation 5(2)(n) of the APFP Regulations requires a plan to be submitted identifying any Crown land. The Applicant has included both onshore and offshore Crown land in D1.12.1: Crown Land - Onshore and Offshore (APP-221). The onshore Crown land is shown on the plan as it will be necessary to obtain the consent of the relevant Crown authority (being the Crown Estate Commissioners) pursuant to s135(1) of the PA 2008 to the inclusion of compulsory acquisition powers in C1.1: Draft DCO including Draft DML (REP1-002) over interests in such land held otherwise than by the Crown.</p> <p>In addition to consent under s135(1) of the PA 2008, the Applicant requires consent under s135(2) of the PA 2008 to include in the DCO any other provisions applying to Crown land. The Applicant considers consent under s135(2) applies to all Crown land and not just land where compulsory acquisition powers are being sought.</p> <p>The approach set out above is consistent with the approach taken to the identification of Crown land on Crown land plan(s) and interests listed in Part 4 of the Book of Reference in the following made offshore wind farm DCOs:</p> <ul style="list-style-type: none"> • The Norfolk Vanguard Offshore Wind Farm Order 2022; • The Norfolk Boreas Offshore Wind Farm Order 2021; • The Hornsea Three Offshore Wind Farm Order 2020; and • The East Anglia THREE Offshore Wind Farm Order 2017. <p>It is noted that the Burbo Bank decision only related to consent pursuant to s135(2) of the PA 2008. No compulsory acquisition powers were being sought or granted in the Burbo Bank Extension Offshore Wind Farm Order 2014 and therefore consent pursuant to s135(1) of the PA 2008 was not required.</p> |
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| | | | In any event, Regulation 7 of the AFPF Regulations only requires Part 4 of the Book of Reference to list the relevant Crown authority (the owner of the Crown interest) and not any other persons within an interest in Crown land. Therefore there is no requirement to list in the Book of Reference any other persons with offshore land interests, such those parties with an interest in the Endurance Aquifer, as no compulsory acquisition powers are being sought offshore. |
| CA.1.19 | Applicant ERYC | <p>Other special category land</p> <p>Part 4 of the BoR [AS-002] identifies various land plots within the Order limits as being Crown land or open space. Does any other land within the Order limits comprise land either forming part of a common or fuel or field garden allotment or which is held inalienably by the National Trust? If so, provide details.</p> | The Applicant has identified no other land within the Order limits forming part of a common or fuel or field garden allotment or which is held inalienably by the National Trust. |
| CA.1.20 | Applicant | <p>Land near Throstle Nest Farm</p> <p>[RR-023] raised concerns that the indemnity agreement that they were being asked to sign was disproportionately onerous and was 'Wednesbury' unreasonable. Furthermore, they were concerned that the Proposed Development was potentially blighting the sale of their property.</p> <p>Can you:</p> <p>i. Explain why such an indemnity agreement is necessary?</p> <p>ii. Provide an update on the progress with negotiating a voluntary agreement.</p> | <p>i) It is a standard term of land agreements relating to onshore high voltage electricity infrastructure that a landowner covenants not to deliberately or negligently damage the cables and indemnifies the owner / operator of the cables for any losses that may be incurred as a result of such damage. This provision has been agreed with the other 84.3% of landowners on the onshore export cable route where voluntary agreements have been reached. In this case the Applicant has offered additional concessions given the nature of the land (being subsoil of a public highway) and with a cap on liability, the commercial details of which remain under confidential negotiation.</p> <p>ii) The Applicant understands that a sale of the property to East Riding of Yorkshire Council may have been agreed. ERYC were</p> |

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| | | <p>iii. Explain why, given the concerns regarding the indemnity agreement, you have not taken up the owners offer of giving you the freehold rights for the land for free?</p> | <p>granted planning permission on 7 February 2022 for change of use from a dwelling house (Use Class C3) to a children’s care home (Use Class C2). The landowners’ agent advised the Applicant in March 2022 that, given the prospective sale, the present landowners did not feel it necessary to discuss the proposed Heads of Terms further. As a result, whilst continuing to engage with their agent, the Applicant has now engaged with ERYC to commence negotiations on Heads of Terms to take effect once they secure freehold ownership of the property. The Applicant will update the ExA on negotiations as set out in CA.1.1 and update E1.3: Book of Reference (AS-002) as appropriate when further details of the sale are given.</p> <p>iii) The Applicant’s position is that the acquisition of the freehold of the land would not be proportionate to the need case for the installation of underground electricity cables nor consistent with other rights being sought by the Applicant in C1.1: Draft DCO including Draft DML (REP1-002) nor consistent with the land agreements entered in to with landowners of either side of this plot. As set out in ii) above, the Applicant anticipates entering into Heads of Terms and a voluntary land agreement with ERYC once they are the freehold owners, on similar terms to the rest of the onshore export cable route.</p> |
| CA.1.21 | Applicant ERYC (Highways) | <p>A164/ Jocks Lodge junction improvement scheme</p> <p>The proposed cable route would intersect with the A164/ Jocks Lodge junction improvement scheme. Can you:</p> <p>ERYC (Highways)/ Applicant:</p> <p>iv. Provide a plan of the proposed improvement scheme/ land subject to the Compulsory</p> | <p>iv) Please see plan provided at Appendix G2.20 showing the land subject to the Jocks Lodge Compulsory Purchase Order with the Order limits superimposed over it.</p> <p>v) Ongoing discussions are taking place between the Applicant and ERYC with regards to finalising a voluntary land agreement for the cable crossing and advanced draft legal agreements are expected to be provided to ERYC shortly. In addition, discussions are ongoing between both parties’ legal representatives with regards to</p> |

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| | | <p>Purchase Order with the proposed cable route and order limits superimposed over it.</p> <p>v. Provide an update on progress with either agreeing a collaboration agreement or agreed protection within the draft DCO and whether this will be agreed before the close of the Examination.</p> <p>ERYC (Highways): Provide details of the proposed timescale for the implementation of this scheme. (You may wish to combine the answer to this question with the answer to question TT.1.14.)</p> | <p>Protective Provisions contained within the DCO for ERYC's infrastructure. It is expected that all agreements will be in place before the close of examination.</p> |
| CA.1.22 | Applicant | <p>Logistics compound at Lockington In its RR [RR-018] Lockington Parish Council raised concerns about the location of the Logistics Compound that is proposed to be located close to the junction of Station Road and the A164. The Parish Council has suggested an alternative site that would be located on the eastern side of the A164 immediately to the north of the Station Road/ A164 junction. What implications would this have for the Order limits and CA? (You may wish to combine the answer to this question with the answer to question PDS.1.13.)</p> | <p>The land identified by Lockington Parish Council is entirely outside of the Order limits and therefore the Applicant has not sought any CA powers over this land within C1.1: Draft DCO including Draft DML (REP1-002).</p> |
| CA.1.23 | Applicant | <p>Acquisition of other land or rights Are any land or rights acquisitions required in addition to those sought through the draft DCO before the Proposed Development could become operational?</p> | <p>No land or rights acquisitions are required to carry out the authorised development other than those sought in C1.1: Draft DCO including Draft DML (REP1-002) or for which the Applicant has already entered into a voluntary agreement (for example with the Crown Estate).</p> |

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| | | Additional land or rights may need to be acquired to deliver onshore artificial nest structures. Please see the Applicant's response to question HRA.1.34. |
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5 DGN Design

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| DGN .1.1 | Applicant | <p>Photomontage visualisations</p> <p>The Applicant's description of the block visualisations [APP-028, para 4.11.2.36] is noted. It is understood that these portray the 'Maximum Design Scenario' (MDS); in the interests of clarity for all parties, can you confirm that the visualisations provided in [APP-115] are intended to represent the 'worst case' for the onshore substation and Energy Balancing Infrastructure development resulting from the Proposed Development and clarify how this 'worst case' has been established for the block visualisations? The illustrations [APP-115] entitled 'MDS' appear to depict a different development to those entitled 'Illustrative Photomontage' (Viewpoints 1 to 4). Can you clarify why buildings and structures appear to be shown in different locations across these two types of illustration and, if necessary, amend the documents accordingly?</p> | <p>The Applicant can confirm that two sets of photomontage visualisations are provided in A6.4.1: Landscape and Visual Resources Wireframes and Photomontages (APP-115). These are subsequently referred to for clarity as the 'block visualisations' and the 'illustrative visualisations'. In addition, paragraph 4.11.2.36 of A1.2: Planning and Policy Context (APP-008), and Section 4.10.10 of A3.4: Landscape and Visual (APP-028), provide further details relating to the approach taken to produce the visualisations. The Applicant acknowledges that the block visualisations differ from the illustrative visualisations, for the reasons set out in Section 4.10.10 of A3.4: Landscape and Visual (APP-028) and these are summarised below.</p> <p>The 'block visualisations' depict a basic model that illustrates the Maximum Design Scenario (MDS) outlined in Table 4.12 of A3.4: Landscape and Visual (APP-028). This comprises the entire onshore substation site (OnSS) being covered in a 15 m high block, to account for OnSS secondary buildings and Energy Balancing Infrastructure (EBI) main buildings (reflecting the flexibility in design), with the main OnSS buildings (25 m high) and EBI secondary buildings (20 m high) being placed in the most visually prominent locations. These block visualisations represent the worst case in terms of visual obstruction and serve as a primary reference for the LVIA.</p> <p>The 'illustrative visualisations', also referred to as 'photomontages' in the LVIA, have been prepared to show an illustrative 3D model of the OnSS and EBI proposed by Hornsea Four. The illustrative 3D model fits within the block model</p> |

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| | | | <p>parameters and shows buildings and structures in different locations as this model has not been designed to illustrate 'worst case', but to show a more realistic illustration of the potential appearance of the OnSS and EBI. These photomontages serve as a secondary reference for the LVIA.</p> |
| <p>DCN.1.2</p> | <p>Applicant</p> | <p>Design review process Provide an explanation and summary of the Design Review process undertaken by the Applicant and its design team for the onshore substation buildings and structures prior to submission of the Application.</p> | <p>The technical and health and safety requirements of the OnSS and EBI is informed by technical specialists on behalf of the Applicant, directed by design standards and requirements. These technical and safety requirements are the fundamental and primary consideration, as the main priorities of the design process are to provide a buildable and operational substation that satisfies engineering requirements, allowing for emergency and maintenance access.</p> <p>In addition, the Applicant obtained independent professional advice on the design via Land Use Consultants, who were instrumental in the production of F2.8: Outline Landscape Management Plan (APP-243), F2.13: Outline Design Plan (APP-248) and A4.4.6: Design Vision Statement (APP-048). The Applicant considers that the measures set out in these documents is a reflection of the significant emphasis on high quality design throughout the pre-application process.</p> <p>The design approach was guided by the National Infrastructure Commissions Design Principles for National Infrastructure, which makes reference to design quality through four key principles (climate, people, places and value). The Applicant aspired from early in the pre-development process to focus on design quality at the OnSS, over and above what has historically been typical for OnSS design associated with offshore windfarm DCOs. This resulted in landscape and engineered based design considerations that combine with technical and safety requirements to ensure the OnSS and EBI is fit for purpose.</p> <p>The design review process sought to minimise the landscape and visual impact of Hornsea Four and ensure that the proposed buildings, associated infrastructure as well as landscape and boundary treatments considered local landscape character and setting and how this development could best respond to and be integrated into the local landscape. An initial desk-based study identified the</p> |

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| | | <p>landscape character types and in particular the key landscape features which are prevalent in this part of the East Riding of Yorkshire. In summary, this includes a gently undulating landscape which supports intermittent scattered woodland and hedgerows with much of the land in this area being intensively farmed. This work was supplemented by site appraisal work which sought to verify the findings of the initial desk-based research. Existing landscape features both within and surrounding the site were identified and mapped. Work also included a review of the most prominent colours in the landscape that could be used to inform the choice of façade treatment for the proposed buildings. Initial design principles were then developed to identify how the scheme could be best integrated into the landscape and how any impact on the landscape and visual amenity could be minimised.</p> <p>These initial design principles underwent a period of review and refinement in order to explore how this aspiration could be best achieved. In summary the key principles that were identified included the:</p> <ul style="list-style-type: none">• introduction of scattered tree groups around the periphery of the site which would be consistent with the vegetation cover in this area but also reduce the visual dominance of the OnSS site;• introduction of naturalistic landforms with associated tree planting along the southern boundary of the OnSS Site again sought to reduce the visual dominance of the OnSS Site from visual receptors to the south of the development;• retention of existing woodland vegetation around the periphery of the site seeks to minimize the impact on existing landscape features whilst maintaining local landscape character;• application of colour on the facades of buildings to replicate the most prominent colours seen in the local landscape;• use of SuDS as an alternative to traditional asphalt and concrete hard landscape treatments for the external envelope;• use of boundary treatments such as fencing, hedging and screens that were more in keeping with local landscape character; and |
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| | | | <ul style="list-style-type: none"> careful consideration of any PRowWs that needed to be diverted as a result of the development and how any diverted or nearby PRowW could be enhanced and improved as part of the scheme proposals. <p>The proposals were discussed and reviewed at a number of consultation events and then further developed and refined following feedback from these consultation events.</p> |
| DGN.1.3 | Applicant | <p>Application of colour on buildings</p> <p>The outline Design Plan [APP-248] shows indicative approaches to the treatment of the external envelope of enclosures to structures at the onshore substation. These approaches share a similar colour palette with variations in application which are intended to reduce the impact of the large building volumes on the landscape. Demonstrate with further detail, including with reference to successful examples in the built environment, how and why the Applicant has formed the view that applying blocks of colour onto large and significant structures in a landscape setting is a genuinely effective strategy to lessen their visual impact on that landscape. Reference should be made to the effectiveness of such a strategy in reducing the visual impact from long-range, mid-range and close-range viewpoints. References to successful examples in the built environment should include completed projects that could be visited by the ExA.</p> | <p>The local landscape in which the OnSS wite is located is not comprised of strict geometrical forms or lines. It is made up of intermittent scattered woodland and hedgerows, fences and ground cover as well as a varied skyscape all of which create variety in terms of height but also a variety of hues and tones of colour when viewed from eye level. The scattered woodland and landscape features create a broken skyline and the proposed façade treatments for the OnSS buildings therefore seek to mirror the variety of colour and height that currently exists rather than creating a solid or a horizontal banded appearance. The colours suggested for the “pixilated” façade treatments are various muted shades of green, brown, grey and blue which will replicate the tones observed in the local landscape thus helping the buildings blend into the background. Bright bold colours where deemed inappropriate for the rural setting of the OnSS site as they would make the buildings more visible rather than reducing their visual impact. The approach taken is to look at case study examples and then how the approaches taken for these examples can be developed and adapted further in order to reduce the visual impact of the proposed OnSS buildings.</p> <p>All text referenced in the following precedents is direct from reports or planning applications in relation to the project, or comments from the designers about the approach taken to use cladding to minimise the visual impact of the buildings.</p> <p>It is important to note that the Applicant has included the colour application in F2.13: Outline Design Plan (APP-248), which will provide an opportunity for ERYC to engage with the design process during the pre-construction phase.</p> <p><i>Data Centre Rabobank, Best, Netherlands</i></p> |

"The entrance building has a metallic louvred facade. All industrial halls have been brought closer in colour to the green main buildings by means of a pixel pattern in 18 shades of green (aluminium sandwich panels).

The pixels refer on the one hand to the digital processes of the data centre and on the other, the print forms an abstracted image of the surrounding nature at the location."

Source: <https://www.vanaken-cae.com/projects/datacenter-rabobank>

Schuppen House, Berlin (Residential)

"The residence is attached to the end of an existing terrace in the borough of Pankow, where it occupies a site that formerly operated as a garden nursery. The studio decided to cover the house with rounded shingles in varying shades of green, giving the exterior a dappled effect that references the colouring of surrounding plants and trees, as well as the plot's previous use. "It recalls the former nursery on the estate and also interprets the client's brief to build a garden house."

Simultaneously the hasty passerby will not necessarily take notice of the greenish structure blending with plants and trees deep in the gap between neighbouring buildings."

Source: https://archinect.com/brandt_simon_architekten/project/Schuppen

Unite Student Piccadilly Place, Manchester

"During the design process an informal consultation was undertaken with officers of Manchester City Council in order to explore options and preferences for the use of alternative materials and colour palettes with the intention of providing a refreshed and lighter aesthetic to the building. It was established through the presentation of a series of options that a simpler colour palette reflecting the features present in the skyline and adjacent buildings with a generally larger format panel arrangement was preferred."

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| | | | <p>Source: https://pa.manchester.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=QDTTYCBC HHV00</p> <p>Other Project without Detailed Information</p> <ul style="list-style-type: none"> • Deventerstraat 10, Oldenzaal, Netherlands. Lycens BV • Morrison Distribution Centre, Bridgwater |
| DGN.1.4 | Applicant ERYC (Highways) | <p>Detailed design approval onshore</p> <p>Requirement 7 of the draft DCO [APP-203] sets out the parameters which secure the detailed design of the onshore substation. Is the wording of this requirement sufficient to secure the detailed design of the Onshore substation? Are you comfortable that you have the necessary experience and expertise to take on the design approval (substation buildings and structures) post-consent, if the DCO is consented? If not, please indicate what additional support you believe would be required and from whom such support should come.</p> | |
| DGN.1.5 | Applicant | <p>Security fencing</p> <p>The Design Vision Statement [APP-048] sets out possible boundary treatments in the form of security fencing and fixed screens. It notes [APP-048, para 3.4.1] that security fencing would be, as a minimum, a Category 2 'Standard' fence system with a height of 2.4m. Figures 19 and 20 [APP-048, page 030] show indicative sections through boundary treatments and include depictions of fences with outline forms indicating Onshore substation building structures which are approximately twice the</p> | <p>A4.4.6: Design Vision Statement (APP-048) is a summary document, covering mitigation, enhancement, and biodiversity net gain. The document does not secure any of these measures and instead provides a mechanism for stakeholders and members of the public to review the 'Design Vision' of Hornsea Four, inclusive of how such elements interact, how measures are secure (via outline plans) and the overall ambition of the project in respect of design.</p> <p>The schematics and figures included in A4.4.6: Design Vision Statement (APP-048) are not to scale and are for illustrative purposes only. To provide the ExA with this information, updated figures showing the security fence and proposed buildings to scale have been added to a revised version of F2.8: Outline</p> |

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| | | <p>height of the fence. Are the buildings and structures shown in these Figures represented with an accurate height above ground level? If not, provide illustrated examples of the same screening principles which show buildings at their 'true' height as defined by the MDS parameters. Are the security fences depicted in these indicative section drawings with 1m additional electric fencing, as noted in Figures 2 and 3 of the Applicant's outline Design Plan [APP-248, pages 13 and 14]? If not, provide illustrated examples of the same screening principles which show fences and screens at their 'true' height.</p> | <p>Landscape Management Plan (APP-243), which accompanies the Deadline 2 submission.</p> |
| DGN.1.6 | Applicant | <p>Screen options</p> <p>The Applicant's Design Vision Statement [APP-048] introduces the possibility of additional boundary treatments in the form of additional fixed screens in areas where footfall of pedestrians is anticipated. No further mention is given, or indicative proposals presented, for this type of screening in the Applicant's graphic representations of treatments along and around PRowS. Provide illustrated examples of the same PRow treatment principles which show how screening might be incorporated indicating the height that such screens would need to reach in order to be effective.</p> | <p>Due to the current stage of design, the location (or indeed the inclusion) of such screens is undetermined. The Applicant considers that this will form part of the detailed design stage of the OnSS and EBI and will be developed as part of the Landscape Management Plan, in correspondence with ERYC. To facilitate the ExA in the review however, additional text and figures have been added to F2.8: Outline Landscape Management Plan (APP-243), showing the potential indicative location of visual screening and a section drawing to scale. It is considered that this secures the future consideration of such measures. This accompanies the Deadline 2 submission.</p> |
| DGN.1.7 | Applicant | <p>Screen options</p> <p>Clarify the meaning and intent of the following wording, set out in the Applicant's outline Design Plan [APP-248, para 9.2.1.1]:</p> | <p>F2.13: Outline Design Plan (APP-248) will serve as a mechanism to discharge Requirement 7 – detail has been included in respect of fencing for the benefit of the DCO application; however, will not form part of the final version as it is not necessary to discharge Requirement 7. Instead, Requirement 12 will serve to secure relevant detail and information.</p> |

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| | | <p>"It is noted that detail regarding fencing will be approved under DCO Requirement 12. Outline information is provided in this Outline Design Plan for DCO application purposes only and will not form part of the detailed Design Plan to be submitted under DCO Requirement 7."</p> | |
| DGN.1.8 | Applicant | <p>Earthwork bunds</p> <p>The Design Vision Statement [APP-048] sets out the aspiration that proposed earthwork bunds should take "an organic, sinuous form with soft edges... as opposed to a hard-edged engineered form."</p> <p>Signpost where in the application documentation this approach is included as a commitment and how it would be secured by the draft DCO.</p> <p>Is there sufficient space within the onshore substation permanent Order Limits for this type of landscape mitigation to be implemented as described? Please consider the answer to this question in combination with Written Question OWE 1.6 below.</p> <p>Please provide an indicative layout to scale which demonstrates that the earthworks mitigation proposals, surface water attenuation, screening and buffer zones which are proposed can all be accommodated alongside the MDS for the onshore substation and energy balancing infrastructure.</p> | <p>The design of the landscape bunds / mounds is set out in paragraph 4.2.2.2 of F2.8: Outline Landscape Management Plan (APP-243). This document is the mechanism for securing such design characteristics, embedded within the landscape proposals.</p> <p>The Applicant can confirm that there is sufficient space within the landscaping proposals for the OnSS and EBI to accommodate the landscape bunds / mounds. It is considered that Figure 2 of F2.8: Outline Landscape Management Plan (APP-243) provides a scaled indicative layout that demonstrates the indicative location of the earthwork mitigation proposals, surface water attenuation, screening and buffer zones, in relation to the OnSS and EBI site.</p> |
| DGN.1.9 | Applicant | <p>New route adjacent to onshore substation operational site</p> <p>The Design Vision Statement [APP-048, para 3.7] discusses diversion of existing PRoWs and</p> | <p>It is noted that the exact positioning of the PRoW diversion at this location will be determined during the detailed design stage, with adequate flexibility included in the application to facilitate this. An indicative figure has been produced as requested, providing an indication of where the PRoW diversion would be diverted</p> |

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| | <p>Figs 26 to 29 of that document show indicative sections through PRoWs and an indication of diversion of existing PRoW to the west of the proposed onshore substation. Please produce an additional illustrative detail or details showing the PRoW in both plan and section where they would be diverted around the proposed onshore substation at its closest point to the proposed enclosing fence true to scale, consistent with the dimensions quoted in para 3.7.1 of that document and explain how that minimum dimensional offset for the fence from the Order limits would be secured.</p> | <p>at its closest point to the OnSS and EBI. This information is located in an updated version of F2.8: Outline Landscape Management Plan, which accompanies the Deadline 2 submission.</p> |
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6 DCO Development Consent Order (draft DCO)

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| DCO.1.1 | Applicant | <p>Precedents</p> <p>Notwithstanding that drafting precedent has been set by previous DCOs or similar orders full justification should be provided for each power/provision taking into account the facts of this particular DCO application.</p> <p>Where drafting precedents in previous made DCOs have been relied on, these should be checked to identify whether they have been subsequently refined or developed by more recent DCOs so that the DCO provisions reflect the Secretary of State's current policy preferences. If any general provisions (other</p> | <p>The drafting base for the Hornsea Four draft DCO was the Hornsea Three Offshore Wind Farm Order 2020 (Hornsea Three DCO). The drafting used in the Hornsea Three DCO was then amended to reflect project specific differences for Hornsea Four and include any specific drafting requested by stakeholders.</p> <p>The drafting to secure the kittiwake compensation measures included in the Hornsea Four dDCO at Deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)) was drafted following the grant of the Norfolk Boreas Offshore Wind Farm Order 2021 (Norfolk Boreas DCO) and the Norfolk Vanguard Offshore Wind Farm Order 2022 (Norfolk Vanguard DCO), and so includes relevant drafting from those DCOs to reflect the Secretary of State's current preferences as appropriate.</p> |

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| | | <p>than works descriptions and other drafting bespoke to the facts of this particular application and draft DCO) actually differ in any way from corresponding provisions in the secretary of state's most recent made DCOs, an explanation should be provided as to how and why they differ (including but not limited to changes to statutory provisions made by or related to the Housing and Planning Act 2016). Provide a list, or signpost where in the application documentation this can be found, of all the previous DCO's that have been used as a precedent for the drafting of this draft DCO.</p> | <p>The Hornsea Four draft DCO has also incorporated other changes from the Norfolk Boreas and Norfolk Vanguard DCOs which the Applicant considered appropriate and relevant. For example, the Applicant has included a condition in each of the deemed marine licences (DMLs) at Schedule 11 and 12, matching that included in the Norfolk Boreas Offshore Wind Farm Order 2021 and the Norfolk Vanguard Offshore Wind Farm Order 2022, to confirm that no further construction activities can take place under the DMLs following completion of construction and the issue of a close out report to the MMO. Additionally, the Applicant will incorporate changes to Schedule 15 (documents to be certified) in line with the Norfolk Boreas DCO's Schedule 18, which includes certification of the Environmental Statement.</p> <p>It is anticipated that the Secretary of State will make a decision on the DCO applications for East Anglia ONE North Offshore Windfarm and East Anglia TWO Offshore Windfarm on 31 March 2022. If DCOs are granted, the Applicant will review the drafting to ensure that the Hornsea Four dDCO includes the Secretary of State's preferred drafting where appropriate and relevant.</p> <p>The Applicant considers that the dDCO already takes into account any relevant changes made by or related to the Housing and Planning Act 2016.</p> |
| DCO.1.2 | Applicant Any Interested Parties | <p>Implications of recent SoS decision on Norfolk Vanguard and Norfolk Boreas DCOs</p> <p>Can you comment on any implications for the drafting of the DCO for this Application that may have arisen as a result of the recent Development Consent Orders for the Norfolk Vanguard and Norfolk Boreas OWF</p> | <p>The Applicant confirms the version of the Hornsea Four dDCO submitted at Deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)) included a number of changes following the grant of the Norfolk Boreas DCO and Norfolk Vanguard DCO. Please see below a summary of the changes made:</p> <ol style="list-style-type: none"> 1. The changes outlined above in the response to question DCO.1.1; 2. The changes outlined in the response to question ES.1.4; 3. Amendments to Article 4 to clarify that Article 4 grants the power to maintain the project, not to construct and maintain; and 4. Amendments to Article 5(9) (previously 5(10)) to provide the Secretary of State with 14 days rather than 5 days' notice of any transfer of benefit. |

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| DCO.1.3 | Applicant ERYC | <p>Article 2 – definition of commence</p> <p>Applicant: Definition of commence as currently drafted excludes 'onshore site preparation works'. Why are these works excluded?</p> <p>ERYC: Given 'onshore site preparation works' could include, amongst other things, site clearance, archaeological investigations, diversion and laying of services as currently defined it would be possible for the undertaker to potentially carry out these activities without the appropriate assessment or mitigation being provided. Are you therefore satisfied with this definition and if not what alternative wording would you prefer?</p> | <p>The drafting of the definition of commence to exclude preparatory works follows made DCO precedents from the Hornsea One Offshore Wind Farm Order 2014, Hornsea Two Offshore Wind Farm Order 2016 and Hornsea Three Offshore Wind Farm Order 2020. Other made DCOs also use similar drafting in the exclusion of preparatory works from the definition of commencement (the East Anglia ONE Offshore Wind Farm Order 2014, the Rampion Offshore Wind Farm Order 2014, Dogger Bank Creyke Beck Offshore Wind Farm Order 2015, the East Anglia THREE Offshore Wind Farm Order 2017, Norfolk Boreas Offshore Wind Farm Order 2021 and the Norfolk Vanguard Offshore Wind Farm Order 2022.</p> <p>This is a standard approach allowing certain preparatory works, such as archaeological investigations, to be progressed in advance of the detailed design of the onshore HVDC/HVAC substation or connection works being finalised and any relevant requirements relating to the onshore HVDC/HVAC substation or connection works being discharged. The ability to carry out certain preparatory works in advance is essential to the programming of construction works. The preparatory activities included in the definition of "onshore site preparation works" are based on the implementation experience of consultant and engineering teams and informed by the construction of previous projects (such as Hornsea One and Hornsea Two). A number of the preparatory works must be undertaken prior to any commencement date in order to facilitate a safe working environment and ensure practicable construction. Clearance works of relevance to ecological receptors are often required well in advance of construction to ensure that sensitive receptors are not present within the construction area at the time that construction works commence.</p> |
| DCO.1.4 | Applicant ERYC (Highways) | <p>Article 2 – definition of relevant highway authority</p> <p>Whilst a definition of 'highway' and 'highway authority' are provided 'relevant highway authority' unlike 'relevant planning authority' is not defined. Requirements 11 and 18 both refer to 'relevant highway authority' for the purposes</p> | <p>The Applicant confirms it will include a definition of "relevant highway authority" in the updated version of the dDCO submitted for Deadline 2.</p> |

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| | | of clarity does a definition of 'relevant planning authority' need to be included? | |
| DCO.1.5 | Applicant | <p>Article 2 – definition of Secretary of State</p> <p>Should a definition of 'Secretary of State' be included? If yes provide a definition and if no, why not?</p> <p>Can you confirm whether there are any circumstances that would engage a Secretary of State other than that for Business, Energy and Industrial Strategy? If yes provide further details.</p> <p>Confirm that the correct Secretary of State has been identified throughout the draft DCO.</p> | <p>The Applicant does not believe it is necessary to include a definition of the Secretary of State in the DCO.</p> <p>It is not common practice to specify that the Secretary of State referred to is of a particular Government department within legislation. So far as the Applicant is aware, it is also not a practice which has been adopted in made DCOs to date.</p> <p>The Applicant suggests that adding such a definition would not aide the reader's understanding of the drafting and indeed may confuse the reader, if relevant Government department names change at a future date (as they commonly do). For example, the current Secretary of State for Business, Energy and Industrial Strategy would previously have been the Secretary of State for the Department of Energy and Climate Change.</p> <p>Nevertheless, the Applicant confirms that the drafting of the dDCO is intended to refer to the Secretary of State for Business, Energy and Industrial Strategy as the current primary decision-maker for the Hornsea Four Offshore Wind Farm, but organisations under other Secretaries of State (such as DEFRA) are mentioned where appropriate in the dDCO.</p> |
| DCO.1.6 | Applicant MMO | <p>Article 5(1)(b) and 5(12)</p> <p>These provisions as currently drafted would permit transfer of part of the DMLs.</p> <p>MMO: Are you content with the transfer of part of the DMLs and if not, why not? Can you expand upon the objection to this Article that you have provided in your Relevant representation [RR-020]?</p> | <p>The Applicant confirms that there is precedent for this wording in other made DCOs, including the Hornsea Two Offshore Wind Farm Order 2016 and the Hornsea Three Offshore Wind Farm Order 2020.</p> |

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| | | <p>Applicant: Can you provide examples of recent made DCOs with DMLs where the SoS has consented to transfer of part?</p> | |
| DCO.1.7 | Applicant | <p>Article 5(2) This Article carves out a number of paragraphs where reference to the 'undertaker' in the article will not include reference to the transferee or lessee. Whilst this might be true for paragraph (6) it is not clear why it is necessary to carve out paragraphs (3), (5), (8), (9) or (11) as these relate to the undertaker giving notice of transferee. Can you explain for each paragraph why you consider that reference to the undertaker should not apply to a transferee or lessee, particularly those relating to the process for transfer of the benefit.</p> | <p>The reason for not including a transferee or lessee in the definition of 'undertaker' in these paragraphs was to ensure that it was clear which obligations applied to the existing undertaker and which obligations applied to the proposed transferee/lessee in the circumstances of a transfer/lease.</p> <p>The Applicant has however reconsidered this approach and has amended the version of the dDCO submitted for Deadline 2 so that Article 5(2) now only excepts paragraph (5) (previously numbered (6) in the application version of the DCO) only.</p> |
| DCO.1.8 | Applicant MMO | <p>Article 5(5) Applicant: Can you explain the need and justification for setting a specific procedure for the SoS to determine the transfer of benefit applications and in particular why the 8 week time period is required (the Explanatory Memorandum (EM) [APP-204, Para 5.10] confirms that there is no precedent for this approach) is it because you have experienced problems on other projects, if so which ones, or are you aware of other undertakers having problems which is why you are seeking to include this?</p> <p>MMO: You have advised [RR-020] that you consider that the proposed eight-week timescale would</p> | <p>The Applicant confirms that Article 5(5) was deleted in the dDCO submitted at Deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)).</p> |

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| | | be too short to allow for full consultation. What time period would you consider appropriate? | |
| DCO.1.9 | Applicant | <p>Article 6</p> <p>In accordance with s150 of the PA2008 and the Infrastructure Planning (Interested Parties and Miscellaneous Prescribed Provisions) Regulations 2015, express consent is required from the consenting authority for the inclusion of 6(c), (d), (e) and (f). If express consent is not received these would need to be removed from the DCO. Can you comment on how this would be managed?</p> | <p>The Applicant is in discussions with the relevant consenting authorities and is confident that express consent will be provided prior to the close of the Examination on the basis that adequate protection can be provided via protective provisions. In the event that express consent is not received prior to the Secretary of State making a decision, the Applicant understands that the Secretary of State will remove these provisions from the made DCO (if granted) as part of the statutory drafting checks that are undertaken before a DCO is made.</p> |
| DCO.1.10 | Applicant ERYC (Highways) | <p>Article 8</p> <p>Are the activities listed at 8(1) sufficient to cover the works that would be required to implement the Proposed Development? Should the list be expanded/ amended as follows (suggestions in bold):</p> <ul style="list-style-type: none"> a) break up or open the street, or any sewer, drain or tunnel within or under it; b) tunnel or bore under the street or carry out any works to strengthen or repair the carriageway; c) remove or use all earth and material in or under the street; d) place and keep apparatus in the street; e) maintain, alter or renew apparatus in the street or change its position; f) demolish, remove, replace and relocate any street furniture within the street; g) execute any works to improve sight lines; h) execute and maintain any works to provide hard or soft landscaping; | <p>Article 8(1) is based on the Model Provisions and is sufficient to cover the works required for the Proposed Development. For example, in respect of (e) the word "maintain" is already defined in the DCO and includes "alter" and "replace". It is noted that some of the activities in bold (such as (g) to (j)) are permitted by Articles 12 and 14.</p> <p>However, the Applicant has included some of the suggested additional wording in the version of the dDCO submitted for Deadline 2 to make it clear that such activities are included.</p> |

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| | | <p>i) carry out re-lining and placement of road markings;</p> <p>j) remove and install temporary and permanent signage; and</p> <p>k) execute any works required for or incidental to any works referred to in sub-paragraphs a) to k)</p> | |
| DCO.1.11 | Applicant ERYC (Highways) | <p>Article 10(1)</p> <p>As currently drafted, this Article permits the stopping up or diversion of any street.</p> <p>Applicant: Why is this necessary?</p> <p>ERYC (Highways): Should this be limited to streets only within the Order limits?</p> | <p>This wording is based on the Model Provisions and has precedent in the Hornsea Three Offshore Wind Farm Order 2020, Norfolk Boreas Offshore Wind Farm Order 2021 and the Norfolk Vanguard Offshore Wind Farm Order 2022. The Applicant has sought to identify all of the streets and public rights of way that may need to be temporarily diverted or stopped up in order to construct the Proposed Development in Schedule 3. However, it is possible that at the time of construction additional streets of public rights of way may need to be temporarily stopped up or diverted due to unforeseen circumstances (for example, due to another unrelated diversion or stopping up being in place at the same time). In order to ensure the deliverability of Hornsea Four it is necessary for this power to extend to any street or public right of way. However, the power is subject to the consent of the street authority which can be given subject to reasonable conditions.</p> |
| DCO.1.12 | Applicant Consenting authorities | <p>Articles 10(7), 12(2), 15(9) and 17(6)</p> <p>As currently drafted, consent will have been deemed to have been granted by the consenting authority if no response is received within 28 days.</p> <p>Applicant: Explain the reason behind a 28-day timeframe?</p> <p>Consenting Authorities: Is 28 days long enough? If not, why not and what would be an appropriate timeframe?</p> | <p>The 28-day timeframe is reasonable and necessary to ensure that should the consenting authority not respond within that time, the Applicant can still have certainty on the construction programme and will not need to factor in expensive contingency periods where it may be without a response from the consenting authority. The Applicant notes that 28 days was the timeframe provided in the corresponding provisions in the Hornsea Three Offshore Wind Farm Order 2020 and the Norfolk Vanguard Offshore Wind Farm Order 2022.</p> |

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| DCO.1.13 | Applicant ERYC (Highways) | <p>Article 14</p> <p>This Article would give the Applicant the power to alter the level or width of any street (including kerb, footway, cycle track or verge) within the order land. While it would be necessary to obtain the consent of the street authority (which could not be unreasonably withheld) to exercise this power it is still a wide-ranging power. Should it therefore be limited to identified streets? If yes which streets? If no, why not?</p> | <p>The Applicant considers that this power is reasonable and necessary. As the detailed design has not yet been finalised, it would not be appropriate to amend this Article to only grant the power to alter the level or width of certain streets.</p> |
| DCO.1.14 | Applicant | <p>Article 20(1)</p> <p>This Article extends the time frame for CA from the usual 5 to 7 years, given the interference and uncertainty it generates for persons whose land or rights are subject to CA. The EM [APP-204, Para 5.33] provides a limited explanation can the Applicant provide further justification.</p> | <p>Similar to the Hornsea Three DCO and the Dogger Bank Teeside A and B DCO which both secured a seven year consent implementation time limit and consequent compulsory acquisition time limit, Hornsea Four is one of the largest Round 3 offshore windfarms to come forward through the consenting phase.</p> <p>The application of a consent time limit is interlinked with the UK government's stated policy objective to support the development of a domestic offshore wind industry which delivers renewable energy at a reducing cost to the UK consumer through competitive market mechanisms. In line with the Hornsea Three's submissions, the Applicant strongly supports this policy and recognises the value that vigorous competition between offshore developers and within the offshore supply chain brings to the wider industry and to the UK consumer. Within the Hornsea offshore wind zone alone, continual development of the supply and offshore construction in industry, incentivised by the competitive allocation of price support contracts, has delivered reductions in the cost of energy from £140/MWh for Hornsea Project 1 to £57.50MW/h for Hornsea Project 2 between 2015 and 2017 respectively.</p> <p>The request for seven years is further justified due to the current volatility in the global supply chain, partly exacerbated by recent events in Eastern Europe.</p> |

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| | | | <p>Within this context there are a number of benefits which an award of seven years consent would offer including;</p> <ul style="list-style-type: none">• maximising the ability to bring forward strong, viable projects.• broaden the ability for a wider WTG supplier offer and the ability for a wider top tier transmission system supplier offer particularly in view of the forecast growth in demand. There are currently two main WTG suppliers (Siemens and MHI Vestas) in the UK offshore market, this may expand to include widely large scale commercially available suppliers in to the market (such as GE and Samsung) helping to increase competition within the WTG Market place, driving costs down and strengthening the ability for WTG suppliers to deliver up to 4GW over each delivery year (or under a non-capped CfD scenario, delivery of a higher total capacity of consented projects further supported by additional generation capacity) which is needed to deliver Government's 40GW by 2030 target, potentially deliverable from Hornsea Project Four and other projects in the advanced stages of consenting.• broaden the ability for the supply chain to keep up with demand, use and drive the expansion of key supporting suppliers this includes installation vessels, foundations suppliers, offshore substations, HVAC booster stations, electrical components, cables and as noted above turbine suppliers.• Broaden the ability for the supply chain to be able to draw on HVDC technology, utilise challenges faced through limited suppliers and longer lead in times. <p>The Applicant remains confident of the viability and feasibility of Hornsea Four and the deliverability of it in good time. The Applicant further welcomes the introduction of annual contracts for difference commencing in March 2023 however for the reasons set out above, if the implementation is seven years, this would offer advantages to the energy consumer including development of increased clear generation cost efficiency.</p> |
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| | | | <p>The land agreements do not reference compulsory acquisition time limits or implementation. All land agreements are entered in to for a period longer than the 7 years to allow for compulsory acquisition powers, where they have to be relied upon, to work together in unison with voluntary rights and ensure a consistency across the onshore export cable route and substation. It is on this premise that the vast majority of landowner agreements are now complete.</p> |
| DCO.1.15 | Applicant | <p>Article 21(2) As currently drafted, this does not include a reference to being subject to the TP Article (28). Can the Applicant either amend the drafting to include the reference or explain why it is not necessary to do so.</p> | <p>The current drafting has precedent in the Hornsea Three Offshore Wind Farm Order 2020, Norfolk Boreas Offshore Wind Farm Order 2021 and the Norfolk Vanguard Offshore Wind Farm Order 2022. It is not necessary for Article 21(2) to be expressed to be subject to the TP Article (28) as it relates to the compulsory acquisition of both new and existing rights. It is appropriate for Article 21(2) to be subject to Articles 22 (private rights) and 30 (statutory undertakers) as these Articles place restrictions on the acquisition of such new and existing rights.</p> |
| DCO.1.16 | Applicant | <p>Articles 21(8), 28(12) and 29(12) – Special Category Land As currently drafted, the draft DCO has a number of articles rather than a specific special category land article. Why have you taken this approach and what is the advantage of this over the usual drafting?</p> | <p>The Applicant included the special category land drafting with the relevant power so that the conditions or consequential effects relating to that power are contained within the same Article. However, the effectiveness or meaning of the drafting would not be changed if the dDCO were to be amended so that the special category land drafting is in a separate Article.</p> |
| DCO.1.17 | Applicant ERYC Natural England | <p>Article 36(2)(a) As currently drafted, this Article would allow the removal of any hedgerows within the Order limits AND any hedgerows specified in Schedule 10.</p> <p>Applicant: Should this be limited to those specified in Schedule 10 and if not, why not?</p> <p>ERYC and Natural England:</p> | <p>The drafting permits the undertaker to remove any hedgerows which are both within Order limits and specified in Schedule 10. The Applicant does not consider that it permits the undertaker to remove any hedgerow within the Order limits that is not specified in Schedule 10 on the basis that the word “and” is used and not “or”.</p> |

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| | | Do you have any concerns about the Applicant's ability to be able to remove all hedgerows within the Order limits AND any hedgerows specified in Schedule 10? | |
| DCO.1.18 | Applicant | <p>Article 39</p> <p>Do you intend to amend Article 39 to include the additional wording suggested by the MMO [RR-020, para 2.3.4] and if not, why not?</p> | The Applicant confirms that it amended article 39 of the dDCO at Deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)) to include the additional wording suggested by the MMO. |
| DCO.1.19 | Applicant | <p>Article 40 and Schedule 1, Part 4</p> <p>The DCO as drafted makes provision for the appeal procedures of s78 and s79 of the Town and Country Planning Act 1990 (TCPA 90) to apply regarding the discharge of requirements. However, it also includes a specific appeal procedure for discharge of requirements in schedule 1, Part 4 (para 34).</p> <p>Can you confirm what is the intention behind including two different appeal procedures?</p> <p>Planning Inspectorate (PINS) Advice Note 15 (section 19, good practice point 3 and appendix 1) addresses this issue and sets out a standard drafting procedure for the discharge of requirements. It advises that if this drafting is not followed then it should be covered by the EM. The EM [APP-204, paras 6.9-6.10] does not make any reference to the PINS advice note drafting.</p> <p>Can you explain why this advice has not been followed or amend the EM?</p> <p>In the South Humber Energy Bank Centre DCO, the SoS removed an article which sought to apply s78 and s79 of the TCPA 90 appeal</p> | <p>The Applicant confirms that the inclusion of the application of s78 and s79 of the Town and Country Planning Act 1990 by Article 40 was a drafting error. The correct appeals procedure should be that set out in Schedule 1, Part 4 of the dDCO, which substantially matches the template drafting provided in Appendix 1 of PINS Advice Note 15.</p> <p>The only substantive departure from the template drafting set out in Appendix 1 of PINS Advice Note 15 is that Schedule 1 Part 4 of the dDCO only applies to the discharge of requirements under Schedule 1 Part 3 as opposed to the whole of the DCO (i.e. it does not apply to approvals by the Secretary of State pursuant to the Order or the MMO). The Applicant will amend article 40 of the dDCO accordingly to apply Schedule 1 Part 1 as the appeals procedure. The Applicant has also made minor amendments to the timescales in Part 4 of Schedule 1 to align with those in the PINS Advice Note. In light of this, the Applicant does not consider it necessary to update the Explanatory Memorandum.</p> |

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| | | <p>provisions and replaced it with a specific appeal procedure in the article.</p> <p>In light of this decision, for consistency, Article 40 as drafted would need to be replaced with an article applying the procedure set out in Schedule 1, Part 4. If there are differences between the procedure as drafted and the PINS advice note then a justification will need to be provided.</p> | |
| DCO.1.20 | Applicant | <p>Article 45</p> <p>As drafted, this Article provides that the undertaker may not exercise the CA powers until they have a guarantee or alternative form of security in place. Can the Applicant explain why this guarantee cannot be provided now or before the end of the Examination?</p> | <p>The Applicant does not consider it to be proportionate or appropriate for security (in the form of a guarantee or alternative form of security) to be in place now or prior to the grant of the DCO. The current drafting has precedent in the Hornsea Three Offshore Wind Farm Order 2020 and the Cleve Hill Solar Park Order 2020 in addition to a number of other energy DCOs (such as the Immingham Open Cycle Gas Turbine Order 2020).</p> <p>The requirement for security is only triggered if the compulsory acquisition or temporary possession powers are exercised and only in respect of the land over which such powers are exercised, and the Applicant cannot exercise the CA powers unless and until the DCO is granted. It would be disproportionate and costly for the Applicant to have to provide security in respect of all of the Order land when (a) the DCO has not been granted and CA powers cannot be exercised and (b) it is highly likely that compulsory acquisition powers will only need to be exercised over a small part of the Order land, if at all. In addition, it is more appropriate for the amount of the security to be based on land values and compensation as at the date that the powers are to be exercised as opposed to the date of the Examination.</p> |
| DCO.1.21 | Applicant | <p>Article 46</p> <p>This Article seeks to amend the DBCB Wind Farm Order 2015. However, the EM [APP-207] does not explain which provision of the PA2008 the Applicant is relying on to include this Article and Schedule 13 in the draft DCO (ie is it</p> | <p>The Applicant refers to paragraphs 6.54 to 6.62 of the EM [APP-207]. Section 120(5)(a) enables a DCO to modify a statutory provision which relates to any matter for which provision made be made in a DCO. A statutory provision, as defined in section 120(6) of the PA 2008, includes another DCO (as an instrument made under the PA 2008). Section 120(5)(b) of the PA 2008 enables a DCO to make amendments to statutory provisions of local application if it is necessary or</p> |

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| | | <p>120(5)(a) or (b)) or provide any explanation why the Applicant considers the provision applies in the circumstances of this case.</p> <p>Can you confirm which of the paragraphs of s120(5) of the PA2008 are being relied on and explain why it applies in this case.</p> | <p>expedient to do so. The Applicant considers the DBCB Wind Farm Order 2015 to be a statutory provision of local application as the powers are limited to a defined area.</p> <p>The Applicant considers that both provisions apply to the proposed modifications and amendments and therefore the Secretary of State can choose whether to use s120(5)(a) or (b).</p> <p>As set out in the EM [APP-207], the approach taken is based on Article 37 and Schedule 11 of the Millbrook Gas Fired Generating Station Order 2019 where the Order Limits for the Millbrook Gas Fired Generating Station Order 2019 overlapped with the Order Limits in the Rookery South (Resource Recovery Facility) Order 2011. Amendments were made to Rookery South (Resource Recovery Facility) Order 2011 to ensure that works could be carried out without prohibiting or causing any adverse impacts to the other project.</p> <p>In paragraph 6.8 (page 8) of the decision letter for the Millbrook Gas Fired Generating Station Order 2019, the Secretary of State agreed that <i>"section 120(5) does provide an appropriate mechanism for a new Development Consent Order to amend an existing Development Consent Order and that the provisions in article 38 and Schedule 11 are necessary and expedient as they will ensure that the proposed Development can be constructed, operated and maintained without impediment. The Secretary of State agrees with the ExA that the alternative proposal of an interface agreement is not sufficient"</i>. Further details on the legal basis for this approach are set out in paragraphs 8.2.8 to 8.2.15 of the ExA's Recommendation Report for the Millbrook Power DCO.</p> <p>The overlap between Hornsea Four and Dogger Bank Creyke Beck Order limits in proximity to Creyke Beck substation is the same scenario as the overlap between Millbrook Power and Rookery South and therefore the Applicant considers that it is necessary and expedient to take the same approach for Hornsea Four.</p> |
| DCO.1.22 | Applicant | <p>Article 48</p> <p>Can you provide detailed legal submissions regarding the operation of this article, including:</p> | <p>Sections 120(3) and (4) of the PA 2008 state that a DCO may make provision for matters that are ancillary to the authorised development including the matters listed in Part 1 of Schedule 5. Paragraph 3 of Schedule 5 includes the <i>"abrogation</i></p> |

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| | <p>i. The legislative basis upon which it is permissible to include it within the draft DCO.</p> <p>ii. How the article is intended to operate.</p> <p>iii. The legal enforceability of the article.</p> <p>iv. How the article is able to affect the legal enforceability of a binding s106 agreement under the TCPA 90 and the operation if s106(3)-(8) of the TCPA 90.</p> <p>Alternatively, would a more appropriate way of addressing this issue be to seek variations to the affected s106 agreements and if not, why not?</p> | <p><i>or modification of agreements relating to land</i>". The power to modify or abrogate agreements relating to land was used in the Hinkley Point C (Nuclear Generating Station) Order 2013 (Article 52(6)(b)) and was included in the Manston Airport DCO (Article 35) before it was quashed.</p> <p>The Applicant considers that an agreement pursuant to s106 of the Town and Country Planning Act 1990 is an agreement relating to land as it contains obligations restricting the use or requiring a specific use of land and is enforceable against successors in title. This position was accepted by the ExA and the Secretary of State in the Manston Airport DCO.</p> <p>The section 106 agreements relate to land where the Applicant is proposing to install underground cables. The Applicant has reviewed the section 106 agreements and there are no exceptions for successors in title who are statutory undertakers or utility providers. Therefore, the section 106 agreements would be automatically binding on the undertaker even though the obligations are not relevant to the construction or operation of Hornsea Four and the rights granted to the undertaker for Hornsea Four would not be sufficient for the undertaker to comply with the obligations in the section 106 agreements.</p> <p>The Applicant is not seeking to release the existing landowner or developer from its obligations under the section 106 agreements and therefore it would not be appropriate or necessary for the section 106 agreements to be abrogated. Instead, Article 48 seeks to modify the section 106 agreements so that enforcement action cannot be taken against the undertaker, as a successor in title, for any breaches by the landowner of the section 106 agreements. The enforceability of the section 106 agreements against the landowner and any other successors in title by ERYC would remain unchanged.</p> <p>The Applicant would not be able to vary the s106 agreements by way of a deed of variation without the agreement of the landowner who would also need to be a party to the variation agreement. The Applicant considers that this approach could result in an impediment to the delivery of Hornsea Four as the landowner</p> |
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| | | | may refuse or wish to use the variation as an opportunity to re-negotiate other provisions in the section 106 agreements. |
| DCO.1.23 | Applicant | <p>Schedule 1 Part 1 Authorised Development</p> <p>The draft DCO [APP-203, Schedule 1, Part 1, para 1] Authorised Development Work No. 5 (b) and (c) in the intertidal zone includes horizontal directional drilling (HDD) pits- both launch and exit, whereas Work No. 6 only includes (b) transition joint bays. However, the ES Chapter 4 Project Description [APP-010 paras 4.9.2.4 to 4.9.2.18] describe the HDD pits being located landside of the cliff zone therefore in Works No. 6 with HDD ("or other trenchless technique" as described in ES 4.9.1.6) passing under the cliff zone and the intertidal zone to pits either within the intertidal zone or in the nearshore zone in Works No. 2(f). Please confirm if the draft DCO needs to be amended such that HDD launch or exit pits are included within Works No. 6 and if launch pits described in Works No. 5 (c) should be omitted from Works No. 5.</p> | <p>Relevant updates were incorporated into Schedule 1, Part 1, Works No 5 (c) and 6 (a) as part of the deadline 1 submission of C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002).</p> |
| DCO.1.24 | Applicant | <p>Schedule 1 Part 1 Authorised Development</p> <p>Please respond to the MMO's [RR-020, para 2.4.2] request for clarification of "how the management and enforcement of these [Work nos. 9a and 9d] activities will happen if they are both under the Local Planning Authority and MMO's regulator remit" and please extend your answer to explain how management and enforcement of Work No. 5 activities will happen as being in the intertidal zone (ie below MHWS) they fall within the offshore works area</p> | <p>In these circumstances, the Applicant would seek to discharge each relevant Requirement with the Local Planning Authority and marine licence condition with the MMO relating to the Works no. at the appropriate time.</p> <p>The Applicant has responded to this question in its response to RR-020-2.4.2 within G1.9: Applicant's Comments on Relevant Representations (REP1-038).</p> |

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| | | but the local council also has certain regulatory responsibilities within the intertidal zone. | |
| DCO.1.25 | Applicant | <p>Schedule 1 Part 1 Authorised Development</p> <p>Can you confirm if you proposing to include scour protection to stabilise the use of jack up barges and if so does it need to be included in the list of associated development set out below Work No 10 in the draft DCO?</p> <p>Can you confirm where in the draft DCO/ DML the disposal volumes for drill arisings in connection with any foundation drilling is set out. If it is not currently included in the draft DCO/ DML would you be prepared to include the wording suggested by the MMO [RR-020, para 2.4.3] and if not, why not?</p> | The Applicant has addressed these comments in its response to RR-020-2.4.3 within G1.9: Applicant's Comments on Relevant Representations (REP1-038) . |
| DCO.1.26 | Applicant Undertaker for DBCB DCO | <p>Schedule 9(3) and Schedule 13(3)</p> <p>As currently drafted paragraph 3 would effectively prevent the undertaker for DBCB DCO exercising a number of powers contained within the DBCB DCO over the Hornsea 4 Order Land without first obtaining the prior written consent of the Applicant. As drafted there appears to be no provision for consent not to be unreasonably withheld or any deemed consent provisions or appeal provisions. As a consequence, there appears to be no mechanism other than arbitration for the DBCB undertaker to challenge a decision to withhold consent. However, for the reverse situation the drafting of paragraph 3, Part 7, Schedule 9 states that the undertaker for the DBCB DCO may not unreasonably withhold its consent and includes a deemed provision.</p> | <p>The Applicant considers that the difference in drafting is acceptable as the DBCB undertaker has a wide range of powers over land in proximity to Creyke Beck substation that could be used to impede or delay the construction of Hornsea Four. This includes powers over land that is no longer required for DBCB given the location of its connection bays within Creyke Beck substation has now been confirmed by National Grid. This difference in drafting was considered to be necessary and expedient in the Millbrook Gas Fired Generating Station Order 2019.</p> <p>The Applicant notes that it has not received any comments on the proposed drafting from the DBCB undertaker despite chasing on multiple occasions. The Applicant continues to try to establish contact to discuss these provisions.</p> |

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| | | <p>Applicant: What is the reason behind the difference in the drafting of these two paragraphs and is it reasonable?</p> <p>Undertaker for DBCB DCO: Is this drafting acceptable? If not, why not and what alternative wording would you prefer.</p> | |
| DCO.1.27 | Applicant Environment Agency | <p>Schedule 9(5) In its RR [RR-010] the Environment Agency advised that they had outstanding concerns regarding the proposed works to the Watton Beck crossing and as a result was unable to confirm that it consented to the disapplication of the Environmental Permitting Regulations (England and Wales) 2016 and that discussions were ongoing. Can you provide an update on the progress with these discussions and whether the issue has been resolved? If it hasn't can you indicate whether this matter would be resolved by the close of the Examination and if it isn't, how this provision would need to be amended.</p> | Please see responses to questions CA.1.10 and OWE.1.4 for an update on this matter. |
| DCO.1.28 | Applicant | <p>Schedules 11 and 12 Can you respond to the suggestions made by the MMO [RR-020, section 2.5] regarding the drafting of this schedule and if you do not accept the suggestions can you explain why?</p> | The Applicant has provided detailed responses to all of the relevant representations made by the MMO in the Applicant's Comments on Relevant Representations (REP1-038). These responses resulted in several changes to the draft DCO, as submitted at Deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)). |
| DCO.1.29 | Applicant ERYC Undertaker for DBCB DCO | <p>Schedule 13(6) Paragraph 6 appears to be attempting to insert a provision which would prevent the DBCB undertaker from being in breach of a</p> | Please see the response to question DCO.1.21. There were some cross-referencing errors in paragraph 6 which have been corrected in the version of the dDCO submitted for Deadline 2. This provision applies where the DBCB undertaker has been unable to comply with a requirement in the DBCB DCO as a |

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| | | <p>requirement in their DCO if the operation of the co-operation provisions in paragraph 4 of the Hornsea 4 protective provisions prevent it.</p> <p>Applicant: Provide legal submissions on the legislative basis upon which this drafting is permissible. How is it intended to operate in practice and provide further detailed explanation of why this is necessary?</p> <p>ERYC: As the LPA with responsibility for discharging the requirements and enforcing the DBCB DCO do you wish to comment on this drafting? Undertaker for DBCB DCO: Is this drafting reasonable? If not, why not and what alternative drafting would you prefer?</p> | <p>result of the Applicant withholding its consent to exercise the powers in paragraph 3(1) to enable the construction of Hornsea Four. Breach of a requirement is automatically an offence regardless of whether the relevant planning authority decides to take enforcement action. The provisions ensure that the DBCB undertaker is not put in difficulties as a result of what would otherwise be technical breaches of its requirements, through no fault of its own.</p> <p>For example, the DBCB undertaker could be prevented from accessing land using the powers in Article 30 under paragraph 3(1) due to safety reasons for the duration of certain construction works in proximity to Creyke Beck substation. As a result of this temporary restriction on access, the replanting of a tree or shrub may not be able to be undertaken in the first available planting season and result in an automatic breach of Requirement 15(2) of the DBCB DCO.</p> <p>The provisions in paragraphs 6 and 8 serve related but separate purposes: paragraph 6 mitigates the risk of any non-criminal proceedings (for example, for injunctive relief) being brought in respect of any breach of the requirements, whilst paragraph 8 provides a defence to criminal proceedings. As such, both are necessary.</p> <p>A similar provision was included in Schedule 11 of the Millbrook Gas Fired Generating Station Order 2019. This provision was considered acceptable, necessary and expedient by the Secretary of State.</p> |
| DCO.1.30 | Applicant | <p>Schedule 13 (7) This paragraph refers to a paragraph 25(3) and 28. It is not clear what these refer to, presumably they are paragraphs within the DBCB DCO. Explain what these references are to and amend accordingly.</p> | <p>This was a cross-referencing error which has been corrected in the version of the dDCO submitted for Deadline 2.</p> |
| DCO.1.31 | Applicant | <p>Schedule 13(8) Provide the legislative basis on which you are relying to include this within the DBCB DCO and why is it necessary? In particular why do you</p> | <p>Please see the response to question DCO.1.29.</p> |

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| | | think that the co-operation provisions in paragraph 4 are likely to cause the undertaker of the DBCB DCO to breach the requirements of their DCO and how is this necessary or reasonable? | |
| DCO.1.32 | Applicant | <p>Requirement 1</p> <p>As currently drafted, the time limit for commencement would be seven years rather than the usual five years. The EM [APP-207, Para 6.8.1] offers limited explanation or justification for this. Can you provide a further justification as to why seven years is necessary in the circumstances of this particular case?</p> | Please see the response to question DCO.1.14. |
| DCO.1.33 | Applicant | <p>Requirement 2(10)</p> <p>It would appear that some text may be missing, or this section could benefit from re-drafting so that its intent is clearer. Please could you review and amend accordingly.</p> <p>Respond to the MMO's concern [RR-020, para 2.4.6] regarding the maximum number of turbines and a request that this should be set by Requirement 2 the draft DCO or the DML.</p> | The Applicant has assumed this reference should be to Requirement 3(10) of the draft DCO as Requirement 2(10) does not exist. The Applicant has updated Requirement 3(10) to clarify that the requirements for jacket foundations referred to in (a) and monopile foundations referred to in (b) both relate to offshore electrical installation or offshore accommodation platforms. |
| DCO.1.34 | Applicant ERYC | <p>Requirement 7(1) and (4)</p> <p>It is unclear what is meant by the phrases "construction of connection works in Work No 7" and "the connection work in work No 7 may not commence until".</p> <p>Applicant:</p> <p>Can you provide further clarification of what is meant?</p> <p>ERYC:</p> | The Applicant amended the wording in Requirement 7 to clarify this provision in the version of the dDCO submitted at deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)). |

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| | | Are you satisfied with the wording as currently drafted? if not, why not, and what wording would you prefer? | |
| DCO.1.35 | Environment Agency | <p>Requirement 10 (1)</p> <p>The Environment Agency [RR-010] has highlighted that due to the period of time that would have elapsed between the pre-application surveys for protected species (water voles and great crested newts) and the start of construction, there would be a need to re-survey features prior to construction and the findings would be included in the updated Ecological Management Plan. Should there be a need for updated mitigation for protected species arising from the pre-consultation surveys then you have expressed a wish to be reconsulted. Are you satisfied with the wording of Requirement 10? If not, why not, and what alternative wording would you wish to see?</p> | |
| DCO.1.36 | Applicant | <p>Requirement 12</p> <p>The current drafting is confusing particularly how 12(1) and 12(2) to 12(4) are intended to interact with each other; what is the difference between the 'draft fencing plan' and the 'outline fencing plan' and what is meant by the 'approved fencing plan' - is it the plan approved under 12(1) or 12(2)? Consider redrafting.</p> | The Applicant amended the wording in Requirement 12 to clarify this provision in the version of the dDCO submitted at deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)). |
| DCO.1.37 | Environment Agency EYRC | <p>Requirement 14</p> <p>In its RR [RR-010] the Environment Agency advised that there were a number of landfill sites in close proximity to the route of the Proposed Development and as a consequence</p> | |

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| | | <p>careful consideration of any impact to the landfill sites needs to be considered.</p> <p>The requirement as currently worded would require the relevant planning authority to consult with the Environment Agency on any scheme to deal with the contamination of any land (including groundwater) that is likely to cause significant harm to persons or pollution of controlled waters or the environment.</p> <p>Environment Agency and EYRC: Are you satisfied with this wording? If not, why not, and what alternative wording would you prefer?</p> <p>'Significant harm' is not currently defined in the draft DCO, what do you understand by this phrase, and should it be defined from a precision and enforceability perspective?</p> | |
| DCO.1.38 | Applicant Environment Agency | <p>Requirement 17</p> <p>In its RR [RR-010] the Environment Agency sought greater clarity regarding the specific location for temporary bridges over 'main rivers' in order that it could be satisfied that existing bridge crossings would not be available and a concern that it may not be appropriate to install temporary bridges at some of the larger main rivers.</p> <p>Applicant: Has this information been provided? If not, why not and when could it be?</p> <p>Environment Agency:</p> | <p>This information has been provided in response RR-010-B within G1.9: Applicant's Comments on Relevant Representations (REP1-038).</p> |

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| | | <p>If this information has been provided are you now satisfied with the proposed locations of the temporary bridges and that these locations would be secured by the requirement as currently worded?</p> | |
| DCO.1.39 | <p>ERYC Environment Agency</p> | <p>Requirement 17 In many other made DCOs the Requirement regarding a Code of Construction Practice either details the documents that are to be provided or lists the subject areas that it needs to cover. Having regard to this, and also noting Tables 2 and 3 on pages 12 to 14 of the Outline CoCP [APP-237], are you content with the current wording of Requirement 17 of the draft DCO [APP-203]?</p> | |
| DCO.1.40 | <p>Applicant</p> | <p>Requirement 17(2) Clarify if this should refer to the 'connection works' and not the 'construction works'? If it is 'construction works' then confirm what these are as they are currently not defined in Article 2 and amend Article 2 to include the definition.</p> | <p>The Applicant confirms this should be the "connection works". Requirement 17 was updated to reflect this in the version of the dDCO submitted at deadline 1 (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)).</p> |
| DCO.1.41 | <p>ERYC</p> | <p>Requirement 21(1) Refers to 'commencement of operation' of work No 7. Is ERYC sufficiently clear as to what this means? If not, why not and what alternative wording would be preferred?</p> | |
| DCO.1.42 | <p>Applicant ERYC</p> | <p>Requirement 24 As currently drafted, this Requirement includes two tailpieces. Applicant: Why is this necessary?</p> | <p>The purpose of tailpiece wording in paragraphs (1) and (2) of Requirement 24 is to allow the undertaker and relevant planning authority the flexibility to agree a different time period (currently a three month period is the default) in the event that a longer period is required due to unforeseen circumstances.</p> |

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| | | <p>ERYC: Is this acceptable to you?</p> | <p>The Applicant has amended paragraph (3) of Requirement 24 in the dDCO submitted for Deadline 2 to remove the tailpiece wording as the agreement of amendments to approved details is addressed by Requirement 30.</p> |
| DCO.1.43 | Applicant Environment Agency | <p>Requirement 24 In its RR [RR-010], the Environment Agency has highlighted concerns about equipment being left in situ and that this aspect may benefit from ongoing discussions and clarification as new understanding or guidance becomes available. Does the Requirement as currently worded allow for this and, if it does not, what alternative or additional wording would be required?</p> | <p>Yes, Requirement 24 allows for the onshore decommissioning plan to be prepared in accordance with relevant guidance at the relevant time. The onshore decommissioning plan must be approved by the local planning authority and the Applicant accepts that in order to obtain that approval, it will have to demonstrate that relevant guidance has been considered and where appropriate complied with.</p> |
| DCO.1.44 | Applicant | <p>Requirement 27(2) Requirements 6, 8, 10, 12, 15, 16, 17, 18, 19, 22, 25 all state "no stage of connection works may commence until...". However, Requirement 27(2) says that the stages of construction must not permit the development to be constructed in more than one overall phase. It is unclear what is meant by this when the inference from other requirements is that development is proposed in stages. Can the Applicant clarify.</p> | <p>The Applicant uses the term "stage" in the Requirements to ensure that the provisions can be discharged in relation to discrete stages of Work(s). For example, the Applicant may seek to discharge the Requirements as they relate to the HDD works to allow those works to commence in line with technical and operational time period requirements, without having finalised the detail of the onshore substation and/or EBI or progress with pre-construction works prior to the requirement to discharge all construction requirements. This ensures the project can proceed in a timely manner.</p> <p>The term "stage" is different from the term "phase". The Applicant uses the term "phase" to confirm that it will not build part of the infrastructure and then return potentially some years later and build the remainder of the infrastructure. That is not proposed for Hornsea Four and the Applicant has committed to building the project in one construction phase, albeit the construction phase may be progressed in stages. Flexibility to discharge provisions in stages i.e. in relation to discrete Work No(s) is required for practical purposes related to the delivery of the project.</p> |
| DCO.1.45 | Applicant | <p>Requirement 27 At the moment in the draft DCO [APP-203] you have defined all of the onshore export cable</p> | <p>The intention behind Requirement 27 of the dDCO is to assist the relevant planning authority by setting out the stages of construction and allowing the relevant planning authority to raise any potential issues with the partial discharge</p> |

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| | | <p>corridor (ECC) works, with the exception of the landfall and onshore substation areas, as comprising a single Work No. 6. In addition, "connection works" are defined in the draft DCO as being Works Nos 6 to 10 and any associated development in connection with those works. This means that you would require certain plans and documents to be authorised before connection works could commence anywhere along the onshore ECC. Please explain how this relates to the Requirement 27 of the draft DCO that requires the submission of a written scheme setting out the stages of construction of the authorised project for the written approval of the relevant planning authority (or the MMO for works seaward of MHWS).</p> | <p>of requirements in relation to part of Works Nos. This approach is already being adopted on the Hornsea Three Offshore Wind Farm. Stages of construction will not necessarily equate to Works Nos. and a stage could include either part of a Work No. or more than one Work No.</p> <p>The Applicant confirms that the Hornsea Three Offshore Wind Farm Order 2020 uses similar drafting, in that the "connection works" were defined as Work Nos. 6 to 15, which covered all onshore works except the landfall areas. The Hornsea Three Offshore Wind Farm Order 2020 also included Requirement 6, which was very similar to Requirement 27 of the Hornsea Four Offshore Wind Farm dDCO.</p> |
| DCO.1.46 | Applicant | <p>MMO's request for setting of maximums and volumes</p> <p>In its Relevant Representation [RR-20], the MMO has requested that the maximum footprint area per turbine [para 2.4.4], electrical installations [para 2.4.6] and scour protection per turbine and per structure and the volume of cable works [para 2.4.9] should be presented in the draft DCO or DML. Can you please respond to this request? Alternatively, if this matter is dealt with in the pro-rata annex, can you please provide a copy.</p> | <p>This information was signposted in the Applicant's responses to Relevant Representation comments RR-020-2.4.4, 2.4.6 and 2.4.9 in G1.9: Applicant's comments on the Relevant Representations (REP1-038). The A4.4.8: Pro-rata Annex was provided at submission (APP-046) and resubmitted at Deadline 1 (REP1-006).</p> |
| DCO.1.47 | Applicant Environment Agency ERYC | <p>Flood mitigation measures for onshore substation (Work No 7)</p> <p>In its Relevant Representation [RR-010] the Environment Agency highlight that there is currently no specific Requirement for flood</p> | <p>The Applicant does not consider that a Requirement for flood mitigation is necessary.</p> <p>The Applicant notes that as part of the Environment Agency Relevant Representation (RR-010), it was acknowledged that "There does not appear to</p> |

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| | | <p>mitigation measures in relation to the onshore substation.</p> <p>Applicant and ERYC: Is such a Requirement necessary? If not, why not? If yes please provide preferred wording.</p> <p>Environment Agency: Please provide preferred wording.</p> | <p>be a specific Requirement within the DCO that relates to flood mitigation measures for the onshore substation, but we are satisfied that the Flood Risk Assessment provided gives an accurate account of the issues within our remit, and shows a sequential approach to development, accompanied by satisfactory mitigation proposals".</p> <p>Whilst it is noted that flood risk mitigation measures are considered to be satisfactory, the Applicant can confirm that Requirement 15 'Surface water' of the DCO relates to flood risk at the OnSS specifically. The Requirement stipulates that a detailed surface water scheme will be developed in consultation with relevant sewerage and drainage authorities and the Environment Agency and submitted to and approved in writing by the lead local flood authority. The scheme must accord with F2.6: Outline Onshore Infrastructure Drainage Strategy (APP-241). It is therefore considered that no additional Requirements are necessary.</p> |
| DCO.1.48 | Applicant | <p>Offshore decommissioning Can you comment on the suggestion by the MMO that a Requirement dealing with offshore decommissioning should be included in the DCO? Would such a requirement be needed and if not, why not and can you comment on the MMO's suggested wording.</p> | <p>The Applicant has addressed these comments in its response to RR-020-2.4.10 in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> |
| DCO.1.49 | Applicant Ministry of Defence | <p>Suggested Changes to Requirement 23 and Condition 10 [APP-203] The Ministry of Defence has submitted [RR-022] proposals with alternative wording of the draft DCO [APP-203] which seek to address defence safeguarding needs and which it considers suitable to maintain defence requirements.</p> <p>Ministry of Defence: You refer to Requirement 10 (Aviation Safety) in your Relevant Representation. Requirement 10</p> | <p>A response to this query from the Ministry of Defence was provided in the Applicant's Relevant Representation Response comment RR-022-D in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> |

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| | | <p>of the draft DCO [APP-203] deals with ecological management plans. Condition 10 of the draft DML [APP-203] deals with aviation safety. Can you confirm that it is Condition 10 and not Requirement 10 that you would wish to see amended? Can you also confirm that you are satisfied with the wording of Requirement 28 (Claxby Radar Mitigation) or if not, why not and what alternative wording would you want to see?</p> <p>Applicant: Will the wording of Condition 10 and Requirement 23 be amended to the satisfaction of the Ministry of Defence? If not, why not?</p> | |
| DCO.1.50 | Applicant ERYC | <p>Explanatory Note The Explanatory Note at the end of the draft DCO states that a copy of the certified plans and book of reference together with a copy of any guarantee or alternative form of security may be inspected free of charge at the London based offices of Ørsted. This service is normally undertaken by the Local Council.</p> <p>Applicant: What is the reason for Ørsted to take this role? Given the distance between the project and London what provision is made for enabling access to people who may be affected by the scheme who may wish to view these documents post determination?</p> <p>ERYC:</p> | The Applicant has updated the wording in the dDCO submitted at Deadline 2 to confirm the certified plans and the book of reference together with a copy of any guarantee or alternative form of security may be inspected free of charge at the offices of ERYC. |

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| | Are you content with this arrangement? | |
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7 Environmental Impact Assessment (EIA) and Environmental Statement

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| ES.1.1 | Applicant | <p>Significant effect definition and mitigation</p> <p>Paragraph 1.6.1.1 of the ES [APP-007] notes in the context of legislative requirements: "The overall objective of the EIA process is to identify any likely significant effects and for any adverse effects to be avoided or minimised where possible..." (ExA emphasis.)</p> <p>and at paragraph 5.7.8.8 [APP-011]: "Mitigation measures (commitments) are developed to eliminate or reduce any negative effects identified." (ExA emphasis.)</p> <p>Chapter 5 of the ES [APP-011] suggests that significance has been determined from a matrix of magnitude versus value/ sensitivity. Paragraph 5.7.8.3 notes that effects of moderate or greater significance are considered 'significant' for the purposes of the EIA, while effects of minor significance are considered 'not significant'. Paragraphs 5.7.8.9 to 5.7.8.11 appear to suggest that only the former merit consideration for mitigation. This approach is reflected in various ES topic chapters. Clarify if and how effects that were determined to be of minor</p> | <p>The Applicant confirms that significance has been defined using a standardised assessment methodology (DMRB in A1.5: Environmental Impact Assessment Methodology (APP-011)).</p> <p>A4.1.1: How to read this ES (APP-035) provides supporting information to guide the reader in navigating the various documents and registers that have been provided to support the proportionate approach to EIA promoted in the Hornsea Four application for development consent. Step 1: Impacts Register defines the role and function of the A4.5.1: Impacts Register (APP-049) to which the reader is referred. Step 2: A4.5.2: Commitments Register (APP-050) sets out Primary, Secondary and Tertiary Commitments (see glossary for definitions) as part of the EIA process in order to avoid or reduce impacts where possible.</p> <p>This proportionate approach is reflected in various ES topic chapters where an assessment of significant effects is presented. The ES Chapter is the key document delivering proportionality for Hornsea Four, when read in conjunction with the Impacts Register (see Step 1), Commitments Register (see Step 2) and Application Registers (see Step 3).</p> <p>The Applicant confirms that all impacts merit consideration for mitigation (see A4.5.1: Impacts Register (APP-049) and A4.5.2: Commitments Register (APP-050)).</p> <p>Impacts that concluded in no LSE (post-mitigation) at EIA Scoping or PEIR are not considered in detail in ES chapters, subject to stakeholder agreement and no material project or methodology changes. All non-LSE (post-mitigation) are</p> |

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| | | significance - which may be considered by definition to be 'likely significant effects' - were considered for mitigation. | presented within the Impacts Register. Commitments are provided by the Applicant to mitigate (reduce or eliminate) LSE. All impacts at all stages of development (Scoping, PEIR, ES and DCO) were considered for mitigation. |
| ES.1.2 | Applicant | <p>Interpretation of significance level ranges</p> <p>In its Relevant Representation [RR-029], Natural England notes numerous instances in the ES where significance is presented as a range and suggests that it is nearly always the lower value that has been taken forward into the conclusions. Natural England believes that a precautionary principle should be applied instead, especially where a Rochdale envelope has been used. Can the Applicant respond to this, and provide justification for using the lower value in these instances, where it has done so? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | The Applicant has responded to Natural England's Relevant Representation (RR-029-APDX:G-F) in G1.9: Applicant's comments on Relevant Representations (REP1-038) . |
| ES.1.3 | Natural England Applicant | <p>Breadth of magnitude categories</p> <p>In its Relevant Representation [RR-029], Natural England expresses concern that that the definitions of magnitude used in the benthic and intertidal habitats assessment are very broad with no suitable incremental step between 'minor' and 'moderate'. It suggests that this may result in the underestimation of impacts. Which impacts does Natural England believe may have been underestimated? Could Natural England also confirm whether this concern is restricted to that Chapter of the ES, or if it is of broader concern.</p> | These comments have been addressed in G1.9: Applicants comments on Relevant Representations (REP1-038) comments RR-029-6.9 and RR-029-APDX:F-8A. |

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| ES.1.4 | Applicant | <p>Definition and certification of the ES</p> <p>Schedule 15 of the draft DCO [APP-203] (documents to be certified) includes the ES, without a definition. Article 2 of the draft DCO defines the ES as “the document certified as the environmental statement by the Secretary of State for the purposes of this Order under article 38 (certification of plans and documents etc)”. The Application Document Register [APP-002] suggests that the ES comprises Category A volumes 1 to 6 documents.</p> <p>Could you explain whether a clearer definition of what comprises the ES at the close of the Examination is required in draft DCO Schedule 15; how any amendments or updates made during the Examination would be included; and how any intention is assured? For example, a number of documents relating to the Applicant’s response to PINS s51 advice [AS-006 to AS022] were submitted prior to the Preliminary Meeting. Where these clarify or add to the ES, how are they captured as part of that ES, and their content secured?</p> | <p>The Applicant considers that the definition of the ES within the DCO is sufficient and that no update to that definition is required.</p> <p>The Applicant has however reviewed the certified documents schedule for the Norfolk Boreas DCO and noted that the schedule is split between Part 1 (documents forming part of the ES) and Part 2 (other documents to be certified). The Applicant considers this to be a beneficial way to ensure that all relevant ES documents are clearly narrated on the face of the Order for the purposes of certification.</p> <p>The Applicant has therefore updated Schedule 15 of the draft DCO (C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002)) to adopt this approach. Part 1 of Schedule 15 of the draft DCO lists the ES documents submitted with the Hornsea Four DCO application, and subsequently, which together comprise the ES. This includes the documents submitted in response to Section 51 advice, in respect of which the Examining Authority made a procedural decision to accept on 17 January 2022.</p> <p>Part 1 of Schedule 15 will be updated as necessary throughout the Examination, should further documentation amending or clarifying the ES be submitted in Examination. Part 2 of Schedule of the draft DCO lists all other documents to be certified.</p> <p>The Applicant considers this approach ensures the content of the ES is secured.</p> |
| ES.1.5 | Applicant | <p>Vulnerability of the Proposed Development to risks of major accidents and/ or disasters</p> <p>Table 5.5 of the ES [APP-011] recognises the potential for significant effects arising from the vulnerability of the Proposed Development to fire in the onshore substation and the electricity</p> | <p>Table 3 in G1.2: Environmental Risk Assessment of the Onshore Substation and Energy Balancing Infrastructure (AS-020) presents the environmental risk assessment, which includes consideration of both the likelihood of an accident occurring and the severity of any impact on named receptor categories (e.g. human, flora and fauna, watercourses etc.). The risk assessment matrix is informed by the risk scoring set out in Table 1 of G1.2: Environmental Risk Assessment of the Onshore Substation and Energy Balancing Infrastructure (AS-020).</p> |

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| | | <p>balancing infrastructure. The further risk assessment and ES amendments submitted prior to the Preliminary Meeting are acknowledged [AS-006, AS-007, AS-020 and AS-021]. Could the Applicant clarify where the updated 'Table 5.5 of A1.5' is located.</p> <p>It is noted that the information supplied is an assessment that pertains to the risk of an accident occurring rather than an assessment of the impacts that might result in the unlikely event of it doing so. Could the Applicant supplement the risk assessments with an assessment of any likely significant effects on the environment that could result?</p> <p>Could the Applicant also confirm how the 'risk management techniques' that are included in the additional risk assessment to mitigate risk [AS-020] would be secured through any DCO.</p> | <p>The worst case 'severity' of any residual impact is low (2), and low severity accords with a 'neutral' or 'slight' impact as set out in Figure 5.3 (Deriving the level of Significance of an Impact) in A1.5: Environmental Impact Assessment (APP-011) which identifies the level of effect generically applied in the majority of onshore Environmental Statement chapters for Hornsea Four. Given that neither neutral or slight impacts are significant in an Environmental Impact Assessment (EIA) context, following the incorporation of mitigation measures, none of the residual impacts from fire are determined to result in a likely significant effect.</p> <p>The risk management techniques included in G1.2: Environmental Risk Assessment of the Onshore Substation and Energy Balancing Infrastructure (AS-020) have been incorporated into an updated version of F2.12: Outline Energy Balancing Infrastructure HazID Report (APP-247), which accompanies the Deadline 2 submission. This secures the measures under DCO Requirement 26.</p> <p>Please note that reference to 'Table 5.5 of A1.5' is referring to Table 5.5 of A1.5: Environmental Impact Assessment Methodology (APP-011). The information submitted within AS-020 prior to the preliminary meeting is considered to form an updated and more detailed version of the assessment presented previously in APP-011.</p> |
| ES.1.6 | Applicant | <p>Impact pathway approach and cumulative assessment</p> <p>In its Relevant Representation [RR-029], Natural England suggests that the impact pathway approach adopted by the Applicant for the assessment potentially leads to a failure to identify the overall, cumulative impact on any given receptor. Did the Applicant take this into</p> | <p>The Applicant has responded to Natural England's Relevant Representations RR-029-6.8, RR-029-APDX:B-R and RR-029-5.38, which all relate to source-pathway-receptor approach to EIA, in G1.9: Applicant's comments on Relevant Representations (REP1-038).</p> |

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| | | consideration where more than one impact pathway to a receptor was possible? If so, please signpost where this is evidenced. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | |
| ES.1.7 | Applicant Natural England MMO Royal Society for the Protection of Birds (RSPB) | Dudgeon and Sheringham Shoal Extension In light of the Secretary of State's Norfolk Vanguard decision letter and the publication of the proposed Dudgeon and Sheringham Shoal Extension projects' Preliminary Environmental Impact Report (PEIR) on 29 April 2021, are any changes needed to the cumulative assessment, given that some topics were screened out at the time of the assessment due to low data confidence? | The Applicant notes that the topics that screened out Dudgeon and Sheringham Shoal Extension projects due to low data confidence are Marine Geology, Oceanography and Physical Processes, Benthic and Intertidal Ecology, Marine Archaeology and Infrastructure and Other Users. For these topics, it is important to note that for these topics, operational Dudgeon and Sheringham Shoal Offshore Wind Farms are also screened out due to no physical effect-receptor overlap (option 'g' in the Offshore Energy table in A4.5.3: Offshore Cumulative Effects: Assessment Matrices (APP-051)). As such, the same conclusion would equally apply to the Dudgeon and Sheringham Shoal Extension projects (noting that only one screening conclusion can be added to the table when often multiple conclusions could apply). As such, no changes are required to the cumulative assessment. |
| ES.1.8 | Applicant | Consistency of management plan names Could the Applicant check and correct as necessary the names of outline plans and strategies that are relied upon in the mitigation mapping and to secure commitments, as some inconsistencies are apparent between document titles, the Commitment Register [APP-050] and Schedule 15 of the draft DCO [APP-203]. (For example: Outline Construction Traffic and Travel Management Plan/ Outline Construction Traffic Management Plan; Outline Onshore | The Applicant has reviewed the document names in the C1.1: draft DCO including draft Deemed Marine Licence (REP1-002) and the A4.5.2: Commitments Register (APP-050) and can confirm of the documents are as follows: <ul style="list-style-type: none"> • Outline Construction Traffic Management Plan • Outline Onshore Infrastructure Drainage Strategy, and • Outline Written Scheme of Investigation for Onshore Archaeology. <p>These references will be updated in the relevant documents.</p> |

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| | | Infrastructure Drainage Strategy/ Outline Infrastructure Drainage Strategy; Onshore Written Scheme of Investigation.) | |
| ES.1.9 | Applicant | <p>Ornithological Monitoring Plan</p> <p>How are the principles and framework set out in the Outline Ornithological Monitoring Plan [APP-254] secured through the draft DCO and draft DML [APP-203] so as to provide certainty over the content of the proposed final Ornithological Monitoring Plan, noting that it does not appear in Schedule 15 of the draft DCO or the Commitment Register [APP-050], but states: "The final Ornithological Monitoring Plan (OMP) will be based on the principles adopted in this OOMP..."</p> | The Applicant confirms the inclusion of the Outline Ornithological Monitoring Plan (OOMP) in Schedule 15 of the C1.1: draft DCO (REP-002) . |
| ES.1.10 | Applicant | <p>Conformity of draft DML conditions</p> <p>In relation to the draft DML for the generation assets (Schedule 11 of the draft DCO), should Conditions 13(1)(k) (pre-construction plans and documentation), 17(2)(b) (pre-construction monitoring and surveys), and 19(2)(c) (post-construction monitoring) refer to conformity with the outline plan submitted with the application?</p> | The Applicant notes the comments of the ExA and has updated condition 13(1)(k) in the version of the dDCO submitted at Deadline 2 accordingly. The Applicant does not consider an amendment to condition 17(2)(b) or 19(2)(c) is necessary, as these provisions cross-refer to condition 13(1)(k) and thus to the relevant change made. |
| ES.1.11 | Applicant | <p>Outline Fisheries Coexistence and Liaison Plan</p> <p>The Outline Fisheries Coexistence and Liaison Plan [APP-244] is submitted in Volume F of the application documents, 'Additional Application Information', but is labelled on its cover as part of the ES. It does not appear in the list of ES</p> | Condition 13(6) of the DMLs requires that no licenced activities may commence until a fisheries coexistence and liaison plan in accordance with the outline fisheries coexistence and liaison plan has been submitted to and approved by the MMO in writing. The outline fisheries coexistence and liaison plan has now been added as a certified document in Part 2 of Schedule 15 of the draft DCO (C1.1: draft DCO including draft Deemed Marine Licence (REP1-002)). |

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| | | <p>documents in the Application Document Register [APP-002] or in section 1.7 of ES [APP-007]. As such, how would the principles and framework set out in the Outline Offshore Cable Installation Plan be secured through any DCO and DML to provide certainty over the content of the proposed final plans, as they do not appear to be ES documents in practice, and do not appear independently in Schedule 15 of the draft DCO.</p> | <p>Condition 14(4) states that all licenced activities must be undertaken in accordance with all the approved plans, protocols, statements, schemes and details approved under condition 13, unless otherwise agreed in writing by the MMO.</p> <p>As such the Applicant considers that the DCO and DMLs provide sufficient certainty over the content of the proposed final plans.</p> |
| ES.1.12 | Applicant | <p>Offshore Cable Installation Plan</p> <p>The Outline Offshore Cable Installation Plan [APP-250] is submitted in Volume F of the application documents, 'Additional Application Information', but is labelled on the cover as part of the ES. It does not appear in the list of ES documents in the Application Document Register [APP-002], in section 1.7 of ES [APP-007], or in the draft DCO. As such, how would the principles and framework set out in the Outline Offshore Cable Installation Plan be secured through any DCO and DML to provide certainty over the content of the proposed final plan?</p> | <p>The Applicant will amend Condition 13(1)(k) to confirm that the Offshore Cable Installation Plan requires to be in accordance with the Outline Offshore Cable Installation Plan. Please note that the name of this document is being corrected at Deadline 2 to become the 'Outline Cable Specification and Installation Plan'.</p> |
| ES.1.13 | Applicant | <p>Outline Southern North Sea Special Area of Conservation Site Integrity Plan</p> <p>Confirm how would the principles and framework set out in the Outline Southern North Sea Special Area of Conservation Site Integrity Plan [APP-246] would be secured through the draft</p> | <p>The dDCO was amended at deadline 1 to include the Outline Southern North Sea Special Area of Conservation Site Integrity Plan [APP-246] as a certified document.</p> <p>Condition 13(1)(j) also states "In the event that driven or part-driven pile foundations are proposed to be used, the licensed activities, or any stage of those activities must not commence until a site integrity plan for that stage which</p> |

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| | | <p>DCO and draft DMLs so as to provide certainty over the content of the proposed final Southern North Sea Special Area of Conservation Site Integrity Plan, noting that it does not appear in Schedule 15 of the draft DCO [APP-203], but states:</p> <p>"This Outline SNS SAC SIP also provides a framework for further consultation and discussion... to reach agreement on the final details of any required project related mitigation measures through the drafting and approval of the SNS SAC SIP.... A final detailed SNS SAC SIP will be produced closer to the time..."</p> | <p>accords with the principles set out in the outline southern north sea special area of conservation site integrity plan has been submitted to the MMO and the MMO is satisfied that the plan provides such mitigation as is necessary to avoid adversely affecting the integrity (within the meaning of the 2017 Regulations) of a relevant site, to the extent that harbour porpoise are a protected feature of that site."</p> <p>As such, the principles and framework set out in the Outline Southern North Sea Special Area of Conservation Site Integrity Plan [APP-246] are adequately secured through the draft DCO and draft DMLs.</p> |
| ES.1.14 | Applicant | <p>Outline Construction Traffic Management Plan</p> <p>Article 2 of the draft DCO [APP-203] defines the Outline Construction Traffic Management Plan as "the document certified as the outline construction traffic management plan by the Secretary of State for the purposes of this Order under Article 38..."</p> <p>It is not submitted as a freestanding document but as Appendix F to the Outline Code of Construction Practice [APP-237]. Requirement 18 secures the production of the final Construction Traffic Management Plan, while Requirement 17 secures the production of the final Code of Construction Practice, presumably including its appendices. Can the Applicant advise if the Construction Traffic Management Plan is to be secured under both Requirement 17 and Requirement 18? Does this situation</p> | <p>The Applicant notes the comments of the EXA and has amended the definition of "Outline Construction Traffic Management Plan" accordingly to clarify that this means the plan attached as Appendix F to the F2.2: Outline Code of Construction Practice (APP-237). The Applicant believes the position for obtaining approval of the Construction Traffic Management Plan under Requirement 18 is clear, but for additional clarity has amended the drafting to confirm that the final Construction Traffic Management Plan can be approved either as an Appendix to the final Code of Construction Practice or as a standalone document.</p> |

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| | | require clarification, especially noting that the two requirements involve different consultees? | |
| ES.1.15 | Applicant | <p>Appendices to the Outline Code of Construction Practice</p> <p>The Outline Construction Traffic Management Plan and five other outline management plans are submitted as Appendices to the Outline Code of Construction Practice [APP-237]. Three have their own dedicated entries in the Commitment Register [APP-050], while the remaining three rely on the overarching commitment to produce a final Code of Construction Practice that accords with the Outline Code of Construction Practice. Should each be given equivalent weight and commitment?</p> | <p>Please see response to ES.1.21 for an explanation of how commitments are secured in documents within the DCO.</p> <p>The three outline management plans specified within the A4.5.2: Commitments Register (APP-050) are stated as they each form part of a specific commitment. An example of this is Co13, which states that measures to protect groundwater quality will be detailed within the Pollution Prevention Plan. The Code of Construction Practice is then stated as a specific DCO document securing this commitment within the plan, which forms Appendix D. The three plans not stated in the Commitment Register (the Onshore Biosecurity Risk Assessment, the Outline Soil Management Strategy, and the Outline Public Right of Way Management Plan) do not feature in any of the commitments and therefore are not stated in the Commitments Register.</p> <p>The documents are not secured through the commitments, the commitments are secured through the documents. Therefore, it would not be appropriate to list all documents in the Commitments Register.</p> |
| ES.1.16 | Applicant | <p>Outline PRow Management Plan</p> <p>The Outline PRow Management Plan submitted as Appendix C to the Outline Code of Construction Practice [APP-237] includes long term and permanent measures that need to be secured for the operations and maintenance stage of the Proposed Development. Is it appropriate to include these in a Code of Construction Practice aimed at securing time-limited and temporary measures during the construction phase?</p> | <p>The Outline PRow Management Plan, Appendix C of the F2.2: Outline Code of Construction Practice (REP1-027), contains measures to be implemented during the pre-construction and construction stages of Hornsea Four. Measures to permanently divert affected PRowS will be undertaken during the construction process (the physical diversion of the PRowS themselves) and as such it is considered appropriate to include such measures in the CoCP.</p> |
| ES.1.17 | Applicant | <p>Construction Project Environmental Management and Monitoring Plan</p> | <p>The Applicant notes that the word 'monitoring' in the title of the plan is to some extent a misnomer in that the plan does not propose implementation of</p> |

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| | | <p>The ES refers to a “construction project environmental management and monitoring plan covering the period of construction for the relevant stage”, outlined in Conditions 13(1)(d) of the draft DMLs. With reference to the proposed content (listed in the draft DMLs), it is unclear what monitoring would actually be implemented as a result of this plan. Could the Applicant clarify what monitoring, if any, is proposed in this context, and how it would be secured, implemented, and - if necessary - acted upon. Alternatively, is the word ‘monitoring’ in the title of the plan a misnomer?</p> | <p>monitoring in the same way as, for example, the Marine Monitoring Plan. It does, however, contain information relating to environmental mitigation, monitoring and management, with the monitoring in this context typically relating to feedback loops within the different components of the plan. Some examples of this would be monitoring in the context of environmental management inspections (e.g. regular visual inspections of chemical storage areas) and the marine pollution contingency plan (Condition 13(1)(d)(i) of the draft DMLs) which may contain some information about potential monitoring that would be required in the event of a significant oil spill.</p> |
| ES.1.18 | Applicant MMO | <p>Plans required before commencement of marine licensed activities</p> <p>The following plans are required to be produced before commencement of marine licensed activities (draft DCO [APP-203]):</p> <ul style="list-style-type: none"> • a construction project environmental management and monitoring plan (including a marine pollution contingency plan, a marine biosecurity plan, and a vessel management plan); • a scour protection management plan; • a piling marine mammal mitigation protocol; • a cable specification and installation plan; • an aid to navigation management plan; • a site integrity plan (assumed to relate to the Southern North Sea Special Area of Conservation (SAC)); and | <p>The Applicant notes the comments of the ExA and confirms that it has amended the drafting of condition 13 to ensure that any remaining effects fall within the scope of those predicted in the ES.</p> <p>The Applicant notes that the purpose of F2.15: Outline Offshore Cable Installation Plan (APP-250) is to provide as much clarity as possible on how and when detailed information relating to the Hornsea Four cable installation process (inclusive of any site preparation and/or cable protection works) will come forward and how the specific activities are controlled within the Development Consent Order (DCO), so that it provides confidence in the Applicant’s assumptions relating to site preparation, cable burial and deployment of cable protection measures. The document serves as an outline of the Cable Specification and Installation Plan (CSIP) to be presented pre-construction and presents detail on the proposed structure of the CSIP document and the cable burial and protection decision making process. Please note the name of the document, F2.15: Outline Offshore Cable Installation Plan (APP-250) will be</p> |

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| | | <ul style="list-style-type: none"> • an ornithological monitoring plan. <p>Condition 13 mentions only the Site Integrity Plan and Piling Marine Mammal Mitigation Protocol in relation to a need to accord with an outline plan listed in Schedule 15 and secured through Article 38 of the draft DCO [APP-203]. On what basis would the other plans be produced to ensure that the remaining effects fall within the scope of those predicted in the ES?</p> <p>What is the purpose of the submitted Outline Offshore Cable Installation Plan [APP-250]?</p> | <p>amended to match the name of the final document, F2.15: Outline Cable Specification and Installation Plan and resubmitted at Deadline 2.</p> |
| ES.1.19 | Applicant | <p>Plans omitted from the Commitment Register</p> <p>Why do the following not appear in the Commitment Register [APP-050]:</p> <ul style="list-style-type: none"> • Outline Energy Balancing Infrastructure HazID Report; • Outline Marine Monitoring Plan; and • the Outline Southern North Sea Special Area of Conservation Site Integrity Plan? <p>Do the Outline Marine Monitoring Plan and the Outline Southern North Sea Special Area of Conservation Site Integrity Plan need to be included in the definition sections of the draft DCO and the draft DMLs [APP-203]? If not, why not? If yes can you provide the appropriate wording.</p> | <p>Please see responses to ES.1.15 and ES.1.21 regarding the documents included within the A4.5.2: Commitment Register (APP-050).</p> <p>Both the Outline Marine Monitoring Plan and Outline Southern North Sea Special Area of Conservation Site Integrity Plan are now included within the interpretation sections of the C1.1: draft DCO including draft Deemed Marine Licence (DML) (REP1-002).</p> |
| ES.1.20 | Applicant | <p>Control over concurrent piling</p> <p>Could the Applicant respond to the request from the MMO in its Relevant Representation [RR020] for clarity in the Commitment Register [APP-050, Co85] and draft DML conditions</p> | <p>A response is provided to this question in the Applicant's Relevant Representation Response comment RR-020-4.3.3 in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> |

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| | | [APP203] that there would be no concurrent piling operations at the array area and the HVAC booster station. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | |
| ES.1.21 | Applicant | <p>Securing measures in the Commitment Register</p> <p>The Commitment Register [APP-050] is referred to in the interpretation section of the draft DCO [APP-203] and listed in Schedule 15 as a document to be certified. However, there is no further reference to this document in the draft DCO (including the DMLs). Can the Applicant provide a clear explanation of how the commitments set out in the Register are secured through the draft DCO?</p> | <p>The commitments set out in the Commitments Register are each secured through the specific certified documents and specified in the Register. The purpose of the Commitments Register is to provide a tool to review key information associated with all commitments, allowing easy cross reference with the Impacts Register, ES chapters and the relevant documents, plans, and/or protocols that secure their commitment and where those are secured in the DCO.</p> <p>Both A4.5.2: Commitments Register (APP-050) and the A4.6.4: Compensation Commitments Register (APP-060), include a column entitled "How is the Commitment secured". This column indicates how each individual commitment is secured via a DCO requirement and associated document, plan and/or protocol.</p> <p>An example of this is Co. 166, the commitment to undertake an offshore geotechnical survey (including UXO survey) prior to construction and subject to consultation with Historic England. This is secured via DCO Schedules 11 and 12, Part 2, Conditions 13 (2) and 13(3), which require a Marine Written Scheme of Archaeological Investigation.</p> <p>The column entitled "Relevant Application Documents" then details any specific documents provided at DCO application that a stakeholder can review to confirm that this commitment has been included in the relevant document, plans and/or protocol to satisfy the DCO requirement. For the example of Co. 166 this is in the F2.4: Outline Marine Written Scheme of Archaeological Investigation (APP-239).</p> |
| ES.1.22 | Applicant | <p>Compensation documents</p> <p>The Compensation Project Description [APP-057, para 1.1.1.3] refers to documents that are</p> | <p>Paragraph 1.1.1.3 of the A4.6.1: Compensation Project Description (APP-057) refers to two documents from the Environmental Statement. The Applicant submitted the first document Volume 1: Project Description at application as</p> |

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| | | <p>hosted on the Applicant’s website. Confirm if these are in Examination and their Examination Library references, if so. If they are not, should they be?</p> | <p>A1.4: Project Description (APP-010), which has been amended at Deadline 1 (Revision 3 of A1.4: Project Description Revision: 3 (REP1-004)).</p> <p>The second document referred to in paragraph 1.1.1.3 is Volume 1: Site Selection and Consideration of Alternatives and has been updated since publication on the Applicant’s website and can be found submitted in the application as A1.3: Site Selection and Consideration of Alternatives (APP-009).</p> <p>For clarity the Compensation Project Description was submitted at application as A4.6.1: Compensation Project Description (APP-057).</p> |
| <p>ES.1.23</p> | <p>Applicant Natural England RSPB</p> | <p>Compensation site selection</p> <p>The Compensation Project Description [APP-057] notes that further site selection information is provided in the Derogation Information documents. However, while addressing site selection criteria, these appear to fall short of identifying sites that could be secured, should they be deemed necessary. In the light of the SoS’s decision on the Norfolk Boreas and Norfolk Vanguard projects, and in particular the requests for evidence of the location and deliverability of the proposed compensation measures (notably in relation to the kittiwake interest feature of the Flamborough and Filey Coast Special Protection Area (SPA), is further assessment (EIA) required? If so, how will this be addressed in the ES and on what timescale, noting the Secretary of State’s indications of an expectation that such matters, if required, should in</p> | <p>Further refinement of locations for the compensation measures has been undertaken and the refined locations are specified in G1.50: Compensation measures for FFC SPA: Derogation and Compensation Update Position Statement (REP1-071). Please see Responses ES.1.24 and HRA.1.31 which set out further information regarding onshore artificial nesting structures. The refinement of the site selection will not affect the EIA or HRA of the compensation measures (B2.2.2: Habitat Regulations Assessment Compensation Measures Part 1 (APP-179) and B2.2.2: Habitat Regulations Assessment Compensation Measures Part 2 (APP-180) and A4.6.5: Compensation EIA Annex Part 1-6 (APP-061 to APP-066)), as all locations for the compensation measures are within the Areas of Search as set out in the A4.6.1: Compensation Project Description (APP-057). The compensation measures project description still applies to all measures and the Applicant is providing further refinement to the compensation measures within the parameters outlined in the project description A4.6.1: Compensation Project Description (APP-057). None of this detail would require further assessment as it has been covered by the assessments B2.2.2: Habitat Regulations Assessment Compensation Measures Part 1 (APP-179) and B2.2.2: Habitat Regulations Assessment Compensation Measures Part 2 (APP-180) and A4.6.5: Compensation EIA Annex Part 1-6 (APP-061 to APP-066).</p> |

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| | | future be dealt with in Examination? If not, why not? | |
| ES.1.24 | Applicant | <p>Compensation onshore nesting structures</p> <p>In relation to onshore nesting structures, the Compensation Project Description [APP-057, para 3.5.1.1] says:</p> <p>“Site selection and the consideration of alternatives for onshore artificial nesting structure locations, identifying the ecological, land acquisition and technical constraints and requirements, will be further developed and information submitted with the DCO application.”</p> <p>However, the Derogation Information, Compensation measures for FFC SPA: Artificial Nesting: Site Selection and Design [APP-191], does not appear to take this forward, saying, “Site selection and the consideration of alternatives for onshore artificial nesting structure locations, identifying the ecological, land acquisition and technical constraints and requirements, will be further developed.” Can the Applicant signpost if and where this further detail has been submitted in terms of the EIA of the proposed measures? If it has not, is it the Applicant’s intention to do so, and, if so, when?</p> | <p>Following the submission of the DCO Application, the Applicant has continued to refine the site selection for an onshore nesting structure.</p> <p>Further site selection and engagement with landowners and stakeholders is currently being progressed within areas that have been shortlisted as most suitable by the Applicant. In December 2021 the Applicant contacted a number of landowners to enquire if they would be interested in land purchase by the Applicant for the construction of an artificial nesting structure. Expressions of interest were received from a number of landowners and the Applicant is now planning site visits to the areas in question to photograph and map factors such as availability of nest space in the area and the proximity of the potential land options to neighbouring nesting birds. Further updates, following site visits and further discussions with landowners, will be provided in the next iteration of B2.7.4: Compensation measures for FFC SPA: Kittiwake Onshore Artificial Nesting Roadmap (REP1-018) at Deadline 5.</p> <p>The G1.50: Compensation measures for FFC SPA: Derogation and Compensation Update Position Statement (REP1-071) describes the consultation undertaken and key updates including to the compensation measures Roadmaps. The Applicant can confirm that no further detail is required to the EIA as the process undertaken since submission has been a refinement of the original Areas of Search (as described in response ES.123).</p> |
| ES.1.25 | Applicant Natural England MMO RSPB | <p>Environmental assessment of compensation measure sites</p> <p>Given the lack of refinement of possible sites for the proposed compensation measures, how</p> | Please see ES.1.23 and ES.1.24. |

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| | ERYC East Suffolk Council | reliable is the assessment of likely environmental effects set out in the ES [APP-057] for them? Please explain your reasoning. | |
| ES.1.26 | Applicant | <p>Confirmation of possible minor typographical error</p> <p>The ES Non-Technical Summary [APP-006, page 15] lists the 'Marine Management Association' as a consultee. Should this be the Marine Management Organisation?</p> | The Applicant confirms the 'Marine Management Association' should read the Marine Management Organisation. |

8 Habitats Regulations Assessment (HRA)

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| HRA.1.1 | Applicant | <p>European site citations</p> <p>Natural England's Relevant Representation [RR-029] notes that the formal citations and conservation objectives for European sites are live documents that are updated on a regular basis to incorporate the most up to date evidence. Nevertheless, it is important that the documents on which the Examination concludes are 'fixed' before its completion, so that the SoS and others are aware of the version used. Could the Applicant please confirm an arrangement for ensuring that this is the case and how the appropriate information would be provided in an Examination document at the appropriate time (ideally this should be prior to the issue of the Report on the Implications for European Sites by the Examining Authority on</p> | The Applicant has consulted with Natural England regarding whether any European site citations or conservation objectives have changed or are likely to change before 28 July 2022 during a meeting held on 17 th March 2022. Natural England confirmed that they are not aware or expecting any citation or conservation objective changes. If during Examination the Applicant is subsequently made aware of any such changes since DCO Application, or if changes are expected before the RIES is issued, the Applicant will ensure that these changes, and the implications of these changes on the RIAA (if any) are clearly set out in an Examination document - which will be submitted to the Examination by Deadline 5 and prior to 28 July 2022. |

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| | | 28 July 2022). | |
| HRA.1.2 | Applicant Natural England RSPB The Wildlife Trusts | <p>Research findings</p> <p>The Report to Inform the Appropriate Assessment (RIAA) [APP-174] draws extensively on guidance, technical reports and published scientific papers, with the list summarised in Part 8 of the RIAA. Given the currency and dynamic nature of the topics considered, have any relevant references been published subsequently that should be taken into account in the HRA, and, if so, what are they and might they change the outcome materially?</p> | <p>The Applicant has compiled a document (Section 10 of G1.9: Applicant's comments on Relevant Representations Revision: 01 (REP1-038)) which lists all the relevant guidance, technical reports and published scientific papers that have been published subsequent to the finalisation of Part 8 of the RIAA, and have been referred to in responses to Relevant Rep comments and in presenting the Applicant's position/ case in the examination. To date, there is no new information that could change the outcome of the RIAA materially, however the Applicant will inform the Examining Authority (ExA) if this position were to change.</p> |
| HRA.1.3 | Applicant | <p>Composition of HRA documentation</p> <p>It is not entirely clear which documents the ExA and the SoS should rely on in making a recommendation and assessment respectively in relation to the HRA. For the avoidance of doubt and to ensure that there is no missing information, could the Applicant confirm the following:</p> <ul style="list-style-type: none"> • all data and analysis taken from the ES and relied on in the HRA is fully cross-referenced; • there is no Category B Volume 2 Chapter 1, and the RIAA/ HRA documents start at Chapter 2; • there is no Annex 2.1 to Volume B2, though there is an Annex 2.2 - are B2.1 and B2.2.1 missing, and, if so, please can they be provided; the documents that comprise appendices to the RIAA, given that the main report [APP167] at | <p>The Applicant provides a response to each point in the ExA question below:</p> <ul style="list-style-type: none"> • The Applicant can confirm that all data and analysis taken from the ES and relied on in the HRA is fully cross-referenced; • The Applicant can confirm that there is no Category B Volume 2 Chapter 1, and the RIAA/ HRA documents start at Chapter 2. The ES RIAA Docs (Parts 1 – 12) are all Category B, Volume 2, Chapter 2 and then state which part after the document name (e.g. Volume 2, Chapter 2 Report to Inform Appropriate Assessment Part 4); • The Applicant can confirm that there is no Annex 2.1 to Volume B2 - B2.2.1 is a number not in use; • To clarify - Paragraph 1.2.1.1 refers to appendices which provide an update to the draft RIAA that was submitted at PEIR (i.e., the main RIAA report (Part 1), Appendix A (Part 2), Appendix B (Part 3) and Appendix C (Part 4). While Appendices D – I (Parts 5-12) provide new information; • The Applicant can confirm that parts 5, 6 and 7 of B2.2 (Designated Sites) (APP-171 to APP-173) represent Appendix D to the RIAA despite not being labelled as such on the cover. This is an error in the title of the RIAA Part 6 document submitted for the DCO Application; |

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| | | <p>paragraph 1.2.1.1 refers only to Appendices A, B and C, while there appear to be nine Appendices (A to I) submitted with the application;</p> <ul style="list-style-type: none"> • that parts 5, 6 and 7 of B2.2 (Designated Sites) [APP-171 to APP-173] represent Appendix D to the RIAA despite not being labelled as such on the cover; • how Habitats Regulations Assessment Compensation Measures, Parts 1 and 2, [APP-179 and APP-180] sit within the suite of HRA documents – are they intended to be part of the RIAA and are they related to the without prejudice derogation case; • if Volume B, Chapter 5 (Without Prejudice Derogation Case) [APP-182] should be titled Volume 2B, Chapter 5; • if Volume B, Chapter 8 (FFC SPA: Gannet, Guillemot and Razorbill Compensation Plan) [APP-193] should be titled Volume B2, Chapter 8; and • whether the document F2.11 (Outline Southern North Sea Special Area of Conservation Site Integrity Plan) [APP-246] forms part of the HRA documentation? | <ul style="list-style-type: none"> • To clarify - the Habitat Regulations Assessment – Compensation Measures Parts 1 and 2 (APP-179 and APP-180) are part of the Derogation case documentation submitted by the Applicant. These documents relate to Volume A4, Annex 6.6: Compensation EIA Annex Parts 1 – 6. They are a stand-alone HRA for the compensation measures detailed within the Without Prejudice Derogation Case, and have been produced as the measures represent development linked to Hornsea Four; • The Applicant can confirm that this document should be referred to as B2.5: Without Prejudice Derogation Case (APP-182); • The Applicant can confirm that this document should be referred to as B2.8 FFC SPA: Gannet, Guillemot and Razorbill Compensation Plan (APP-193) (please note as detailed in G1.50: Compensation measures for FFC SPA: Derogation and Compensation Update Position Statement (REP1-071) a separate compensation plan will be produced for gannet. The new titles of the documents will be: <ul style="list-style-type: none"> ◦ B2.8: FFC SPA: Guillemot and Razorbill Compensation Plan; and ◦ Gannet Compensation Plan (Volume and chapter to be confirmed). • To clarify the document F2.11: Outline Southern North Sea Special Area of Conservation Site Integrity Plan (APP-246) is within Category F (Additional Application Information) and does not form part of the HRA documentation however both ES and RIAA assessments cross-reference this plan. |
| HRA.1.4 | Applicant Natural England | <p>Grey seal interest of the Noordzeekustzone SAC</p> <p>The screening matrices [APP-169] and screening report [APP-168] identify potential Likely Significant Effects in relation to the grey seal interest of the Noordzeekustzone SAC</p> | <p>The Applicant can confirm that the grey seal interest of the Noordzeekustzone SAC was mistakenly omitted from integrity matrix 9. However, the Noordzeekustzone SAC has been fully assessed in the RIAA, with a conclusion of no AEol. Integrity matrix 9 has been amended accordingly and no further assessment is necessary. The updated document was part of the Applicant's</p> |

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| | | <p>(Netherlands). However, this does not appear to be considered in the integrity matrices [APP170] alongside other transboundary grey seal sites. Should it have been included in the analysis reported in integrity matrix 9? If so, is a reassessment necessary? If it is, when will this be submitted into the Examination?</p> | <p>Revision 2 of B2.2.C: Report to Inform Appropriate Assessment: Integrity Matrices (REP1-012).</p> |
| HRA.1.5 | <p>Applicant Natural England</p> | <p>Screening Natural England’s relevant representation advises that Flamborough Head SAC, Humber Estuary SAC, SPA and Ramsar site, and the Southern North Sea SAC should be screened in for assessment due to the potential for Likely Significant Effects arising from changes to physical processes, and in the case of the Southern North Sea SAC, changes to the hydrodynamic regime and sediment transport regime. Drawing on responses to other questions around physical processes including the assessment of the Flamborough Front, can the Applicant provide an updated screening assessment of these matters or justification as to why this is not necessary? Can Natural England provide a view on whether any progress made in these areas has affected its position on the screening of Likely Significant Effects in these matters?</p> | <p>The Applicant is confident that an update to the screening assessment is not necessary as the Likely significant effect screening conclusions remain valid. The Applicant has commissioned an independent study (as set out in G1.46: Clarification Note on Marine Processes Supplementary Work Scope of Works (REP1-068)) which was submitted at Deadline 1, an update on progress is anticipated to be submitted to the Examination by Deadline 3, to support the position with regards to the potential for likely significant effects arising from any changes to physical processes or changes to the hydrodynamic regime and sediment transport regime.</p> |
| HRA.1.6 | <p>Applicant Natural England</p> | <p>Assessment of effects in relation to marine mammal qualifying features Could Natural England please expand on the further information required in order to inform the assessment of Likely Significant Effects on</p> | <p>The Applicant has provided a response to the points raised by Natural England in their response to Relevant Representations (Section 5 of Annex 5 in G1.9: Applicant’s comments on Relevant Representations (REP1-038)).</p> |

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| | | <p>harbour seal in The Wash and North Norfolk Coast SAC from vessel collision risk? Could the Applicant please address the points raised by Natural England on: • Likely Significant Effects on harbour seal in The Wash and North Norfolk Coast SAC from vessel collision risk; • the worst-case scenario assessed in relation to simultaneous and concurrent piling; and • the in-combination assessment tiers and inclusion of seismic surveys? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has discussed Relevant Representation RR-029-APDX:D-26 (Section 5 of Annex 5 in G1.9: Applicant's comments on Relevant Representations (REP1-038)) regarding seismic surveys in the in-combination assessment and following advice from Natural England will provide a response at Deadline 3.</p> |
| HRA.1.7 | Applicant | <p>Clarification of maps</p> <p>Figure A-2 of Part 2 of the RIAA [APP-168] shows the location of designated sites identified under criterion 2, with an allocated number for each, rather than their name or identity. Please confirm if the preceding table, Table A3, is the table referred to in the Figure legend. The legend states that there is a key to these in a 'separate table in chapter'. Please clarify what and where this is so that the designated sites labelled 1 to 56 on the map can be identified. Figure A-4 of Part 2 of the RIAA [APP-168] shows the location of designated sites identified under criterion 4 but these are not labelled. Please provide this information by way of a clarified map and accompanying update to the document as needed.</p> | <p>The Applicant can confirm that the designated sites 1-56 labelled on Figure A-2 (B2.2: Report to Inform Appropriate Assessment Part 2: Appendix A: Habitat Regulations Assessment Screening Report (APP-168)) and amended by document AS-015) correspond to the information presented in Table A3 which provides the name of the designated site, country and relevant feature(s) (i.e. species) for this location. The Applicant has produced a new version of Figure A-4 which provides labels for all designated sites identified under Criteria 4. B2.2: Report to Inform Appropriate Assessment Part 2: Appendix A: Habitat Regulations Assessment Screening Report (APP-168) will be updated, to include the amended figure, and submitted at Examination Deadline 2.</p> |
| HRA.1.8 | Natural England RSPB | <p>In-combination assessment for kittiwake Do Natural England and the other nature conservation bodies agree with the approach used in compiling the RIAA [APP-167] that the</p> | <p>As explained in the RIAA Revision 2 of B2.2: Report to Inform Appropriate Assessment Part 1 (REP1-010), the Applicant notes that Natural England agreed to the removal of the contribution of Hornsea Three to the in-combination collision total for kittiwake at the Flamborough and Filey Coast SPA in the</p> |

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| | <p>The Wildlife Trusts</p> | <p>contribution to the losses of the kittiwake feature of the Flamborough and Filey Coast SPA as a result of the Hornsea Three project is compensated for and that the project's contribution to an in-combination assessment can therefore be discounted? Can the same rationale now be applied to the Norfolk Boreas and Norfolk Vanguard projects? If so, does this change any of the positions reached in representations to date on whether it is possible to exclude Adverse Effects on Integrity on the SPA in relation to in-combination effects on kittiwake?</p> | <p>Examinations of East Anglia One North and East Anglia Two. Natural England agreed to this position as (in its own words) "the impact from this project [i.e. Hornsea Three] is considered to be fully compensated for". The Applicant refers the Examining Authority to pages 4, 7 and 8 of Appendix A16b of Natural England's Deadline 9 submission which is appended at Appendix A of this response.</p> <p>This was further confirmed in Table 1, Appendix A16c. of Natural England's Deadline 12 response for East Anglia One North and East Anglia Two, where Natural England stated that the contribution from Hornsea Three is "set to 0 in the in-combination assessment as compensated for". Natural England's Deadline 12 submission is appended at Appendix B of this response.</p> <p>The Applicant agrees with the rationale underpinning this statement, as any mortality potentially attributable to Hornsea Three is offset by the compensatory measures secured.</p> <p>The Applicant's view is that this rationale should apply equally to Norfolk Boreas and Norfolk Vanguard contributions, given compensation for the impact of those projects on kittiwake at the FFC SPA is now secured. There is no reason in principle for taking a different approach. It may also become applicable to the contributions from the East Anglia One North and East Anglia Two projects, pending decisions from the Secretary of State which are due on 31 March 2022.</p> <p>The Applicant is willing to submit into Examination revised collision risk estimates to show the effect of removing these projects from the in-combination totals.</p> |
| <p>HRA.1.9</p> | <p>Applicant</p> | <p>In-combination total for PVA modelling Natural England's Relevant Representation [RR-029] notes that some of the in-combination totals provided in the RIAA for the population viability analysis (PVA) modelling differ from its</p> | <p>In relation to further testing and suitability of PVA modelling, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-O, RR-029-APDX:B-18 & RR-029-APDX:B-59).</p> |

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| | | <p>estimates and advises that the predicted contribution to in-combination impacts from the Proposed Development is provided as a range to allow consideration of uncertainties. Please provide an update on any progress being made in agreeing the PVA modelling totals used in the in-combination assessment, including the contribution of the Proposed Development. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant recognises that there is potential for cumulative and in-combination impact values to change throughout the examination process due to other projects moving between their PEIR, final applications and through their examination phases. This means that there is potential for the current PVA modelling results to become outdated. It is the Applicant's intention following revisions to the baseline, to rerun PVA modelling using a range of impact values to allow for impacts below and above that predicted for Hornsea Four alone and in-combination to be reviewed (for instance, modelling with increments of 50 mortalities above and below the predicted impact values), therefore future proofing the modelling as Hornsea Four progresses through examination. Consequently, this will also allow the ExA and Natural England to consider a range of PVA outputs should they wish to do so.</p> |
| HRA.1.10 | Applicant Natural England RSPB | <p>Offshore ornithology modelling</p> <p>Natural England's Relevant Representation [RR-029] raises fundamental concerns about possible errors in the application of the model used to analyse the baseline offshore ornithological characterisation data to produce the density and abundance estimates that underpin the HRA.</p> <p>Has the Applicant engaged with Natural England subsequently, has progress been made towards a resolution, and will further assessment be submitted into the Examination? If so, when, given the fundamental importance of this issue to the HRA? If not, why not?</p> <p>In the absence of further assessment based on an agreed methodology, what would be the implications for decision-making in terms of quantification and understanding of the likely effects on the offshore ornithology interests of European sites of the Proposed Development?</p> | <p>The Applicant has held an additional Ornithology Technical Panel Meeting (17 Feb 2022) to discuss the MRSea comments and options available to resolve these concerns with Natural England. The Applicant is rerunning the MRSea abundances using a methodology that addresses Natural England's comments for a single species (gannet) in the first instance and intends to produce a Baseline Sensitivity Report (G2.10: MRSea Baseline Sensitivity Report - Gannet) to provide a direct comparison of the results from modelled outputs. Part 1 of the first Baseline Sensitivity Report (Applicant's consideration of Relevant Representations and methodological changes) is to be submitted at Deadline 2, which provides the narrative surrounding the review provided by Natural England, the consultation undertaken to date on the methods and the agreed approach to undertake a revised MRSea modelling for gannet. Gannet was selected and agreed with Natural England as the most suitable species to undertake initial revised modelling for, as this species does not require apportionment of unidentified species groups from the raw data and therefore represents the best option to investigate. Part 2 of the MRSea Baseline Sensitivity Report – Gannet (G2.10) will be provided to Natural England as soon as it is ready (between Deadline 2 and 3) and submitted into Examination at Deadline 3.</p> <p>Part 3 of the Baseline Sensitivity Report (G2.10) will provide a comparison between the current MRSea and revised results for gannet setting out the</p> |

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| | | <p>(If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations)</p> <p>(Cross-reference may be made to relevant responses to ExQ1 Marine Ecology, provided any specific HRA implications are detailed in this response.)</p> | <p>implications, if any, for changes to ornithological characterisation data to produce the density and abundance estimates that underpin the HRA. Should any changes between the current MRSea and revised results be at a level that is judged to be insignificant then additional modelling of other species would not be undertaken following agreement with Natural England.</p> |
| HRA.1.11 | Applicant | <p>Natural England concerns in relation to the assessment methodology</p> <p>In its Relevant Representation [RR-029], Natural England raises five further concerns in relation to the assessment methodology adopted by the Applicant. Briefly, these are:</p> <ul style="list-style-type: none"> • including birds in flight in auk displacement analysis; • seasonal definitions for gannet and kittiwake displacement; • inclusion of statistical confidence intervals; • inclusion of counterfactual of final population size in population viability analysis; and • use of a theoretical generalised stable age structure to apportion impacts to adults from SPA colonies for HRA assessment. <p>Has any progress been made towards resolution of these matters, and will further assessment be submitted into the Examination? If so, when? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) (Cross-reference may be made to relevant responses to ExQ1 Marine Ecology, provided any specific HRA implications are</p> | <p>In relation to inclusion of birds in flight, please see the Applicant's response to the Relevant Representation (RR-029-5.9B).</p> <p>In relation to seasonal definitions, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-82).</p> <p>In relation to inclusion of statistical confidence, please see the Applicant's response to the Relevant Representation (RR-029-5.9D).</p> <p>In relation to inclusion of counterfactual of final population size in population viability analysis, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-18).</p> <p>In relation to use of a theoretical generalised stable age structure to apportion impacts to adults from SPA colonies for HRA assessment, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-44).</p> <p>The Applicant is working on the production of an Assessment Sensitivity Report that sets out the key assessment parameters (including those highlighted by Natural England). The Applicant currently intends to submit this report to the ExA at Deadline 3 to allow the ExA to understand the different assessment outcomes from using Natural England's referred approach and the Applicant's preferred approach. If necessary it can be updated and resubmitted at various points during the examination, as discussions evolve.</p> |

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| | | detailed in this response.) | |
| HRA.1.12 | Applicant | <p>Adverse Effects on Integrity for the Flamborough and Filey Coast SPA</p> <p>Natural England notes concerns [RR-029] that the effective loss of habitat for guillemot and razorbill from the Flamborough and Filey Coast SPA populations due to effects on functionally linked sea area habitat has not been fully assessed. It also suggests that the proposed compensation measures would be ineffective in this respect. Will further assessment of this matter be submitted into the Examination? If so, please indicate when this can be, noting that it would be required as soon as possible, or provide rationale as to why this is not intended. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>In relation to assessment of areas of importance to auk features of the FFC SPA, please see the Applicant's Relevant Representations Response RR-029-APDX:B-92 in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> <p>In relation to compensation measures for functionally linked sea area habitat please see Applicant's Relevant Representations Response RR-029-APDX:C-DD in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> |
| HRA.1.13 | Applicant | <p>Adverse Effects on Integrity for the Flamborough and Filey Coast SPA</p> <p>Natural England's Relevant Representation [RR-029] notes that, overall, it does not wholly agree with the Applicant in relation to in-combination effects and does not believe it possible to rule out an Adverse Effect on Integrity of the kittiwake feature of the Flamborough and Filey Coast SPA for collision impacts in-combination with other plans and projects.</p> <p>Natural England also notes concerns regarding displacement effects on guillemot and razorbill from the Proposed Development, and in-combination effects on gannet from collision</p> | <p>The Applicant has considered the Secretary of State's decision for Norfolk Boreas and the associated Habitats Regulations Assessment (HRA), which follows from the decision made for Hornsea Three. The Applicant considers that, despite its confidence that there is no potential for AEol on kittiwake from Hornsea Four in-combination with other plans and projects as evidenced in its original DCO application, it is not a point that it wishes to pursue during Examination. These changes are captured in Revision 2 of B2.2: Report to Inform Appropriate Assessment Part 1 (REP1-010) and Revision 2 of B2.5: Without Prejudice Derogation Case Part 1 - 3 (REP1-014) and will be subsequently updated upon request from the ExA based on an overall conclusion that there is potential for an AEol on kittiwake at the FFC SPA from Hornsea Four in-combination with other projects. For the avoidance of doubt, the Applicant's position remains that there will be no AEol from Hornsea Four alone on the kittiwake feature and, aside from the overall (in-combination) conclusion on integrity noted above, the Applicant maintains its position in all other respects in regards to its methodology and</p> |

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| | | <p>mortality. Given these uncertainties, Natural England also highlights that the scale of any compensation that might be necessary cannot be determined. Has any progress been made towards resolution of these matters, and will further assessment be submitted into the Examination? If so, when, noting that it would be required as soon as possible? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) (Cross-reference may be made to relevant responses to ExQ1 Marine Ecology, provided any specific HRA implications are detailed in this response.)</p> | <p>assessment of the effects on the FFC SPA features. The Applicant also maintains its position of no AEol alone or in-combination for all other qualifying species or seabird assemblage of the FFC SPA and for all other European sites.</p> <p>In relation to gannet collision risk, the Applicant is aware that SNCBs are currently in the process of providing significant revisions to gannet collision risk assessments to account for the double counting of impacts (as an individual which is displaced cannot be subsequently at risk of collision and vice versa) when cumulatively combining displacement and collision risk impacts together. This is highly likely to lead to significant reductions in collision risk in-combination impacts, and is expected to address Natural England's current concerns.</p> <p>In order to assist Natural England with predicting the likely impacts from displacement from Hornsea Four alone and in-combination for auks and gannet, the Applicant has analysed post-construction monitoring data from all available OWFs to better understand the rationale for the differences in displacement responses exhibited at different OWFs and how this then relates to mortality. The results of these literature reviews are designed to provide the Examining Authority and Natural England with the confidence to rule out beyond scientific doubt the upper ranges of displacement and mortality rates, thus significantly reducing concerns in relation to in-combination displacement impacts on auk and gannet features of the FFC SPA. The auk displacement and mortality note was submitted at Deadline 1 (G1.47), and the gannet displacement and mortality note will be submitted at Deadline 2 (G2.9).</p> |
| HRA.1.14 | Applicant Natural England | <p>Predicted gannet mortality</p> <p>Unlike the subsequent corresponding analyses for other features, why does the analysis of potential effects on gannet from the Flamborough and Filey SPA population during operation and maintenance not include a summary of predicted mortality based on a wider range of displacement mortality rates (the 'Natural England range') [APP-167]? (The</p> | <p>In relation to the assessment rationale for gannet displacement impacts please see Applicant's Relevant Representations Response RR-029-APDX:B-12 in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> |

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| | | <p>combined effect of displacement and collision risk, and the in-combination displacement assessment similarly does not include it). Are additional calculations and conclusions based on the Natural England approach necessary? If so, when would they be submitted into the Examination?</p> | |
| HRA.1.15 | <p>Applicant Natural England RSPB</p> | <p>Comparison with Sula Sgeir gannet colony At various places in the RIAA [APP-167], the Applicant makes a comparison with the harvesting of chicks from the Sula Sgeir gannet colony when discussing gannet mortality impacts and the Population Viability Analysis. The comparison seems to seek to demonstrate that even the loss of several thousand birds annually from the Sula Sgeir colony does not challenge the resilience of the colony. What weight should be placed on this comparison, given the likely material difference in average natural survival rates of gannet chicks and adult breeding birds?</p> | <p>Population viability analysis on the Sula Sgeir gannet population was undertaken by Trinder (2016) in order to understand the effects of harvesting rates on the population level of gannets at Sula Sgeir. Between 2004 – 2014 the gannetry at Sula Sgeir increased by an average rate of 2.2% per annum despite an annual harvest of approximately 2,000 chicks. This is 0.7% lower than the national average Scottish gannet population annual growth rate, as to be expected when considering the harvesting occurring. For reference the most recent annual average growth rate of the FFC SPA calculated from the period of 2008 – 2017 is over 8%, significantly higher than that of Sula Sgeir and Scottish national average, suggesting the overall health and stability of the FFC SPA colony is significantly greater than Sula Sgeir and it is therefore reasonable to assume the FFC SPA would have greater resilience to any impacts.</p> <p>Using the national average survival rates for gannet, as used within the compensation calculations, the likelihood of gannet surviving to adulthood is roughly ~26%. These survival rates also match that used within the PVA modelling by Trinder (2016). Therefore, using the above likelihood of survival to adulthood the harvesting of 2,000 chicks would lead to the loss of 520 future breeding adults. This roughly translates to the loss of one adult for every four chicks that are harvested.</p> <p>Trinder (2016) modelled additional harvesting rates of up to an additional 2,000 chicks per annum (this is on top of the current harvesting rate of 2,000 chicks per annum), which, when considering the likelihood of a chick reaching adulthood is ~26%, equates to an effective harvesting rate of up to 1,040 breeding adults per annum.</p> |

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| | | | <p>The results of the modelling predicted that population growth rate remained positive when considering a harvesting rate of between 2,000 (current rate; ~520 breeding adults) to 3,000 chicks (~780 breeding adults). At harvest levels above 3,500 (~910 breeding adults and above), the majority of simulations still predicted positive growth for the colony.</p> <p>These results provide evidence of the resilience of gannetries and support the conclusion that when considering the combined in-combination impacts of collision risk and displacement predicted for the FFC SPA of ~480 breeding adults (when considering a 80% displacement rate and 1% mortality for all projects), this predicted impact would not lead to an AEol for the gannet feature of the FFC SPA. This is due to the total combined collision risk and displacement impact value of ~480 being well under the typical harvesting value for Sula Sgeir of ~520 equivalent breeding adults. When this impact value is considered alongside the fact that the FFC SPA colony has a much higher growth rate and also has a similar population size this all confirms that such a level of impact can be withstood.</p> <p>Through the additional narrative provided it is clear that weight can be placed on this comparison, even considering any likely material difference in average natural survival rates of gannet chicks and adult breeding birds, as the values for adults can be extrapolated for assessment purposes and provide the evidence to support colony growth and therefore continued survival despite the loss of future breeding adults from a colony population.</p> |
| HRA.1.16 | MMO | <p>Controlling in-combination impacts on the integrity of the Southern North Sea SAC</p> <p>Given the doubts expressed by some parties in Relevant Representations, what level of confidence does the MMO have that the proposed Southern North Sea SAC site integrity plan</p> | |

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| | | <p>for this project (based on [APP-246]), when considered alongside similar controls that would be available through Marine Licence conditions attached to other projects that might affect the harbour porpoise interest feature in-combination, would provide it with sufficient control over the timing and nature of noisy activities across the various projects to ensure that the relevant in-combination disturbance impact thresholds would not be breached? In the event that a number of noisy activities from various concurrent projects became likely, would it be the MMO's intention to use these controls to ensure that no threshold was breached, and, if so, how?</p> | |
| HRA.1.17 | Applicant | <p>Apportionment of impacts to European sites</p> <p>Could the Applicant explain the reasoning behind the approach taken to apportioning impacts on European site interest features, notably the Flamborough and Filey Coast SPA. A theoretical generalised stable age structure has been used. Is this likely to be representative of all adults and 'adult-type' birds present? Are any amendments necessary, and, if so, when will these be available to the Examination? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's Relevant Representations Response RR-029-APDX:B-44 in G1.9: Applicant's comments on the Relevant Representations (REP1-038) in relation to the use of generalised age structures.</p> <p>The Applicant considered available evidence, this included site specific survey data, published literature and expert opinion, to determine the apportionment of impacts to the FFC SPA, to inform the assessments within the RIAA (B2.2: Report to Inform Appropriate Assessment Part 1 (APP-167)).</p> |
| HRA.1.18 | Applicant | <p>Natural England comments on the RIAA</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond</p> | <p>The Applicant has provided a response to the points raised by Natural England in their response to Relevant Representations (Section 5 of Annex 5 in G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |

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| | | to the uncertainties and comments relating to the RIAA set out by Natural England in Appendix D to its Relevant Representation (entries 11 to 43) [RR-029], focussing on those graded as red or amber by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | |
| HRA.1.19 | Applicant | <p>Natural England comments on the HRA</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond to the uncertainties and comments relating to the HRA set out by Natural England in Appendix E to its Relevant Representation [RR-029], including:</p> <p>i) the scope of protected sites screened in for further assessment of changes to physical processes; and ii) the sufficiency of evidence to rule out connectivity between impacts on the Flamborough Front and seabird prey availability, focussing on those entries graded as red or amber by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please find below the Applicant's response to the two questions:</p> <p>i). The Applicant has provided a response to the points raised by Natural England in their response to Relevant Representations (Section 6 of Annex 5 in G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>ii) Please see the Applicant's Relevant Representations Response RR-029-APDX:B-92 in G1.9: Applicant's comments on the Relevant Representations (REP1-038) with regards to the Flamborough Front and prey availability.</p> |
| HRA.1.20 | Applicant | <p>In-combination effects on kittiwake - update</p> <p>The position statement, G1.5 Kittiwake Adverse Effects on Integrity (AEoI) Conclusion [AS023], notes a change in the Applicant's position in relation to the in-combination effects on kittiwake. It notes that changes are necessary to the following earlier submissions:</p> <ul style="list-style-type: none"> • B2.2.1.2 Report to Inform Appropriate Assessment Part 2 Schedule of Change; and | <p>The Applicant has replaced the two 'schedule of change' documents, as listed in the question, with the following documents:</p> <ul style="list-style-type: none"> • Revision 2 of B2.2: Report to Inform Appropriate Assessment Part 1 (REP1-010); • Revision 2 of B2.2: Report to Inform Appropriate Assessment Part 4: Appendix C: Integrity Matrices (REP1-013); and • Revision 2 of B2.5: Habitats Regulations Assessment Without Prejudice Derogation Case Part 1-3 (REP1-014). |

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| | | <ul style="list-style-type: none"> • B2.5.1 Without Prejudice Derogation Case Schedule of Change. <p>When are these to be made available to the Examination?</p> | <p>These documents were submitted to the Examination at Deadline 1.</p> |
| HRA.1.21 | Applicant | <p>Maximum design scenario, mitigation, and alternatives: avoiding AEol</p> <p>Are any further design, alternatives or mitigation options under consideration or not yet fully explored to reduce potential Adverse Effects on Integrity of European sites?</p> <p>Are there any instances where uncertainties (for example, the absence of completed ground conditions or other engineering assessment work) mean that the MDS may change going forward, with subsequent implications for the information supporting the HRA?</p> | <p>The Applicant is currently refining the MDS for some parameters (e.g. sandwave clearance volumes). However, this refinement is downwards and therefore no subsequent implications for the information supporting the HRA are anticipated.</p> <p>The Applicant confirms that no further design, alternatives or mitigation options are currently under consideration or not yet fully developed and presented within the Application for Development Consent that would reduce potential Adverse Effects on Integrity of European sites.</p> |
| HRA.1.22 | MMO Natural England Applicant | <p>Mitigation for effects on marine mammal qualifying features and monitoring</p> <p>Could Natural England and MMO explain if any of their proposed post-consent monitoring for effects on the marine mammal qualifying features would: inform the Site Integrity Plan process; serve a purpose of verification of assumptions made in the assessment; or would it simply be useful data collection? What monitoring is required to deliver control over incombination effects and is it necessary to secure this in the draft DCO process?</p> <p>Could the Applicant explain what, if any, options for mitigation measures in relation to</p> | <p>In relation to options for mitigation measures for underwater noise effects on marine mammals and how they are secured within the DCO please see the Applicant's Relevant Representations Response comment RR-020-4.3.3 and RR-020-4.3.5 in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> <p>As stated in RR-029-5.33 of G1.9: Applicant's comments on Relevant Representations (REP1-038), the Applicant confirms that the specific mitigation measure (or suite of measures) (as outlined in F2.11: Outline Southern North Sea Special Area of Conservation Site Integrity Plan (SNS SAC SIP) (APP-246) that will be implemented during the construction of Hornsea Four will be determined, in consultation with the relevant SNCB, following confirmation of final hammer energies and foundation types, collection of additional survey data (noise or geophysical data), and/or acquisition of noise monitoring data, and/or information on maturation of emerging technologies. As such, the Applicant does not consider it necessary to include such commitments at this stage.</p> |

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| | | underwater noise effects on marine mammals could be committed to at the consenting stage to address uncertainties with control in the post-consent stage? Explain how any mitigation measures could be secured through any DCO. | |
| HRA.1.23 | Applicant | <p>Targeted consultation on the derogation case and potential compensation measures</p> <p>Is the Applicant content that the targeted consultation on the derogation case and potential compensation measures [APP-201] has been sufficient to satisfy all of the consultation requirements of the relevant legislation? Please systematically relate the answer to those requirements. Would anything further be necessary?</p> | <p>The Applicant prepared its derogation case including compensation measures for the purposes of its DCO application on a “without prejudice” basis i.e. to provide, without prejudice to the Secretary of State’s decision on whether there is an AEoI, information to demonstrate that the Article 6 (4) derogation tests could be met for Hornsea Four if it is necessary to resort to them to authorise the project. The Applicant is not seeking to authorise the compensation measures within its DCO application and that remains the case despite the fact it has confirmed the “without prejudice” element no longer applies to its compensation for kittiwake (in-combination).</p> <p>The Applicant carried out pre-application consultation on the contents of the derogation case with key stakeholders including Natural England, JNCC and the RSPB on a non-statutory basis. Further detail on the consultation undertaken for the derogation case is presented in B2.9: Record of Consultation (APP-201).</p> <p>The Applicant also considered it good practice to consult with a targeted group of consultees on a non-statutory basis to understand their views on how compensation proposals may affect them or their area. Further information on the targeted consultation is available at B1.1.36 Non Statutory Targeted Compensation Measures Consultation Leaflet and B1.1.37 Non Statutory Targeted Compensation Measures Consultation Responses.</p> <p>When applying for necessary consents to authorise the delivery of the compensation measure(s) (which as noted above, will be separate to the DCO process), the Applicant will comply with all statutory consultation requirements under the applicable legislative regimes in respect of those application(s).</p> |

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| | | | <p>In the meantime, the Applicant considers nothing further is necessary beyond the normal functioning of the Examination of the Hornsea Four DCO application. The Applicant notes that no pre-application consultation activities on compensation measures were carried out for the Hornsea Three, Norfolk Boreas or Norfolk Vanguard DCOs, each of which have been granted by the Secretary of State. The Applicant's approach therefore goes above and beyond established practice to date.</p> |
| HRA.1.24 | Applicant | <p>Securing any derogation case and compensatory measures through a DCO</p> <p>Could the Applicant clarify how any derogation case and compensatory measures would be secured through any DCO should the SoS's HRA demonstrate that they were necessary to address any residual Adverse Effects on Integrity?</p> <p>Given the SoS's clear indication elsewhere that potential derogation and compensation matters should reach a conclusion during the Examination, should the Applicant provide final, without prejudice compensation measures through a Requirement in the draft DCO, to be activated only if the SoS finds AEol? Alternatively, should there be two versions of the draft</p> <p>DCO that are identical other than one having the necessary responses to the SoS's potential finding of AEol and the other not?</p> | <p>The Applicant has taken this question to relate to how any necessary compensatory measures are or could be secured through the DCO, if the Secretary of State is otherwise satisfied that the other two prior conditions for a derogation are met, namely 'no alternative solutions' and 'imperative reasons of overriding public interest' (IROPI). These prior aspects of the derogation case (alternatives and IROPI) are matters of judgement for the Secretary of State on the evidence and not matters to be "secured". The approach taken by the Applicant in this regard is consistent with the Secretary of State's decisions on Hornsea Three, Norfolk Vanguard and Norfolk Boreas.</p> <p>As to how compensatory measures are secured for kittiwake, further to the Position Paper (G1.5: Kittiwake Adverse Effects on Integrity (AEol) Conclusion (AS-023)) submitted by the Applicant on 25 January 2022, which confirmed that the Applicant had revised its conclusion of no potential for adverse effects on integrity (AEol) in respect of the black-legged kittiwake feature of the FFC SPA from Hornsea Four in-combination with other plans and projects, the Applicant has revised the draft DCO (C1.1: Draft DCO and Draft DML (REP1-002)) to include a new schedule 16 entitled "compensation to protect the coherence of the national site network". This schedule is given effect by the inclusion of a new article 49 (compensation provisions) in the draft DCO and the kittiwake compensation plan referred to in schedule 16 has been included as a certified document in schedule 15. Article 49 and schedule 16 together are sufficient to secure the compensatory measures as they relate to kittiwake at the FFC SPA.</p> <p>For the guillemot, razorbill and gannet features of the FFC SPA, the Applicant's position, on the evidence, is that there will be no AEol from Hornsea Four, alone</p> |

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| | | | <p>or in-combination, and the derogation case for those species remains “without prejudice”. However, in the event it is necessary to secure compensation for these species, the Applicant has set out, within the relevant compensation plans for these species (B2.8: FFC SPA Gannet Guillemot and Razorbill Compensation Plan (APP-193)), drafting for additional DCO schedules containing the necessary requirements, which can readily be adopted by the Secretary of State should that be necessary following the outcome of his appropriate assessment. This includes an article that could be included in the DCO to give effect to the provisions in the relevant schedules.</p> <p>Given the above, the Applicant does not consider it necessary to include provisions to secure compensatory measures for those species within the draft DCO at this stage, nor would it be appropriate given the DCO is traditionally the form of Order which is the Applicant is seeking to have granted. The Applicant considers having two parallel forms of DCO would be liable to cause confusion and would give rise to a risk of inconsistency across parallel versions, as well as being unnecessary for the reasons set out above.</p> <p>The Applicant has taken the opportunity to review and revise these draft provisions for Deadline 2. Clean and track changes copies of the updated Roadmaps containing revised provisions for guillemot, razorbill and gannet have been submitted at Deadline 2:</p> <ul style="list-style-type: none"> • B2.7.2: Compensation measures for FFC SPA: Kittiwake Offshore Artificial Nesting Roadmap; • B2.7.4: Compensation measures for FFC SPA: Kittiwake Onshore Artificial Nesting Roadmap; • B2.8.2: Compensation measures for FFC SPA: Guillemot and Razorbill Bycatch Reduction: Roadmap; • B2.8.4: Compensation measures for FFC SPA: Predator Eradication: Roadmap; and • B2.8.6: Compensation measures for FFCSPA: Fish Habitat Enhancement: Roadmap. |
| HRA.1.25 | Applicant | Recent precedent | The Applicant refers the Examining Authority to its response to HRA.1.24 above. |

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| | | <p>If the SoS deems that compensation measures are required, how does the proposed procedure set out in the shadow HRA documents for securing and assessing them (for example, section 2.4 of Habitats Regulations Assessment Compensation Measures Part 1 [APP-179]) compare with the approach implemented by the SoS in recently made orders (for example: The Hornsea Three Offshore Wind Farm Order 2020, and in particular, Article 45 and Schedule 14 of that Order; The Norfolk Boreas Offshore Wind farm Order 2021; The Norfolk Vanguard Offshore Wind Farm Order 2022)? Would a draft Article be required to give effect to the Schedule proposed by the Applicant? Would Schedule 15 (Documents to be Certified) need to be amended if the SoS deems that compensation measures are required? If so, how?</p> | <p>The Applicant has added provisions to secure compensatory measures for the kittiwake feature of the FFC SPA to the draft DCO at article 49 and schedule 16. The kittiwake compensation plan referred to in schedule 16 has been included as a certified document in schedule 15.</p> <p>The Applicant does not consider it appropriate to include provisions in the draft DCO securing compensatory measures for guillemot, razorbill and gannet features of the FFC SPA for the reasons set out in the response to HRA.1.24 . If the Secretary of State deems that compensatory measures are required for these species, then the approach the Applicant has followed as set out above could be implemented, i.e. incorporate additional schedules (based on drafting provided in the relevant compensation plans), add an article to give effect to the schedules and amend Schedule 15 to include the relevant compensation plan as a certified document.</p> <p>The approach the Applicant is proposing to secure the measures is consistent with the approach taken by the Secretary of State in the Hornsea Three, Norfolk Boreas and Norfolk Vanguard DCOs.</p> |
| HRA.1.26 | Applicant RSPB Natural England | <p>Norfolk Boreas and Norfolk Vanguard DCO decisions</p> <p>Do the SoS's HRAs and decisions on the Norfolk Boreas and Norfolk Vanguard projects affect the process or conclusions of the shadow HRA undertaken for this Proposed Development by the Applicant, including the deliverability and timing of the proposed compensation measures, especially in relation to the kittiwake interest feature of the Flamborough and Filey Coast SPA?</p> | <p>As set out in its Position Paper (G1.5: Kittiwake Adverse Effects on Integrity (AEol) Conclusion (AS-023)) submitted on 25 January 2022, in light of the Secretary of State's decision on Norfolk Boreas (and now Norfolk Vanguard), the Applicant has revised its conclusion of no potential for AEol in respect of the black-legged kittiwake feature of the FFC SPA from Hornsea Four in-combination with other plans and projects. The Applicant considered that, despite its confidence that there is no potential for AEol on kittiwake from Hornsea Four in-combination with other plans and projects as evidenced in its original DCO application, it is not a point that it wishes to pursue during Examination.</p> |

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| | | <p>As such, the Applicant is now presenting its case based on an assumed overall conclusion that there is potential for an AEol on kittiwake at the FFC SPA from Hornsea Four in-combination with other projects.</p> <p>The Applicant does not consider that the Secretary of State's HRA and decisions on Norfolk Boreas and Norfolk Vanguard affect the process or overall conclusions of the RIAA in any other manner.</p> <p>The Applicant maintains that there will be no AEol from Hornsea Four alone on the kittiwake feature and no AEol alone or in-combination for all other qualifying species or seabird assemblage of the FFC SPA and for all other European sites. The Applicant relies on the expert evidence and advice presented in the RIAA that demonstrates and concludes, on the evidence, and in the circumstances of Hornsea Four, there would not be any AEol saved as identified above (B2.2.1.1: Report to Inform Appropriate Assessment Part 1 (AS-014)).</p> <p>The Applicant has considered Natural England's comment regarding lead-in timescales for artificial nesting and as set out in Response RR-029-APDX:A-22 in G1.9: Applicant's comments on the Relevant Representations (REP1-038), the Applicant now makes a commitment to implement the nesting structure three breeding seasons ahead of operation of the wind farm. The relevant documents (including the draft DCO for kittiwake) have been updated accordingly to reflect this.</p> <p>The evidence demonstrates that the provision of adequate nesting space can be delivered on either one new or repurposed artificial nesting structure and is presented in support of each of the compensation measures:</p> <ul style="list-style-type: none">• B2.7.1: Compensation measures for FFC SPA: Offshore Artificial Nesting: Ecological Evidence (APP-187); and• B2.7.3: Compensation measures for FFC SPA: Onshore Artificial Nesting: Ecological Evidence (APP-189). |
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| | | | <p>Please see the Applicant's Relevant Representation response RR-029-APDX:C-10 in G1.9: Applicant's comments on the Relevant Representations (REP1-038) regarding the provision of a single artificial nesting structure. Compensatory measures must address the impact of the activity in comparable proportions and that is a matter that must be looked at afresh case by case. The compensation proposed by the Applicant is proportionate to the scale of the predicted impact from Hornsea Four and sufficient to secure the coherence of the National Site Network.</p> |
| HRA.1.27 | Applicant | <p>Number of kittiwake artificial nesting structures</p> <p>The Habitats Regulations Assessment Compensation Measures Part 1 [APP-179] suggests at 1.5.5.6 that a single artificial nesting structure would be provided, as a maximum, as a compensation measure for kittiwake. However, Table 2 appears to present a maximum design scenario of two structures. Please clarify and make any amendments necessary.</p> | <p>The Applicant refers to its response to HRA.1.26 in relation to the justification for and confirmation that a single artificial nesting structure will be sufficient to compensate for the impact of Hornsea Four. The maximum design scenario was devised prior to the finalisation of the RIAA (B2.2: Report to Inform Appropriate Assessment Part 1 (APP-167)) and therefore a highly precautionary worst case scenario was assessed for the HRA Compensation Measures (B2.2.2: Habitat Regulations Assessment Compensation Measures Part 1 and Part 2 (APP-179 and APP-180)), and this also enables cover for any overlap for adaptive management measures.</p> |
| HRA.1.28 | Applicant | <p>SoS input during Examination</p> <p>The Applicant proposes an onshore artificial nesting structure for kittiwake if, "during Examination, the Secretary of State considers that an alternative (alternative to a preferred repurposed or new offshore nesting) measure is required to the proposed primary measures..." [APP-179]. Given that the SoS does not routinely become involved in Examinations, how would such a situation be ascertained?</p> | <p>This statement was in relation to the other relevant projects that were at that time awaiting decisions (Norfolk Vanguard and Norfolk Boreas), or are awaiting decisions (East Anglia One North and East Anglia Two) and from closely following the development of the Hornsea Three artificial nesting structures. The Applicant will carefully consider the Secretary of State's (SoS) decision letters and forthcoming guidance on compensation measures. All measures will be scrutinised through-out the examination so that the SoS can be confident that the compensation measures can be secured at the point of authorising the project.</p> |
| HRA.1.29 | Applicant | <p>Securing mitigation associated with compensation measures</p> | <p>The commitments in A4.6.4: Compensation Commitments Register (APP-060) set out the primary, secondary and tertiary commitments in order to avoid or reduce potential impacts from the compensation measures. These</p> |

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| | | <p>The Applicant's shadow HRA of possible compensation measures notes that "the primary measure applied to avoid an AEol is mitigation" [APP-179]. The relevant commitments from the Commitment Register are set out in Table 7. Section 4 of the Compensation Commitments Register [APP-060] is said to detail how the commitments would be secured, but the table in each case states 'To be determined'. Explain how and when the mitigation measures relied upon in the assessment would be secured if the SoS deemed the compensation measures necessary.</p> | <p>commitments are secured as a result of legislative requirements such as the Environmental Protection Act (1990) and/or standard industry practices e.g. via a Construction Environmental Management Plan (CEMP), or form an intrinsic part of the design and project description and/or are detailed in the Roadmaps, which in turn will be secured in the compensation plans that will be certified documents under the DCO.</p> <p>The Roadmaps provide details on securing consents for each of the compensation measures as set out in the Applicant's Relevant Representation Response comment RR-029-APDX:C-UUU in G1.9: Applicant's comments on the Relevant Representations (REP1-038) (e.g. Section 1.1 Securing key consents and seabed agreements in Revision 2 of B2.7.2: Compensation measures for FFC SPA: Kittiwake Offshore Artificial Nesting Roadmap (REP1-016)) and further information has been provided since submission on the specific consents required, which has been possible with the refined locations. For example, permission from States of Guernsey Agriculture, Countryside & Land Management Services (ACLMS) and the Veterinary Officer is required to undertake predator eradication, due to the Ramsar site designation protection in Guernsey.</p> <p>The G1.50: Compensation measures for FFC SPA: Derogation and Compensation Update Position Statement (REP1-071) describes the consultation undertaken and key updates including to the compensation measures Roadmaps.</p> |
| HRA.1.30 | Applicant | <p>Likely Significant Effect screening for artificial nest structures</p> <p>The screening for Likely Significant Effects set out in Tables 11 and 12 of the Applicant's shadow HRA of the possible onshore artificial nesting structure compensation measures [APP179] identifies potential for habitat loss due to the construction compound and access. Why are permanent impacts such as the loss of habitat beneath the footprint of structures and</p> | <p>The Applicant considers the magnitude of effect associated with the permanent footprint of the onshore artificial nesting structure and /or interference to mobile species to be minor as the area required under the Maximum Design Parameters is 0.04ha. The sensitivity of the receptor where the onshore artificial nesting structure would be located is low as designated sites and priority habitat would be avoided under Commitments CoC-ON-30 and CoC-ON-45 respectively. Therefore, the Applicant concludes that there is no potential for Likely Significant Effects, and no adverse effect on integrity of protected sites, as a result of the permanent habitat loss and disturbance associated with the proposed onshore artificial nesting structure compensation measure.</p> |

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| | | <p>disturbance of, or interference with mobile species features not considered?</p> <p>If such additional Likely Significant Effects were considered, which of the mitigation commitments in Table 13 would ensure no Adverse Effect on Integrity of all protected sites that must be considered in the HRA, including areas such as existing compensation sites, which may not be notified as nationally protected Sites of Special Scientific Interest (SSSIs)?</p> <p>Is further assessment required? If not, why not?</p> | <p>The Applicant's shadow HRA of the possible onshore artificial nesting structure compensation measure (APP-179) will be edited to further clarify this conclusion and re-submitted at Examination Deadline 5.</p> |
| HRA.1.31 | Applicant | <p>Assessment of repurposed onshore artificial nesting structures</p> <p>It is not clear if the Applicant's shadow HRA of possible compensation measures [APP-179] includes consideration of repurposed onshore artificial nesting structures. For example, paragraph 1.5.6.1 suggests it does, while the conclusion in section 9 suggests that it does not. Please clarify. If it does, what might their nature be and where are they described?</p> | <p>A repurposed onshore structure was not assessed in the B2.2.2: Habitat Regulations Assessment Compensation Measures Part 1 (APP-179) (and 'repurposed' in paragraph 1.5.6.1 is legacy text which relates to a point in time at the beginning of compensation measure development when this option was under consideration) as it was deemed unlikely this would be required, and since DCO submission none of the land options proposed by interested parties have had a suitable structure that could be repurposed. The Applicant is therefore confident that an onshore repurposed structure would not be required as a compensation measure and therefore is not an option that is being actively pursued.</p> <p>As mentioned above in the Applicant's response to ES.1.24 and following the DCO Application, further site selection and engagement with landowners and stakeholders is currently being progressed within areas that have been shortlisted as most suitable by the Applicant.</p> |
| HRA.1.32 | Applicant | <p>Document titling</p> <p>Should the references in Compensation measures for FFC SPA: Predator Eradication:</p> | <p>The Applicant has taken the decision to separate the compensatory measures for gannet (as set out in G1.50: Compensation measures for FFC SPA: Derogation and Compensation Update Position Statement (REP1-071) submitted to the Examination at Deadline 1). The Applicant has undertaken further analysis into the level of gannet bycatch within UK waters, including identifying areas of</p> |

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| | | <p>Ecological Evidence [APP-196] (for example, paragraph 2.2.1.4) to the 'FFC SPA: Razorbill and Guillemot Compensation Plan' be to the FFC SPA: Gannet, Guillemot and Razorbill Compensation Plan [APP-193]? Similarly, should the references to the 'Outline Guillemot and Razorbill Compensation Implementation and Monitoring Plan' be to the Outline Gannet, Guillemot and Razorbill Compensation Implementation and Monitoring Plan [APP-200]? Please make any amendments necessary.</p> | <p>highest bycatch risk. The document containing this information was submitted at Deadline 1: G1.42: Compensation measures for FFC SPA Gannet Bycatch Ecological Evidence (REP1-064) and a specific compensation plan (FFC SPA: Gannet Compensation Plan), and consequently separate Implementation and Monitoring plans, will be submitted at Deadline 5. Predator eradication is not being proposed as a compensation measure for gannet and therefore, it is not necessary to update the references referred to in B2.8.3: Compensation measures for FFC SPA Predator Eradication Ecological Evidence (APP-196).</p> |
| HRA.1.33 | Applicant | <p>Proposed DCO Schedule</p> <p>How does the proposed DCO Schedule (set out in draft in various documents, including the roadmap [APP-188]), and in particular its Part 3; Gannet, Guillemot and Razorbill Compensation Measures, paragraph 8) secure the timing of the approval and implementation of the compensation measures in relation to the construction and operation of the Proposed Development, such as the requirement referred to in the ecological evidence documents (eg Volume B2, Annex 8.3 (Compensation measures for FFC SPA: Predator Eradication: Ecological Evidence [APP-196]) that the "GRIMP would be submitted to the Secretary of State for approval... at least one year prior to the commencement of any wind turbine generator")?</p> | <p>The Applicant confirms that any reference to the implementation and monitoring plans being submitted for approval at least one year prior to commencement of any wind turbine generator is indicative only. The lead in time for the submission of each plan will be measure specific, and subject to discussion with the Hornsea Four Offshore Ornithology Engagement Group (OOEG).</p> <p>As set out in Schedule 16 of the draft DCO for kittiwake, and the Roadmaps for gannet, guillemot and razorbill, the implementation and monitoring plans will be submitted in accordance with the timetable for preparation of each plan which is to be included in a plan for the work of the Hornsea Four OOEG. This plan of work must be submitted to and approved by the Secretary of State prior to the commencement of Work Nos. 1, 2, 3, 4 and 5.</p> <p>The implementation of the measures must be in accordance with the approved implementation and monitoring plans. The measures must be implemented in a specified period (measure specific) prior to the operation of any turbine forming part of the authorised development. This ensures that the measures are implemented prior to the risk of any impact to kittiwake, gannet, guillemot or razorbill from the authorised development occurring.</p> |

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| <p>HRA.1.34</p> | <p>Applicant</p> | <p>Compulsory Acquisition of compensation sites</p> <p>The roadmap for onshore artificial nest structures [APP-190] suggests that, if necessary, Compulsory Acquisition powers could be obtained for the acquisition of sites in England and Wales. It goes on to describe the Applicant's ability to undertake Compulsory Purchase under the Electricity Act 1989. Are the powers potentially available through the Planning Act 2008 and the Electricity Act 1989 considered as alternative approaches, or would one be considered more appropriate depending on circumstances? If so, what might these be?</p> <p>How could Compulsory Acquisition powers be obtained if any necessary sites are not identified prior to the close of the Examination?</p> <p>What implications would arise from drawing on Compulsory Acquisition or Compulsory Purchase powers for the completeness of consultation undertaken in accordance with the requirements of the legislation mentioned?</p> | <p>The Applicant is not seeking development consent or compulsory acquisition powers in, on or over land for the delivery of an onshore artificial nest structure (or any other compensatory measure) within the scope of its DCO application. The approach taken by the Applicant in this regard is consistent with the Secretary of State's decisions on Hornsea Three, Norfolk Vanguard and Norfolk Boreas.</p> <p>Any development consent (e.g. planning permission) or land rights will be sought separately, outside of this DCO application and, while the Applicant is seeking to further refine its proposals, it is not therefore necessary for the final sites to have been identified prior to the close of the Examination.</p> <p>It will be the Applicant's responsibility to obtain the necessary land rights to deliver the compensation measures secured in the Order as granted.</p> <p>Once the preferred site for any onshore artificial nest structure has been identified, the Applicant will seek to enter into a voluntary agreement. However, as a last resort in the event that it is not possible to obtain the necessary land rights for a suitable site by voluntary agreement, the Applicant, as a licence holder under the Electricity Act 1989, could make a compulsory purchase order (CPO) under the Electricity Act 1989 at the appropriate time to obtain the necessary land rights required to deliver an onshore artificial nest structure(s).</p> <p>The Applicant's position is that where there are two coexistent statutory powers available to the Applicant that can achieve the same purpose (i.e. the compulsory acquisition of land and rights to deliver an onshore artificial nest structure) then the Applicant is free to choose between such overlapping powers. This position is supported in <i>Sawkill v Highways England Company Ltd</i> [2020] EWHC 801 (Admin).</p> <p>The process for making a CPO under the Electricity Act 1989 is well established and is subject to its own statutory requirements (including notification and an opportunity for objections to be made) as set out in Section 10 of and Schedule 3 to the Electricity Act 1989 and the Acquisition of Land Act 1981. Under the CPO</p> |
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| | | | <p>regime, the Secretary of State would need to be satisfied that various tests had been met prior to confirming the CPO. These tests are similar to the tests applied to the grant of any compulsory acquisition (CA) powers under the Planning Act 2008 and include:</p> <p>the land or rights included in the CPO are necessary and proportionate; that reasonable attempts have been made to reach a voluntary agreement with landowners; that reasonable alternatives have been considered; and there is a compelling case in the public interest.</p> <p>Given that any such CPO would arise against the background of a prior determination by the same Secretary of State that Hornsea Four is needed for imperative reasons of overriding public interest, and that it is necessary to secure compensation measures, it is reasonable to assume that such a CPO would be considered necessary and in the public interest.</p> <p>The relevant compulsory purchase powers under the Electricity Act 1989 could be obtained post-close of Examination (and indeed post DCO grant) and there would be no implications for the consultation process under either statutory regime.</p> |
| HRA.1.35 | Applicant Natural England RSPB | <p>Quantum of compensation measures</p> <p>Uncertainties have been highlighted regarding the offshore ornithological modelling and completeness of the assessment, for example with respect to functionally-linked habitat for auks and the effects of changes to marine processes on seabirds: consequentially, the outcomes with respect to Adverse Effects on Integrity are also highlighted as uncertain. Natural England and the RSPB have raised concerns that the scale and extent of any</p> | <p>The Applicant is confident that its conclusions with regards to effects on seabirds remain valid and are well evidenced. The Applicant has understood the Examining Authority's question to mean the consequential outcomes upon the ability of the proposed compensation measures to deliver the quantum of birds. For the avoidance of doubt, given the Applicant's conclusions and evidence, the Applicant does not consider it necessary and does not therefore propose to advance separate without prejudice compensation measures with respect to any functionally linked habitat for auks. The Applicant has commissioned an independent study (as set out in G1.46: Clarification Note on Marine Processes Supplementary Work Scope of Works (REP1-068) which was submitted at Deadline 1 and an update on progress is anticipated to be submitted to the Examination by Deadline 3) to support the position with regards to the potential</p> |

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| | | <p>compensation that might be necessary cannot therefore be determined.</p> <p>Has any progress been made towards resolution regarding the quantum of compensation, and will further assessment be submitted into the Examination? If so, when, noting that it would be required as soon as possible. If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations. Cross-reference may be made to relevant responses to ExQ1 Marine Ecology, provided any specific HRA implications are detailed in this response.)</p> | <p>for likely significant effects arising from any changes to physical processes or changes to the hydrodynamic regime and sediment transport regime.</p> <p>The Applicant has had further ornithology-related discussions with Natural England regarding functionally linked habitat and their Relevant Representation response (RR-029). Please see the Applicant's Relevant Representation RR-029-APDX:C-DD in G1.9: Applicant's comments on the Relevant Representations (REP1-038).</p> <p>Please see the Applicant's response to the question HRA.1.10. To confirm, irrespective of the outcomes of the revised MRSea modelling there will be no change to functionally linked habitat or marine processes assessments, which will change the quantum of conservation required. The quantum of compensation shall be determined from the MRSea modelling and not the further evidence demonstrating a linkage between habitat type and marine processes.</p> <p>The Applicant has demonstrated through the package of compensation measures that the compensation is viable, effective and can be readily secured and delivered. The suite of compensation measures include a commitment of a 1:2 ratio, in addition to fish habitat enhancement and a contribution to prey resource research. As such, it is considered that the ExA, Natural England and the Secretary of State can have high confidence that the suite of compensation measures is precautionary and the measures are sufficient to provide the compensation required throughout the lifetime of the project.</p> |
| HRA.1.36 | Applicant Natural England RSPB | <p>Seabird colony dynamics and population limiting factors</p> <p>The Applicant reports that the guillemot and razorbill colonies at Flamborough Head have increased in recent years [APP-196]. Are there national or regional differences in colony dynamics, for example is there any evidence that warming waters along the south coast of the UK are causing reduced prey availability and</p> | <p><u>Warming seas and prey availability</u></p> <p>Through climate change, future changes in predator prey dynamics are expected, with overlaps between predator and prey distributions reducing (IPCC, 2022). Seabird species can respond to changes in prey distribution by, for example, switching prey or shifting their range (IPCC, 2022). Warming of seas is known to cause reductions of important auk prey, such as sandeel due to changes in the plankton community. However, there is regional variation in climate effects on seabirds in the UK (Daunt and Mitchell, 2013), with the northern North Sea (particularly in Scottish waters around the northern isles) appearing to experience</p> |

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| | <p>affecting colonies on cliffs and islands there, including the Channel Islands? What evidence is there that the auk colonies associated with islands targeted for rat eradication have been reduced or lost as a result of predation by rats rather than other influences such as reduced prey availability? In its Relevant Representation [RR-029], Natural England considers it unclear if nesting habitat is a limiting factor for the breeding population of kittiwake in the southern North Sea. Is any further or updated evidence available to inform the Examination on this matter?</p> | <p>the most significant impacts to date, whilst only weak climate effects on seabird demography were found in the English Channel, Irish Sea and Celtic Sea (potentially due to the reliance on different species of small fish (Mitchell <i>et al.</i>, 2020) . Thus, climatic effects on seabirds on the Channel Islands are currently thought to be minor in comparison to other colonies, for example along the North Sea's Scottish coastline and northern isles.</p> <p><u>Rat predation underlying auk declines</u></p> <p>There are a variety of factors that impact seabirds in the UK, key factors include climate change and prey availability, invasive species, and bycatch (Dias <i>et al.</i>, 2019). Moreover, UK-wide findings have indicated that predation is also a key limiting factor for seabirds, including auks (Roos <i>et al.</i> 2018). Whilst prey availability can affect guillemot and razorbill populations, Alderney's West Coast and Burhou Islands Ramsar Site and Other Sites Annual Ramsar Review 2019¹ states that evidence suggests food for seabirds was in good supply, therefore making it unlikely that food availability was a limiting factor for breeding auks. Additionally, in B1.1.37: – Non Statutory Targeted Compensation Measures Consultation Responses (APP-166) La Societe Guernesiaise stated that "<i>the brown rat is known to inhibit the breeding success of many breeding species locally (e.g. auks)</i>". Thereby inferring the potential for rat predation to be a limiting factor for auk populations within the Bailiwick of Guernsey (through the overlap of rat presence and auk breeding sites).</p> <p><u>Evidence of overlap of auks and rat</u></p> <p>Post-submission, site visits to the Bailiwick of Guernsey, including Herm and Sark (along with the relevant islands/ islets around the main islands), have shown that rats (including black rat) are present with evidence from Alderney identifying spatial overlap with guillemot and razorbill nesting habitat (including evidence of rat, auk remains and broken eggshells which potentially suggests predation from rat (identified by Alderney Wildlife Trust)). To provide further evidence implementation studies are currently being undertaken with the aim to:</p> |
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¹ Available at: https://www.alderneywildlife.org/sites/default/files/2020-05/ramsar_review_2019_-_for_publication_online.pdf

- surveying of all candidate islands for the presence of invasive mammalian predators, including abundance estimates;
- collect evidence of predation pressures, such as egg caches and gnawed carcasses, and photographic evidence;
- assessment of the amount of potential nest habitat for each island, including data on current colony usage and potential nesting space; and
- full guillemot and razorbill census for each island, providing a baseline for future population and productivity assessments.

Findings from the implementation studies, which include further evidence of the predation pressures, will be presented during Examination at Deadline 5.

Further information on overlap between rat and guillemot/ razorbill as well as rat and potentially optimal nesting habitat for razorbill/ guillemot with low nesting pairs has been identified in Section 3.4 within [G1.33: Predator Eradication: Island Suitability Assessment Bailiwick of Guernsey \(REP1-061\)](#), submitted at Deadline 1.

Evidence of limited nesting habitat

The Applicant has provided a detailed response to Natural England within the Applicant's Relevant Representation Response comment see [RR-029-APDX:C-B](#) in [G1.9: Applicant's comments on the Relevant Representations \(REP1-038\)](#).

The Applicant has presented evidence in the DCO Application to support artificial nesting being delivered both onshore or offshore (see [B2.7.3: Compensation measures for FFC SPA: Onshore Artificial Nesting: Ecological Evidence \(APP-189\)](#) and [B2.7.1: Compensation measures for FFC SPA: Offshore Artificial Nesting: Ecological Evidence \(APP-187\)](#)).

Within the aforementioned documents, the Applicant presents evidence indicating that nesting habitat is likely to be a limiting factor in the southern North Sea. For example, birds have attempted to nest on the ground at Minsmere in Suffolk (as kittiwake are cliff nesting species this indicates a lack of alternative nesting sites). Furthermore, there is a clear lack of suitable natural nesting habitat

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| | | | <p>for kittiwake as many birds have previously, or currently, chosen to nest inland on roofs, light fittings, lamp posts and other suboptimal nesting habitat (see Appendix A in B2.7.3: Compensation measures for FFC SPA: Onshore Artificial Nesting: Ecological Evidence (APP-189)). As the species is a colonial nester, this is clear evidence that suitable nesting habitat is highly limited. As described in the Applicant's response to Question HRA.1.24 of this document, the Applicant is planning site visits to the potential areas within which to locate an onshore nesting structure, with one of the key goals of these being to photograph and map factors such as availability of nest space in the area.</p> <p>In an offshore context, Section 3.2 of the B2.7.1: Compensation measures for FFC SPA: Offshore Artificial Nesting: Ecological Evidence (APP-187) report determined from the evidence base that while offshore populations of kittiwake are increasing, it is highly likely that they are restricted by the availability of appropriate nesting habitat at some locations. The offshore surveys undertaken in Summer 2021 showed that a number of oil and gas platforms were thought to be approaching full capacity in terms of nesting space for kittiwake. The Applicant is undertaking further analysis on evidencing nesting availability limitations and further engagement with operators to explore how deterrents and human activities on oil and gas platforms in the Southern North Sea could be influencing presence and absences on the structures. This information will be provided as updates to Revision 2 of B2.7.2: Volume B2, Annex 7.2: Compensation measures for FFC SPA: Kittiwake Offshore Artificial Nesting Roadmap (REP1-016) at Examination Deadline 5.</p> |
| HRA.1.37 | Applicant | <p>Association between seagrass beds and fish prey</p> <p>Natural England [RR-029] and RSPB [RR-033] have suggested that the ecological evidence provided by the Applicant [APP-198] does not reliably demonstrate a positive association between healthy seagrass beds and the specific species of fish that are typically preyed by the four target seabird species (guillemot, razorbill,</p> | <p>The Applicant considers that the measure of extensive large-scale seagrass restoration (30 ha) would provide resilience to the compensation measures by potentially enhancing prey resource availability as part of a wider package for Hornsea Four. The Applicant refers to the F3.4: Statement of Common Ground between Hornsea Project Four and Natural England Derogation and Compensation Matters (REP1-036) and Natural England welcomes the fish habitat enhancement (seagrass restoration) consideration as a wider resilience measure and is in agreement on the technical and ecological efficacy of the resilience measure.</p> |

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| | | <p>gannet and kittiwake), and thus fails to support a hypothesis that restoration of seagrass beds will help to increase the populations of the prey species and these seabirds. If such evidence does not exist, should this measure be pursued further, and does the Applicant intend to do so?</p> | <p>The Evidence Report (B2.8.5: Compensation measures for FFC SPA: Fish Habitat Enhancement: Ecological Evidence (APP-198)) sets out the ecological evidence for fish habitat enhancement resilience measure and supports it as a likely successful resilience measure. The report documents that seagrass habitats support fish populations and increase biodiversity by enhancing the density, growth, and survival of juvenile fishes and invertebrates. In the UK seagrass meadows support around 50 species of fish and they have particular importance as a nursery ground for juveniles. Numerous peer-reviewed research articles note the importance and value of seagrass meadows globally for supporting high biodiversity, increased productivity and having beneficial ecosystems services in relation to fish habitat and populations.</p> <p>Available data indicates that seagrass meadows provide a key fish nursery habitat. As detailed in Section 2.2.1 of the submitted Fish Habitat Enhancement Ecological Evidence report (B2.8.5: Compensation measures for FFC SPA: Fish Habitat Enhancement: Ecological Evidence (APP-198)) Atlantic herring population in the Baltic Sea have direct spawning migrations into inner coastal waters and to vegetated spawning beds, including seagrass. In addition, several studies noted a high abundance of juvenile herring found in seagrass in studies that took place off the coast of North Wales, UK, in the Wadden Sea off the coast of Denmark and the Baltic Sea of the coast of Sweden. The Evidence Report (B2.8.5: Compensation measures for FFC SPA: Fish Habitat Enhancement: Ecological Evidence (APP-198)) also set out that sandeel aggregations have been recorded within the Humber Estuary.</p> <p>The Applicant is aware that based on the current evidence it is not possible to quantify each prey species at this stage, however, where evidence gaps are identified, the Applicant has proposed a strategy to address those gaps through additional research which will be undertaken to aid in providing such information. Information on further research is outlined in Section 6.1 of the revised Fish Habitat Enhancement Roadmap (Revision 2 of</p> |
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B2.8.6: Compensation measures for FFC SPA: Fish Habitat Enhancement: Roadmap (REP1-024).

As detailed in Section 2.2.2 of the Evidence Report (**B2.8.5: Compensation measures for FFC SPA: Fish Habitat Enhancement: Ecological Evidence (APP-198)**), the Applicant is aware that seabirds generally hunt further offshore away from seagrass, the species that they prey on, such as gadoids and clupeids, often utilise seagrass as nursery habitats. Although there is currently limited evidence on direct links of prey fish migrating from the Humber estuary to the wider North Sea, research is a key component of the fish habitat enhancement resilience measure. In order to gather evidence to contribute towards further understanding of the links between seagrass and target seabird species, the Applicant has identified and commissioned a programme of research to build a more robust evidence base (in addition to the implementation studies). These include fish nursery assessment and connectivity surveys (see Section 6.1 of (Revision of 2 **B2.8.6: Compensation measures for FFC SPA: Fish Habitat Enhancement: Roadmap (REP1-024)**)). This programme of research has commenced and is being undertaken by Yorkshire Wildlife Trust in collaboration with the Hull Marine Lab (University of Hull). Initial reporting of findings is programmed for Q3 2022. These research topics will support existing research detailed within Section 2.2.3 of the Evidence Report (**B2.8.5: Compensation measures for FFC SPA: Fish Habitat Enhancement: Ecological Evidence (APP-198)**), including the use of IHLS data which illustrates herring larvae drifting into the Humber Estuary, where juvenile herring have been recorded.

Records also show the use of the Humber as a migratory pathway, particularly for young cod. Recent netting survey data collected near the Spurn Peninsula by the Yorkshire Wildlife Trust, as part of the Green Recovery Challenge Fund (GRCF) and associated earlier pre-surveys, recorded several species including herring and sandeel within the area (Yorkshire Wildlife Trust, 2022). The implementation study being undertaken this summer is to gather evidence on the connectivity of prey species from the Humber Estuary to the wider North Sea.

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| | | | <p>In addition to seagrass restoration as a resilience measure, the Applicant would also like to highlight the importance of seagrass habitat not just for its services to marine species, due to its physical structure providing shelter from predators and food for juvenile fish, but for other factors. In the UK seagrass is an important buffer, reducing wave and tidal energy and also contributes to coastal protection by trapping sediment and raising the sediment profile. In addition to stabilising the sediment and therefore reducing erosion, they also improve water quality, absorb excess nutrients through their root system and improve nutrient cycling, produce oxygen and are an excellent 'Blue Carbon' habitat as they store significant amounts of carbon in the marine sediment. Seagrass restoration/enhancement is noted as a key potential Nature-Based Solution (NBS) to climate change.</p> <p>The Applicant would therefore like to acknowledge the importance of this resilience measure to not only support the suite of compensatory measures proposed, but also the ability of this resilience measure to provide future ecosystem services and an NBS to support climate change resilience through the restoration of this important blue carbon habitat.</p> |
| HRA.1.38 | Natural England Applicant | <p>Level of detail and confidence in compensation measures</p> <p>In its Relevant Representation [RR-029], Natural England raises concerns that, in the absence of specific locations and delivery mechanisms being identified, the confidence that any of the proposed compensation measures can or will be secured is significantly reduced. The RSPB, in its Relevant Representation [RR-033], explains why it considers that inadequate detail has been provided to enable proper scrutiny of the proposed compensation measures, and why this detail should be available in the application documentation before the Examination. Given</p> | <p>The Applicant wishes to make clear that the locations and delivery mechanisms for any necessary compensatory measures do not in any way influence the outcome or reliability of the Applicant's shadow appropriate assessment, as presented in the RIAA, or the wider derogation case (namely 'no alternatives' or "IROPI"). The outcomes of the RIAA identify the potential quantum of impact associated with Hornsea Four alone and in-combination, which in turn influence the site selection and delivery mechanisms. The inverse is not true.</p> <p>The Applicant's position is that it has presented a credible, reliable and deliverable package of compensatory measures (if required). The measures are secured (in the case of kittiwake) or can be secured (in the case of gannet, razorbill and guillemot) through requirements that the Secretary of State can include or add to the DCO. Draft wording for these requirements has been provided by the Applicant. The Applicant has gone further in its DCO application</p> |

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| | | <p>the lack of refinement of possible sites for the proposed compensation measures, how reliable is the shadow HRA, derogation case and compensation proposals [APP-179]?</p> | <p>to identify sites and delivery mechanisms than any other offshore wind farm developer to date. With regards to a repurposed structure (the Applicant's preferred method of providing artificial nesting as compensation) the Applicant has identified highly feasible options and is currently progressing discussions with owners and operators of suitable platforms (see B2.7.2: Volume B2, Annex 7.2: Compensation measures for FFC SPA: Kittiwake Offshore Artificial Nesting Roadmap (REP1-016)). The Applicant notes that the information available in Examination now is substantially more than the information available to the Secretary of State when granting the Hornsea Three, Norfolk Vanguard and Norfolk Boreas DCOs, and certainly more during Examination of those applications.</p> <p>Since submission of Natural England's Relevant Representation compensation measure workshops have been held with Natural England (3rd and 14th February) to explain the significant progress made since DCO Application submission, in refining the search areas supported by ecological evidence. The Applicant has identified suitable areas to deliver the compensation measures for offshore nesting, bycatch reduction, fish habitat enhancement and short-listed the Bailiwick of Guernsey for predator eradication. The Applicant refers to the Statement of Common Ground (SoCG) between Natural England and the Applicant (Revision 2 of F3.4: Statement of Common Ground between Hornsea Project Four and Natural England Derogation and Compensation Matters (REP1-036)) which illustrates the progress made. Natural England has stated in the SoCG (REP1-036) for offshore nesting that 'the final location remains undetermined, however a comprehensive spatial mapping exercise considering agreed search criteria has been undertaken and revealed areas of high suitability'. Natural England also state that for bycatch reduction they agree with the reasoning for the identified locations for auks and for fish habitat enhancement agree that the site selection process has been appropriate and that the Humber Estuary is a suitable site.</p> <p>RSPB also state in their Relevant Representation Response (RR-033) they recognise "the significant amount of work by the Applicant to explore and</p> |
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| | | <p>identify potential suitable offshore locations for putative kittiwake nesting structures”.</p> <p>Consistent with the approach taken by the Secretary of State in the Hornsea Three, Norfolk Vanguard and Norfolk Boreas DCOs, the drafting proposed by the Applicant to secure the compensatory measures (if necessary) provides a mechanism for further refinement of site selection and delivery mechanisms post-consent, in consultation with an established group of specialist advisors including the SNCB, in line with now established practice and as set out in the roadmaps submitted alongside the application (APP-188, APP-190, APP-195, APP-197, APP-199). Any risks to delivery would be mitigated through monitoring and adaptive management, as appropriate, and in consultation with the establishment of an Offshore Ornithology Engagement Group.</p> <p>The Applicant notes the stakeholders responses regarding refinement and further detail on locations and delivery mechanisms. The site selection and indicative timescales for delivery and implementation for the suite of the compensation measures is set out in the following documents (please note that those documents that are Revision 2 were submitted at Deadline 1):</p> <ul style="list-style-type: none">• B.2.7: FFC SPA: Gannet and Kittiwake Compensation Plan (APP-186);• Revision 2 of B2.7.2: Compensation measures for FFC SPA: Kittiwake Offshore Artificial Nesting Roadmap (REP1-016);• Revision 2 of B2.7.4 Compensation measures for FFC SPA: Kittiwake Onshore Artificial Nesting Roadmap (REP1-018);• B.8: FFC SPA: Gannet, Guillemot and Razorbill Compensation Plan (APP 193);• Revision 2 of B2.8.2: Compensation measures for FFC SPA: Guillemot and Razorbill Bycatch Reduction: Roadmap (REP1-020);• Revision 2 of B2.8.4: Compensation measures for FFC SPA: Predator Eradication: Roadmap (REP1-022); and• Revision 2 of B2.8.6: Compensation measures for FFCSPA: Fish Habitat Enhancement: Roadmap (REP1-024). |
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| | | | <p>The compensation plans and roadmaps have been updated and provide further detail on the locations and delivery mechanisms therefore increasing confidence in each of the proposed compensation measures. Further updates were submitted to the Examination at Deadline 1 in G1.50: Compensation measures for FFC SPA: Derogation and Compensation Update Position Statement (REP1-071) and the Roadmaps will be further updated at Deadline 5.</p> <p>The Applicant has presented sufficient detail to support the efficacy of each compensation measure provided (see Agreement Log in Revision 2 of F3.4: Statement of Common Ground between Hornsea Project Four and Natural England: Derogation Matters (REP1-036)) to the Examining Authority to enable it to have confidence in all of the compensation measures proposed – in terms of their viability, effectiveness, secure ability, and deliverability.</p> <p>The Applicant considers that the shadow HRA conclusions, derogation case and compensation proposals are validated by the significant progress made since the DCO Application, and there is high confidence of further progress expected before Examination Deadline 5.</p> |
| HRA.1.39 | Applicant | <p>Mitigation commitments discounting potential compensation sites</p> <p>How might the Examining Authority and Secretary of State deal with a hypothetical situation where compensation was deemed to be required to address an Adverse Effect on Integrity of a protected site, but where implementation of all of the relevant mitigation commitments in the registers might be considered to effectively discount all of the sites that might be suitable for that measure? Has an analysis been undertaken and provided to exclude such a possibility? If</p> | <p>The Applicant considers that the situation described is as the question suggests: hypothetical. For the reasons set out below and given the availability of potential sites with connectivity to the biogeographical populations to which the relevant species belong, means the Examiners can be confident that, this is not considered to be a realistic possibility.</p> <p>The Applicant has reviewed the A4.6.4: Compensation Commitments Register (APP-060) and there are no hypothetical situations where the implementation of all the mitigation commitments would discount a site for compensation delivery. The site selection process (for example B2.7.5: Compensation measures for FFC SPA Artificial Nesting Site Selection and Design (APP-191) and Revision 2 of the compensation measures Roadmaps) has specifically considered locations where the commitments can be met and environmental impacts would be minimised, such as commitment CoC-OFF-13. Compensation Measures will not be co-located in immediate proximity (within an appropriate</p> |

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| | | <p>so, can this be submitted into the Examination. If not, why not?</p> | <p>buffer) to oil and gas or carbon capture and storage infrastructure, aggregate dredging or disposal sites, or cables and pipelines in identifying sites suitable for offshore artificial nesting. For example, analysis of the predator eradication compensation measure at the preferred location Bailiwick of Guernsey has determined the mitigation commitments are all Primary (intrinsic to the design of the measures) or Tertiary commitments (required regardless of the EIA process such as legislation and/or standard best practice) that can be implemented at the islands in the Bailiwick of Guernsey, should it be deemed necessary.</p> <p>The Applicant is confident the compensation measures can be delivered whilst meeting the commitments (should it be deemed necessary).</p> |
| HRA.1.40 | Applicant | <p>Quantum and timing of kittiwake offshore nesting structures Natural England [RR-029] is concerned that the Applicant would propose to limit compensation to a single offshore nesting structure for kittiwake, with a lead in time of one to two breeding seasons before first generation from the Proposed Development. Natural England considers this 'very high risk' and suggest it is substantially less than the compensation proposed and accepted by the Secretary of State for Hornsea 3. What is the Applicant's response? Any relevance of the Secretary of State's decisions for Norfolk Boreas and Norfolk Vanguard should be taken into account in replying.</p> | <p>The Applicant refers to its response to HRA.1.26 in relation to the lead in time for the offshore nesting structures, and justification for the number of structures proposed. In relation to the latter, the quantum of compensation corresponds to the impact of the project in question. The predicted impact of Hornsea Four on kittiwake is lower than that of Hornsea Three.</p> |
| HRA.1.41 | Applicant | <p>Single or separate offshore artificial nest structures for gannet and kittiwake? Can the Applicant clarify if the intention would be to provide a combined or separate offshore artificial nest structures for gannet and kittiwake, if required for both species? Does the Applicant have any response to Natural</p> | <p>The Applicant has addressed this concern in its response to point RR-029-APDX:C-C and RR-029- APDX:C-10 of Natural England's Relevant Representations submitted at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) describing the ecological evidence of gannet and kittiwake cohabiting nesting areas and is confident that a combined offshore artificial nesting structure for gannet and kittiwake can be delivered.</p> |

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| | | England's concerns in this respect in its Relevant Representation [RR-029]? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | |
| HRA.1.42 | Natural England Applicant | <p>Likely success of further onshore nesting structures for kittiwake Could Natural England explain its view [RR-029] that further onshore artificial nesting structures for kittiwake are unlikely to result in sufficient benefits to provide adequate compensation. Nest for nest, why does it consider that offshore nesting structures might provide a higher level of compensation than onshore nesting structures? What is the Applicant's view on this?</p> | <p>The Applicant is confident that compensation for kittiwake can be delivered from onshore or offshore nesting structures. A detailed response to Natural England regarding nest site limitation for both onshore and offshore nesting is within the Relevant Representation responses (see RR-029-APDX:C-B). Nesting site limitations has also been discussed in HRA 1.36 above. Please see Relevant Representation response RR-029-APDX:C-D submitted at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (Rep1-038)) regarding the evidence for nesting structures and limited nesting capacity.</p> <p>The Applicant is undertaking a thorough site selection process for a potential onshore nesting structure and commenced with an extensive initial search area to provide flexibility and scope to ensure a location could be selected that was ecologically suitable and within which nesting availability could be determined as a limiting factor. Therefore, the Applicant is confident compensation for kittiwake can be delivered through all proposed routes.</p> |
| HRA.1.43 | Natural England Applicant RSPB | <p>Effectiveness of bycatch compensation measures Natural England [RR-029] highlights the high level of uncertainty associated with bycatch reduction compensation measures. The RSPB [RR-033] describes them as experimental research that could not yet be considered as a compensation measure. Are there any updates on research or trials? Is it the Applicant's intention to continue to put such measures forward as compensation?</p> | <p>The Applicant has addressed this in its responses to point RR-029-APDX:C-EE and RR-029-APDX:C-CC of Natural England's Relevant Representations and point RR-033-CG of the RSPB's Relevant Representations at submitted at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |
| HRA.1.44 | Applicant | <p>Effectiveness of predator control There is disagreement between the Applicant and several parties (eg [RR-029 and RR-033]) about</p> | <p>The Applicant is no longer pursuing the locations at which predator control was considered. The Applicant has provided a detailed response to Natural England and RSPB within the Relevant Representation responses G1.9: Applicant's</p> |

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| | | the likely effectiveness of predator control (as opposed to predator eradication) as a compensation measure for auks. Is the Applicant intending to continue to promote predator control as a potential compensation measure in view of the evidence put forward? If so, why? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | comments on the Relevant Representations (REP1-038) (see comments RR-029-APDX:C-EEE and RR-033-FF). |
| HRA.1.45 | Applicant | <p>Natural England comments on draft DCO Schedule</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond to entries 18 to 38 relating to the draft DCO Schedule, as set out by Natural England in Appendix A to its Relevant Representation [RR-029], focussing on those graded as red or amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | The Applicant responded to the Relevant Representations at Deadline 1. Please see the Applicant's Relevant Representation Response comments RR-029-APDX:A-18 to RR-029-APDX:A-38 in Annex 5 of G1.9: Applicant's comments on the Relevant Representations (REP1-038) . |
| HRA.1.46 | Applicant | <p>Natural England comments on the RIAA</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond to the issues, discrepancies and questions relating to the RIAA (entries 70 to 130) set out by Natural England in Appendix B to its Relevant Representation [RR-029], focussing on those graded as red or amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | The Applicant has provided a response to the points raised by Natural England in their response to Relevant Representations (Section 3 of Annex 5 in G1.9: Applicant's comments on Relevant Representations (REP1-038)). |
| HRA.1.47 | Applicant | <p>Natural England comments on the derogation case</p> | The Applicant has provided a response to Natural England comments at Deadline 1, including those graded as amber and red (in addition to those graded purple |

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| | | In addition to the issues highlighted in the ExA questions above, could the Applicant respond to the uncertainties and comments relating to the derogation case set out by Natural England in Appendix C to its Relevant Representation [RR-029], focussing on those graded as red or amber by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | and green). Please see the Applicant's Relevant Representation Response in Section 4 of Annex 5 in G1.9: Applicant's comments on the Relevant Representations (REP1-038) . |
| HRA.1.48 | Applicant | <p>Predator eradication on Rathlin Island</p> <p>The RSPB's Relevant Representation [RR-033] notes that a funded project for predator eradication on Rathlin Island is going ahead. Is it the Applicant's intention to remove it from the list of possible compensation sites? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | The Applicant has confirmed that Rathlin Island is no longer being pursued as a predator eradication compensation measure. Please see the Applicant's Relevant Representation Response to RSPB RR-033-DD in G1.9: Applicant's comments on the Relevant Representations (REP1-038) . |
| HRA.1.49 | Applicant | <p>Reinvasion of eradication sites</p> <p>The RSPB suggests [RR-033] that some of the possible predator eradication sites suggested by the Applicant would be at high risk of reinvasion, including some that have already been reinvaded after a successful eradication programme. Has this information been shared between the parties, and will the Applicant modify the list accordingly? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | Please see the Applicant's Relevant Representation Response comment RR-033-FF in G1.9: Applicant's comments on the Relevant Representations (REP1-038) . |

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| HRA.1.50 | Applicant | <p>Grey seal interest feature of the Isles of Scilly Complex SAC</p> <p>The RSPB suggests [RR-033] that the HRA Compensation Measures Part 1 [APP-179] should include the grey seal interest feature in the screening for the Isles of Scilly Complex SAC. Does the Applicant agree that this is a relevant and important omission in the context of an eradication plan? Are changes necessary? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has provided a response to the point raised by the RSPB in their response to Relevant Representations (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |
| HRA.1.51 | Applicant | <p>Estimated costs of the without prejudice compensation measures</p> <p>Please provide a reasoned case to demonstrate the confidence levels that could be placed on the estimated costs [APP-202] of providing the without prejudice compensation measures, given that no sites have been identified or secured.</p> | <p>The costs estimates provided at Table 1 (the total suite of compensation options for all species) of document B2.10: Without Prejudice Derogation Funding Statement (APP-202) ("the Derogation Funding Statement") is a summary of a detailed cost analysis undertaken by the Applicant. The Applicant has confidence in the costs estimates provided in the Derogation Funding Statement for the following reasons:</p> <ol style="list-style-type: none"> 1. Orsted has considerable experience of securing consents, permissions, design, procurement and fabrication of installations both onshore and offshore. Specifically the Applicant was able to rely upon advice from its affiliate, Orsted Hornsea Project Three (UK) Limited relating to costs associated with onshore nesting sites. This covered land acquisition costs and the costs of designing, procuring and fabricating the structures. The Applicant does not consider the specific sites to be determinative of costs as the sites upon which the Applicant would focus are predominantly brownfield and therefore comparable to those pursued by Hornsea Project Three. In addition, the Applicant's affiliate has been in discussions with The Crown Estate and has been given a steer of the likely option and rental costs associated with a new offshore structure. 2. In relation to fish habitat enhancement measures the Applicant received and analysed costs associated with an existing seagrass project. In addition the Wildlife Trust have provided costs based upon their experience of seagrass |

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| | | <p>restoration that further to the Applicants consideration of implementation at more challenging sites align with the initial cost estimate provided by the Applicant</p> <p>3. The Applicant’s consultants have reviewed a number of predator eradication programmes and were able to provide estimates that fed into the initial costs estimates. The implementation studies are being undertaken by predator eradication experts. The studies undertaken to date on the selected islands have also confirmed the initial cost assumptions made by the Applicant.</p> <p>4. The bycatch measures were costed by the technology provider and the sum payable to participating fishers had been agreed pre submission.</p> <p>5. The total figure provided at Table 1 of £29.5million includes a 50% contingency applied across DEVEX, CAPEX, OPEX and APEX for each compensation measure/resilience measure (excluding the prey availability fund).</p> <p>Despite the increased confidence the Applicant has in the costs estimates provided, the Applicant does not propose to revise the contingency applied at this stage due to recent global events and their impact on commodity prices. There is a risk the estimates provided may fluctuate. The Applicant proposes to submit an updated E1.1: Funding Statement (APP-224) at Deadline 7 (the ExA is referred to answer CA1.16). To ensure both the Derogation Funding Statement (APP-202) and the Funding Statement (APP-224) are consistent the Applicant would propose to update the Without Prejudice Derogation Funding Statement (APP-202) at Deadline 7 to align with the latest commodity prices and market changes before the close of examination.</p> |
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9 Historic Environment including Marine Archaeology

| PINS Question Number: | Question is addressed to: | Question | Applicant’s Response: |
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| HE.1.1 | Historic England | Expand on and clarify Relevant Representation [RR-015] | |

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| | | <p>Would Historic England (HE) please expand on and clarify the specific concerns raised in its Relevant Representation [RR-015] about the proportionate approach to EIA that has been taken in this application.</p> | |
| HE.1.2 | Historic England | <p>Comments on Outline Marine Written Scheme of Investigation</p> <p>Please comment in detail on whether the Outline Marine Written Scheme of Investigation [APP-239] is sufficient to satisfy HE's concerns [RR-015] about management of risk to marine archaeological assets, and if not, why not.</p> | |
| HE.1.3 | Historic England | <p>Impact on historic seascapes</p> <p>Does HE accept the Applicant's assessment [APP-021 para 9.7.2.18] that "...it is considered that the impact on the historic seascapes by the introduction of wind farm infrastructure does not warrant further methodological development or mitigation" and if not, why not?</p> | |
| HE.1.4 | Applicant | <p>Monitoring of archaeological receptors</p> <p>Please explain what action would be taken as a result of the proposed monitoring identified during the pre-construction surveys as included within Outline Marine Written Scheme of Investigation [APP-239], and if none, why?</p> | <p>The Applicant can confirm that any data collected as part of the pre-construction surveys detailed in Table 8 in F2.4: Outline Marine Written Scheme of Investigation (WSI) (APP-239) will undergo archaeological assessment to ascertain information regarding whether the areas have archaeological potential (as per Co166 in A4.5.2: Commitments Register (APP-050) and Condition 13(2) & 13(3) of Schedules 11 and 12 of C1.1: Draft DCO including DMLs (REP1-002)). The reporting of the assessment will be undertaken as per the requirements of Co140, F2.4: Outline Marine Written Scheme of Investigation (APP-239) and secured by Condition 13(2) & 13(3) of Schedules 11 and 12 of C1.1: Draft DCO including DMLs (REP1-002).</p> <p>In line with Co46 and Condition 13(2) & 13(3) of Schedules 11 and 12 of C1.1: Draft DCO including DMLs (REP1-002), should a feature of archaeological potential or significance be identified then all intrusive construction activities will be routed and microsited to avoid the feature with archaeological exclusion zones (AEZs)</p> |

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| | | | <p>established in consultation with Historic England. Should the archaeological assessment conclude that avoidance is not the best mitigation approach, further assessments utilising the archaeological methods outlined in F2.4: Outline Marine Written Scheme of Investigation (APP-239) will be undertaken in consultation with Historic England. Any features of archaeological importance identified during pre-construction surveys may also be subject to post-construction monitoring as per the requirements detailed in F2.4: Outline Marine Written Scheme of Investigation (APP-239).</p> |
| HE.1.5 | Applicant | <p>Fishermen’s Fasteners and Archaeological Exclusion Zones</p> <p>Please explain why the six ‘Fishermen’s Fasteners’ identified in the National Record of the Historic Environment (NHRE) have not been assigned Archaeological Exclusion Zones (AEZs) [APP-02] para 3.4.1.3].</p> | <p>The Applicant notes that as detailed in paragraph 4.4.1.4. in F2.4: Outline Marine Written Scheme of Investigation (APP-239), fishermen’s fasteners are defined as places where fishermen have historically reported that their fishing gear has snagged. These fasteners have not been assigned AEZs by the Applicant as no clear evidence of seabed remains were detected during the geophysical surveys (Table A.3 of A5.9.1: Marine Archaeology Technical Report (APP-085)) and accurate positioning information is not known. Furthermore, and as per Co166 (A4.5.2: Commitments Register (APP-050)) and Condition 13(2) & 13(3) of Schedules 11 and 12 of C1.1: Draft DCO including DMLs (REP1-002), an offshore geophysical survey (including an Unexploded Ordnance (UXO) survey) will be undertaken prior to construction and will be subject to a full archaeological review in consultation with Historic England. The archaeological assessment will take the locations of the fishermen fasteners into account and assign AEZs where any potential archaeological receptors are identified.</p> |
| HE.1.6 | Historic England ERYC | <p>Impact assessment</p> <p>The Applicant’s Impact Register [APP-049, page 57] reports that, following a route refinement process, the onshore export cable corridor now incorporates a Scheduled Monument at York Road. For this reason, direct impacts on designated heritage assets during construction were scoped back in for assessment.</p> <p>The Impact Register suggests this was a ‘Simple Assessment’ rather than a ‘Detailed</p> | |

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| | | <p>Assessment'. Given the potential for an impact on a Scheduled Monument. Do you agree with this approach?</p> <p>If you do not agree, please set out the reasons for this and indicate what further action you believe to be required.</p> | |
| HE.1.7 | Applicant | <p>Historic significance of PRow</p> <p>Provide a response, or provide signposting indicating where a response is provided, to the points raised in [RR-038] relating to the significance of Jillywoods Lane. In addition, provide signposting to the assessment of the historical significance of any PRow affected by the Proposed Development.</p> | <p>The Applicant has responded to RR-038 in G1.9: Applicant's comments on Relevant Representations (REP1-038).</p> <p>Jillywoods Lane is not recorded as a heritage asset in the Humber Historic Environment Record, nor was it raised as an asset to be considered for assessment by the Historic Environment Stakeholders. Public Rights of Way (PRow), generally, do not form part of a heritage assessment unless they form part of a parish or county boundary or have been in use over a long period of time as evidenced by historic mapping. Jillywoods Lane, in part, forms the parish boundary between Rowley and Skidby, and has been identified as an Important Hedgerow which will require recording prior to construction as detailed in F2.10: Outline Written Scheme of Investigation for Onshore Archaeology (APP-245).</p> <p>The heritage importance of Jillywoods Lane was assessed as part of the wider historic landscape characterisation assessment as presented in A6.5.1: Historic Environment Desk Based Assessment (APP-116) which considered the historic landscape character to be of local heritage importance. The impact assessment of the historic landscape character was not considered in detail in the ES as there were no likely significant effects identified at PEIR (see A3.5: Historic Environment (APP-029)).</p> |
| HE.1.8 | Applicant | <p>Priority archaeological geophysical surveys</p> <p>The Applicant's ES Chapter 5. Historic Environment [APP-029, para 5.6.5.3] clarifies that three priority areas were not surveyed due to landowner access constraints. Please provide further detail setting out the constraints preventing the completion of these</p> | <p>The constraints which prevented the Applicant undertaking geophysical surveys of the three priority areas referred to in paragraph 5.6.5.3 of A3.5: Historic Environment (APP-029) was due to access constraints from the associated landowners. A total of 348 hectares of geophysical survey was completed to inform the DCO application, the three uncompleted areas total only 21 hectares. These three areas will now be surveyed as part of the geophysical survey at the</p> |

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| | | <p>surveys. Will these surveys be carried out before the close of the examination?</p> <p>If not, please set out the reasons for this and clarify how this might be addressed post-decision if the application is consented.</p> <p>What implications might the completion of these surveys have for the results of the Applicant's ES?</p> | <p>post-consent (pre-construction) stage as detailed in F2.10: Outline Written Scheme of Investigation for Onshore Archaeology (APP-245).</p> <p>Completing these priority surveys in the post-consent (pre-construction) stages would provide a clearer understanding of the presence or absence of the potential archaeological remains identified from the desk-based assessments and inform the requirement for further stages of evaluation and mitigation. Depending on the findings of the geophysical survey, the potential archaeological remains in these areas would be treated the same as other areas of potential and already substantiated archaeological remains following a staged approach to identify appropriate and proportionate post-consent evaluation and mitigation.</p> |
| HE.1.9 | Applicant Historic England ERYC | <p>Further mitigation measures</p> <p>[APP-029, para 5.1.1] sets out a series of measures under the heading "Further mitigation: built heritage" that could be put into effect in order to further lessen the impact from the Proposed Development prior to construction works commencing. Set out the barriers which exist that prevent these measures being agreed during the Examination and the steps necessary to overcome these barriers so that agreement can be reached and secured during the Examination.</p> | <p>The Applicant does not foresee any barriers that would prevent the mitigation measures detailed under the heading "Further mitigation: built heritage" from being agreed. The mitigation measures for preventing accidental damage to built heritage assets during construction are also presented within F2.10: Outline Written Scheme of Investigation for Onshore Archaeology (APP-245), a draft of which was submitted to Historic England and ERYC for comment prior to the Hornsea Four DCO submission. No issues or disagreements were raised by these stakeholders to the Applicant as to the process of securing these mitigation measures and therefore it is the Applicant's view that this has been agreed.</p> |

10 Infrastructure and Other Users

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| INF.1.1 | Applicant | Pre-Application consultation with relevant stakeholders | The Interested Parties that submitted the relevant representations referred to [RR-002, RR-004, RR-011, RR-012, RR-014, RR-027, RR-031, RR-035] all own or operate, or hold some other form of interest, in assets that may be directly |

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| | | <p>Table 11.3 of Chapter 11 of the ES [APP-023] sets out the pre-application discussions that you undertook with a number of stakeholders. A number of these have submitted RR [RR-002, RR-004, RR-011, RR-012, RR-014, RR-027, RR-031, RR-035]. However, Drax Power Ltd [RR-007] does not appear on this list, why not?</p> | <p>affected by Hornsea Four. For that reason those parties were consulted generally and in relation to the EIA undertaken. Drax Power Ltd differs from those other parties in that it does not have an interest in an asset directly affected by Hornsea Four. As RR-007 explains, carbon dioxide from Drax's onshore BECCS Project is expected to be stored in the Endurance aquifer. Therefore, the nature of Drax's RR is to declare its interest in the Endurance aquifer and to ask the ExA to consider the impacts of Hornsea Four on that aquifer. Such an interest did not qualify for consultation under the Planning Act 2008 or the relevant EIA Regulations.</p> |
| INF.1.2 | Applicant | <p>Endurance Carbon Capture and Storage (CCS)</p> <p>Chapter 11 of the ES [APP-023] acknowledges that in the absence of mitigation that the Proposed Development has the potential to effect Endurance CCS and it indicates that discussions with the promoters of this scheme are "on-going". Can you:</p> <ul style="list-style-type: none"> i. Provide an update with regards to these discussions. ii. Indicate how the proposed mitigation referred to in the ES [APP-023, eg paras 11.11.3.10, 11.11.7.7 and 11.11.13.7] would be secured. iii. Advise how the conclusion that the impact on Endurance CCS would be negligible [APP-023, paras 11.11.3.12, 11.11.7.9 and 11.11.13.13] was reached when the mitigation that might be required is currently unknown and, in any event, appears unsecured. iv. Explain what weight can be given to the conclusion that the impact on Endurance CCS would be negligible given that at this stage it would appear that the mitigation that might be required is unknown and, in any event, appears to be unsecured? | <ul style="list-style-type: none"> i. The Applicant has fortnightly meetings with bp, the operator of the Northern Endurance Partnership which include technical, commercial and consenting-related discussion. The Applicant and Northern Endurance Partnership are targeting a resolution of outstanding matters prior to the close of Examination however as identified in the Position Statements submitted by both parties at DL1 G1.29: Position Statement between Hornsea Project Four and bp (REP1-057) there are significant challenges to a commercial resolution. The Applicant therefore continues to advocate a set of protective provisions for the benefit of the licensee from time to time of the UK Carbon Dioxide Appraisal and Storage Licence CS001 in Part 8 of Schedule 9 of the draft DCO for Hornsea Four to allow both projects to continue development in the overlapping area of seabed ('the Overlap Zone') ii. The Applicant considers that, in a similar manner to commercial cable crossing agreements that are commonplace in the offshore wind industry, the mitigation set out in paragraphs 11.11.3.10, 11.11.7.7 and 11.11.13.10 of A2.11: Infrastructure and Other Users (APP-023) will be secured by a commercial agreement with the developers of the Endurance CCS site. It is important to note that the Applicant has proposed protective provisions for the benefit of the licensee from time to time of the UK Carbon Dioxide Appraisal and Storage Licence CS001 in Part 8 of Schedule 9 of the draft DCO for Hornsea Four, which envisage co-existence in the Overlap Zone. The Applicant considers that the proposed protective provisions address the known uncertainties and |

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| | | | <p>seek to put in place a process to ensure successful coexistence. See paragraphs 5.5 to 5.10 of G1.29 Appendix 1: Summary of the Applicant's position regarding the interface with the Northern Endurance Partnership Project (REP1-057) for further justification for the Applicant's position that coexistence is possible and the mechanisms that could be employed to achieve this.</p> <p>iii. Additionally, the commercial relationship between the Applicant and bp is governed by an Interface Agreement (further detail on this agreement is provided in G1.29: Position Statement between Hornsea Project Four and bp (REP1-057) with both parties agreeing to establish an Interface Management Group comprising the project managers for the Applicant and the developers of the Endurance CCS site, establishing communication and liaison on planned activities (such as planned operations and maintenance and development activities) so as to be able to plan and reduce or avoid adverse effects. The Applicant considers that the combination of protective provisions (once agreed with bp), the Interface Management Group and commercial agreements offers comfort that the mitigation is secured resulting in the conclusion that the impact upon Endurance CCS would be negligible</p> <p>iv. As set out in paragraph 11.11.3.8 of A2.11: Infrastructure and Other Users (APP-023), the Applicant acknowledges that the Endurance CCS site is considered to be of high value regionally and nationally, both in economic terms and contributing to government targets set out in the Energy White Paper (Powering our Net Zero Future), and is therefore considered to be of high sensitivity within the Overlap Zone. The Applicant also acknowledges that the magnitude of the impact of the construction, operation and decommissioning of Hornsea Four on the proposed CCS site and associated infrastructure has the potential to be, on a worst case and precautionary basis, moderate, but noting that there is currently a high level of uncertainty associated with the planned development activities associated with the Endurance CCS site within the Overlap Area. The Applicant considers that in the absence of any mitigation, the potential impact on the CCS development activities</p> |
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| | | | <p>arising from the operation and maintenance of Hornsea Four, within the Overlap Zone, is considered to result in a potential significance of moderate or large (the extent of significance being dependent on the final details of the CCS scheme and the extent of the interaction with Hornsea Four, but in any event, considered, on a worst case and precautionary basis, to be potentially significant in EIA terms, noting again the high level of uncertainty relating to the proposed CCS development details).</p> <p>The Applicant considers that with the development of effective mitigation on the basis set out in the Application and secured in the manners set out in (ii) and (iii) above, the impact within the Overlap Zone will have a residual magnitude of negligible, which combined with a high sensitivity, results in a residual significance of slight, which is not considered significant in EIA terms.</p> <p>The Applicant maintains that coexistence in the whole of the Overlap Zone is possible and the protective provisions have been designed to allow additional time for the NEP Project (and the novel carbon capture storage technology) to mature to resolve any outstanding bp concerns in this regard. The Applicant believes these provisions strike the appropriate balance to manage the interests between the parties and the requirement for coexistence prescribed in the Interface Agreement and relevant policy.</p> <p>The Applicant considers that the assessment in relation to the potential impact of the construction, operation and decommissioning of Hornsea Four on the proposed CCS site and associated infrastructure presented in A2.11: Infrastructure and Other Users (APP-023) is appropriate and robust, noting that no planning application has been submitted in relation to the offshore elements of the Endurance CCS project. The Applicant acknowledges this high level of uncertainty associated with the planned development activities associated with the Endurance CCS</p> |
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| | | | <p>site within the Overlap Zone and notes that this level of uncertainty has been built into the assessment on a precautionary basis. Relevant details from the offshore elements of the Northern Endurance Partnership project will be considered within assessment if made available during Examination. Notwithstanding this, the Applicant considers that the combination of protective provisions, the Interface Management Group and commercial agreements offers comfort that the mitigation is secured and therefore the residual significant would be not significant in EIA terms.</p> <p>The Applicant and the wider Ørsted group of companies has considerable experience in developing coexistence with oil and gas operators/owners particularly relating to vessel and helicopter access to existing and proposed infrastructure. The mitigations therefore that apply to the access issues put forward by NEP are known and the Applicant is therefore confident of being able to resolve these issues to ensure coexistence in line with policy.</p> |
| INF.1.3 | Applicant | <p>Proposed Kilmar to Ravenspurn North Carbon Capture (CC) pipeline Provide an update on whether details of the proposed Kilmar to Ravenspurn North CC pipeline [APP-023, para 11.7.1.33] are available or likely to be available during the course of the Examination and whether they therefore need to be assessed given that it is likely that this pipeline would cross the proposed array area.</p> | <p>To clarify, the proposed pipeline would be for the transportation of natural gas and not Carbon Capture (CC). The Applicant and Alpha Petroleum, the operator of the proposed pipeline are in regular and constructive discussions and this response has been agreed between the parties. Alpha Petroleum have confirmed that there are no further details at this time on whether this pipeline or an alternative pipeline from Kilmar to an alternative host South of RN will go ahead. It is not known if or when this information will be brought forward, but if it is, the Applicant will update the CEA in line with the CEA methodology. It should be noted that if a current proposal to reinstate the existing Kilmar export route goes ahead there is unlikely to be a requirement for a new pipeline and the Kilmar and Garrow NULs' decommissioning may be deferred beyond 2027.</p> |
| INF.1.4 | Applicant | <p>Commercial Crossing Agreements Chapter 11 of the ES [APP-023, para 11.7.1.51] advises that where the export cable would</p> | <p>The Applicant has identified only one potential offshore cable crossing, which would be between Hornsea Four and Dogger Bank. At this time the Applicant is awaiting information from Equinor/SSE Renewables, which are developing and</p> |

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| | | <p>need to cross an active cable then a commercial crossing agreement would be entered into. Can you explain how many crossing agreements would be needed; advise whether these agreements would be made pre or post consent; provide an update on the progress made and if agreements are to be made pre consent whether this information will be submitted into the Examination?</p> | <p>constructing Dogger Bank, on its cable routing and confirmation of where the Hornsea Project Four export cable will cross the Dogger Bank export cable. There is potential for the Hornsea Four and Dogger Bank crossing to take place onshore instead of offshore.</p> <p>The technical details of the crossing will be detailed in a crossing agreement, and consideration will be given to appropriate crossing methodologies through further consultation with Equinor/SSE Renewables, once more detailed design of the Hornsea Four export cable route has been conducted post consent. The Applicant will enter into the crossing agreement with Equinor/SSE Renewables prior to the construction of Hornsea Four.</p> |
| INF.1.5 | Applicant | <p>Mitigation of risk to the Viking Link cable infrastructure</p> <p>Please respond in detail to [RR-012] from Eversheds on behalf of Viking Link with particular regard to the representation that: "mitigation will be required to ensure that the risk to the Viking Link cable from the Project is limited. It is considered that this mitigation could consist of either deeper cable burial or rock placement over the Viking Link cable, in addition to some form of traffic management (IMO routeing measures)".</p> | <p>The Applicant has met and consulted regularly with Viking Link both pre and post submission of the Application for development consent. Through regular consultation, the Applicant understands Viking Link's concerns arising out of the Viking Link interconnector being located within the gap formed between the existing Hornsea Project Two and proposed Hornsea Four. The Applicant is confident in reaching an agreement with Viking Link and is continuing constructive commercial negotiations with Viking Link to address their concerns. Detailed comments relating to the points raised as part of the Viking Link relevant representation are considered below.</p> <p><u>Viking Link's relevant representation</u></p> <p>Viking Link's relevant representation is factually incorrect in that it refers to a "Structures Exclusion Zone". No such measure is proposed by the Applicant. Through the pre-application period the Order Limits were revised such that the southern boundary of the array area was moved to the north of Viking Link. The gap referred to is between the southern boundary of Hornsea Four and the northern boundary of Hornsea Two. Therefore, Viking Link is outside the proposed Order Limits of Hornsea Four. Reference to a "Crossing Agreement" is also irrelevant because no infrastructure associated with Hornsea Four will cross Viking Link.</p> <p><u>The Applicant's position</u></p> |

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| | | <p>A4.3.2: Selection and Refinement of Offshore Infrastructure (APP-037) highlights that through consultation with Viking Link and others, the Hornsea Four offshore export cable corridor was narrowed in the vicinity of the interconnector. The precise nature of this reduction in area was determined through extensive consultation, site investigations and ecological surveys.</p> <p>A5.7.1: Navigational Risk Assessment Part 2 (APP-082) includes a safety case for the gap that would be formed between Hornsea Project Two and Hornsea Four. The safety case considers vessel movements pre scheme with Hornsea Project Two in place and the subsequent impact with the addition of the Project (with both base case levels and future case levels of traffic).</p> <p>Analysis carried out by Anatec on behalf of the Applicant, and provided to Viking Link, predicts increased vessel movements from an average of 5.3 vessels per day to 5.9 vessels per day passing through the gap. This would equate to an additional 219 vessels per annum (the equivalent of less than one additional vessel per day). Based on the data analysis and impact assessments reviewed, including the negligible ranking associated with <i>accidental anchoring on unburied cable</i> and <i>emergency anchoring on the cable</i> identified within Viking Link's own Environmental Statement, Hornsea Four considers that the small change in vessel numbers passing through the gap, within the vicinity of the interconnector, would not be sufficient to increase the risk level to significant levels.</p> <p>Viking Link have suggested mitigation to the Applicant, in order to protect their interconnector from anchor strike or the impact of vessels sinking and resting on the cable, neither of which have been identified by the Applicant as likely scenarios. As part of the safety case, included within the A5.7.1: Navigational Risk Assessment (APP-081, APP-082 & APP-083), a study of potential gap users identified that the likelihood of an incident within the gap is low, as is the potential for anchoring (including emergency anchoring). Given the positive consultation undertaken with relevant stakeholders (including the leading vessel operator in the area) and the commitments included in the Application, A5.7.1: Navigational Risk Assessment (APP-081, APP-082 & APP-083) concludes that the gap does</p> |
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| | | <p>not pose a significant risk to safe navigation. Notwithstanding the above, Viking Link have suggested deeper burial of the interconnector, but have not provided evidence substantiating why this is necessary (see further below).</p> <p>Without prejudice to the Applicant's case, should this measure be found to be necessary as a result of the Project, noting the stages of each project with Viking Link intending to be operational by the end of 2023, this would be technically challenging and inconvenient to Viking Link if implemented retrospectively. With that in mind, Viking Link have put forward the alternative suggestion of additional protection placed over the interconnector. The Applicant's position is that neither measure is required unless it can be clearly demonstrated otherwise.</p> <p>Viking Link suggested a Traffic Separation Scheme (TSS) should be introduced within the gap between Hornsea Project Two and the Project. Requirements for any form of routing measure within the gap has been considered as part of the safety case included within the A5.7.1: Navigational Risk Assessment (APP-081, APP-082 & APP-083). The gap was designed using a rigorous process of consultation and assessment with the MCA, Trinity House, international regulators, and key operators in the area, all closely involved in the risk assessment process. It was agreed between those parties that a TSS would not be required.</p> <p>In accordance with best practice, the Applicant has offered mitigation measures (commitments included as part of the Application). Those were assessed through the Hazard Workshop process (see paragraph 18.2 of A5.7.1: Navigational Risk Assessment Part 2 (APP-082)) and include:</p> <ul style="list-style-type: none">• Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners and Kingfisher Bulletins and the wind farm will also be charted;• the application of the International Regulations for The Prevention of Collisions at Sea (COLREGs, 1972 as amended) which account for interactions between vessels as well as navigation in narrow channels; |
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- the gap was designed with consideration of Permanent International Association of Navigation Congresses' (PIANC) guidance and in consultation with users and regulators, noting that the PIANC guidance was recommended for use during consultation;
- at the Hazard Workshop, aids to navigation were discussed but Trinity House considered standard wind farm marking (IALA O-139) to be sufficient therefore aids to navigation (marking and lighting) will be deployed in accordance with the latest relevant available standard industry guidance and as advised by Trinity House, MCA, CAA and MOD as appropriate; and
- the Project will be compliant with Marine Guidance Note 654 (MCA, 2021).

These mitigation measures were discussed at the Hazard Workshop and the consensus was that no further or additional mitigation was required.

The MCA's position

The Applicant believes that the MCA is supportive of the Applicant's safety case contained within the NRA ([A5.7.1: Navigational Risk Assessment Part 2 \(APP-082\)](#)) and that it will submit a substantive representation at Deadline 2. The Applicant expects that to confirm that the gap between Hornsea Two and Hornsea Four is acceptable from a surface navigation safety perspective. The Applicant intends to provide a response to the MCA's representation as soon as possible after Deadline 2. A draft statement of common ground (SoCG) between the Applicant and the MCA is well advanced, and so it may be possible to build the Applicant's response into that SoCG and submit it at Deadline 3.

Commercial negotiations

The Applicant is continuing constructive commercial negotiations with Viking Link to address outstanding concerns.

Request for evidence

As noted above, the Applicant has not received substantive evidence from Viking Link to support the mitigation measures sought in the relevant representation,

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| | | | despite having requested this. It would assist the Applicant and the Examination process if the ExA could request such evidence from Viking Link, including a cable burial risk assessment demonstrating the required depth of cable. |
| INF.1.6 | National Viking Limited Grid Link | <p>Assessment of risks of harm to the Viking Link cable adjacent to the Proposed Development</p> <p>Is Viking Link satisfied with the conclusions of the ES in regard to assessment of risks of harm to the Viking Link cable within the gap between the Proposed Development and Hornsea 2 in particular due to other marine users such as shipping and fishing?</p> | |
| INF.1.7 | Applicant NGET Relevant Authority's | <p>Update on SEGL2</p> <p>Chapter 11 of the ES [APP-023, para 11.7.1.49] refers to survey work being underway for the SEGL2 and that planning applications are expected to be submitted in early 2022. Can you provide an update on this work; whether applications have been submitted and if so what the timescale for determination is; if applications have not been submitted provide an update on when this might happen.</p> | The Applicant and NGET currently have monthly update meetings to discuss the progress of SEGL2 and the potential interaction with Hornsea Four. At the most recent meeting, held on 9th March 2022, NGET confirmed their hope to submit their planning applications by the end of April 2022. Any further updates will need to be submitted by NGET. In view of the imminent timeframes for the proposed application, the Applicant is proactively seeking further information and shall update the CEA in line with the CEA methodology should that information be forthcoming. |
| INF.1.8 | Northern Gas Networks National Grid Gas PLC | <p>Location of Pipelines</p> <p>In your Relevant Representation [RR-30 and RR-026] Northern Gas Networks you indicate that the onshore cable route would cross two high pressure bulk supply gas pipelines and three medium pressure gas mains and National Grid Gas PLC you indicate that you have two high power gas transmission lines in close proximity to the Order limits can you both provide a plan showing the location of these pipelines in relation to the proposed Order limits.</p> | |

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| INF.1.9 | Applicant | <p>Ravenspurn North and Trent Platforms</p> <p>Please respond in detail to [RR-031] from Perenco UK Limited concerning:</p> <ul style="list-style-type: none"> i. Obstruction of access by helicopter to the 43/26 Ravenspurn North platform. ii. Obstruction of microwave communications with the 43/24A Trent platform. iii. Obstruction of the marine/ shipping collision Radar Early Warning system located on the Ravenspurn North platform. | <ul style="list-style-type: none"> i. The Applicant has responded to RR-031 in detail at DL1. The Examiners are directed to G1.9: Applicant’s comments on Relevant Representations (REP1-038), reference RR-031-1 ii. Obstruction of microwave communications with the 43/24A Trent platform is now the subject of a proposed commercial agreement between the Applicant and Perenco. The Applicant and Perenco are targeting completion of this agreement as soon as practicable and shall update the Examiners once the agreement has been finalised. iii. The Applicant has responded to RR-031 in detail at DL1. The Examiners are directed to G1.9: Applicant’s comments on Relevant Representations Revision: 01 (REP1-038), reference RR-031-3. <p>The Applicant and Perenco are engaging in constructive discussions with a view to submitting a position statement to ensure the Examiners are kept up to date as to the progress of discussions relating to (i) and (iii) above.</p> |
| INF.1.10 | Applicant and Alpha Petroleum Resources Limited | <p>Alpha Petroleum Resources wish to be kept updated about the DCO Examination</p> <p>In a letter of comfort dated September 2021 between the Applicant and Alpha Petroleum Resources Limited [APP-162, pages 58-61], Alpha’s concerns in regard to allision risk, microwave communications effects, helicopter operations and a proposed pipeline are agreed as matters not “needing further consideration during the DCO Examination”. However, in an annex to that letter of comfort, Alpha noted a wish to make representations to the Examination but has not made a Relevant Representation. Would the Applicant clarify the status of that annex to the letter of comfort and confirm the latest communication with</p> | <p>As referred to above in answer to INF.1.3 the Applicant and Alpha Petroleum Resources Limited (Alpha) are in constructive discussions and Alpha has received sufficient comfort from the Applicant to confirm that the Alpha Relevant Representation attached as an annex to the letter of comfort on pages 58-62 of B1.1.33 Stakeholder Working Group Meetings, Letters of Comfort and Letters of No Objection (APP-162) will not be formally submitted into the Examination. Alpha accept the conclusions detailed in Section 18 of A5.11.1 ES Volume 5 Annex 11.1: Offshore Installation Interfaces Part 1 (APP-086) regarding the impacts upon Alpha’s current infrastructure as broadly acceptable. Alpha do not therefore propose to participate in the Examination in relation to the issues outlined in the letter of comfort.</p> |

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| | | Alpha; and would Alpha please confirm if it still wishes to make a representation to the Examination and if so, what the nature of that representation will be. | |
| INF.1.11 | Applicant | <p>Update on commercial crossing agreements</p> <p>Provide an update on progress with commercial crossing agreements [APP-023, para 11.7.1.34] and whether these will be in place before the close of the Examination or if it is intended that these will be agreed and issued post consent.</p> | <p>Consideration has been taken in the offshore cable corridor route and interarray layout for cables to reduce interference with existing infrastructure and where crossings are unavoidable those crossings have been identified and included in Table 11.11 Pipelines crossing and located within the associated 1 km buffer area of the Hornsea Four array area, the HVAC Booster Station search area and offshore ECC of A2.11: Infrastructure and Other Users [APP-023]. The Applicant is in consultation with all relevant operators in regard to all crossings. The Applicant has also identified all proximate assets and continues to engage with the owners and operators of those assets. Where required, the Applicant will enter into crossing and/or proximity agreements prior to the construction of Hornsea Four.</p> |
| INF.1.12 | Relevant Interested Parties | <p>Notification period</p> <p>The Applicant is proposing, during construction, to provide a minimum of 14 days' notice of installation activities [APP-023, paras 11.11.4.6 and 11.11.4.14] is this sufficient? If not, why not and what notice period would be appropriate?</p> | |
| INF.1.13 | Applicant Relevant Interested Parties | <p>Emergency activities</p> <p>Chapter 11 of the ES [APP-023] acknowledges that there would need to be restrictions in place for oil and gas operators accessing rigs, platforms and pipelines during construction. Can you explain what if any procedures/ processes would be in place to deal with emergencies eg divers needing to access a pipeline for repairs, vessels accessing platforms. If no procedure/ processes are proposed, would</p> | <p>The Applicant acknowledges that emergency situations have priority and procedures will be laid out in proximity agreements with oil and gas operators. These procedures and processes will be developed in consultation with oil and gas operators, based on co-existence planning, provided commitments and HSE guidance documentation, including adherence to safety zones. The co-existence planning as referred includes emergency procedures & processes which in turn are secured by inclusion in Crossing & Proximity agreements. These are entered into pre-construction. The schedule therein will refer to emergency protocols, with a legal obligation to ensure these are agreed between the parties and in place before works may commence.</p> |

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| | | they be required and how would they need to be secured? | |
| INF.1.14 | Applicant Harbour Energy | <p>Co-existence agreement – update</p> <p>Chapter 11 of the ES [APP-023, para 11.11.6.14] refers to on-going discussions between the Applicant and Harbour Energy regarding a co-existence agreement in relation to the Johnston Oil Field. Provide an update on the progress with this agreement, what it agrees and whether it would be completed before the close of the Examination.</p> | <p>The Applicant and Harbour Energy are discussing terms of a coexistence agreement covering matters including marine corridors and provisions for helicopter access for the purpose of decommissioning the Johnston field. At this date, measures to ensure helicopter access remain to be agreed. The Applicant's analysis and conclusions with respect to helicopter operations, as for example documented in A5.11.1 ES Volume 5 Annex 11.1: Offshore Installation Interfaces Part 1 (APP-086), are not agreed. The Parties continue to have constructive discussions pertaining to this issue and will update the Examiners by DL5, if not before, as to the progress between them. The above statement has been agreed within the parties.</p> |
| INF.1.15 | Applicant | <p>Update on side agreements with other infrastructure stakeholders</p> <p>Please advise current status of any proposed side agreements with Oil and Gas operators and their expected status by end of the Examination. The ExA notes, in particular, [APP-023 page 18] "delay in execution of a side agreement due to change in owner (merger of Premier and Chrysaor)" within the table entry for Shell.</p> | <p>By way of an update the side agreement with Shell UK Limited (Shell) was completed on 9th November 2021.</p> <p>As referred to in answers to specific questions raised the Applicant is progressing commercial discussions with Perenco UK Limited (INF1.9) and Harbour Energy (INF1.14). The Applicant is also progressing commercial discussions with Bridge Petroleum Limited as confirmed in the response reference RR-002 of G1.9 Applicant's comments on Relevant Representations Revision: 01 (REP1-038) and is currently reviewing comments received from BPL on a set of heads of terms proposed to BPL on 15th February 2022. The Applicant and BPL are targeting completion of the agreement before the end of the Examination.</p> <p>The Applicant is also engaging with NEO Energy (SNS) Limited further to their relevant representation reference RR-004. The Applicant acknowledges that a commitment was made to submit a position statement for DL2; RR-004-B and this is at G2.15 Position Statement between Hornsea Project Four and NEO. NEO have not formalised their position as yet to allow the Applicant time to include it within the position statement, but the Applicant remains committed to agree a joint position statement by DL3 and before the issues specific hearing on 26th April 2022.</p> |

11 Landscape and Visual Effects

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| LV.1.1 | ERYC | <p>Study area parameters</p> <p>Are you satisfied with the study areas adopted by the Applicant for the onshore substation and the landfall site? If not, please set out the reasons for this position and indicate what additional areas should be included and the reasons why these areas should be included.</p> | |
| LV.1.2 | ERYC Historic England Natural England HCC | <p>Representative viewpoints</p> <p>The Applicant notes [APP-028, Table 4.4] that the viewpoints presented have been agreed by all stakeholders.</p> <p>Is the selection of viewpoints presented by the Applicant satisfactory or do you believe that additional viewpoints are required?</p> <p>If you believe additional viewpoints are required, please provide further details to explain why they are required.</p> | |
| LV.1.3 | ERYC Other Interested Parties | <p>Cumulative effects</p> <p>Are you satisfied with the list of projects included in the assessment of potential cumulative landscape and visual effects [APP-028, Tables 4.23 and 4.24]? If not, identify those projects that you believe should be included and indicate why you believe that they should be included.</p> | |

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| LV.1.4 | Applicant | <p>Cumulative effects</p> <p>The Cumulative Effects Assessment [APP-028, para 4.12.3.5] notes that there are five projects which may, when considered as part of the assessment baseline, give rise to cumulative effects that may be significant. It then goes on to list only four projects. Please confirm the number of projects which may, when considered as part of the assessment baseline, give rise to cumulative effects that may be significant and explain what they are?</p> | <p>The Applicant advises that paragraph 4.12.3.5 of A3.4: Landscape and Visual (APP-028) lists four bullet points; however, 'Dogger Bank Creyke Beck A and B' (consented in 2015) was included in the summary as two projects as it can be considered to comprise two projects combined. This is as per the listing on the project website.</p> <p>The Applicant confirms that the relevant projects are correctly listed in the bullet points below paragraph 4.12.3.5. These are:</p> <ul style="list-style-type: none"> - Jocks Lodge Highway Improvement Scheme; - Dogger Bank Converter Stations (comprising both projects A and B, though noting they are constructed as one); - Albanwise Solar Farm; and - NGET Substation Extension. <p>For the purposes of assessment no updates to the chapter are considered necessary as the location and existence of Dogger Bank A and B has been accounted for.</p> |
| LV.1.5 | Applicant | <p>Cumulative effects</p> <p>The Cumulative Effects Assessment [APP-028, section 4.12] makes reference to "Dogger Bank A and B". In the interests of clarity for all parties, can you confirm that references to this project refer to part of the development originally known as Dogger Bank Creyke Beck, for which the SoS made a Development Consent Order on 17 February 2015? If not can you confirm what is meant by this reference.</p> | <p>The Applicant can confirm that this is correct.</p> |
| LV.1.6 | Applicant | <p>Cumulative effects</p> <p>How does the analysis of receptor-led, inter-related cumulative effects [APP-028, table 4.25] consider the cumulative effects from various construction and operational impacts on the amenity of the worst-affected</p> | <p>Receptor led effects have been considered with the respective technical chapters and the potential for transboundary effects are considered therein.</p> <p>Assessment of effects arising from traffic, noise and air quality during construction, on human receptors, is captured in the following onshore chapters of the Hornsea Four Environmental Statement that was submitted as part of the DCO application:</p> |

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| | <p>residential receptors? (For example, visual, noise, air quality impacts experienced by the occupiers of the residential properties at Burn Park Farm.)</p> <p>Provide signposting which details where inter-related cumulative effects as described above and their mitigation are set out.</p> | <ul style="list-style-type: none"> - A3.7 Traffic and Transport (APP-031); - A3.8 Noise and Vibration (APP-032); and - A3.9 Air Quality (APP-033). <p>A3.4: Landscape and Visual (APP-028) assesses visual effects on the closest properties during construction (paragraph 4.11.1.18 of A3.4: Landscape and Visual (APP-028)) and confirms that large adverse effects will occur at Burn Park Farm, Burn Park Cottages and Poplar Farm (paragraph 4.11.1.23 of A3.4: Landscape and Visual (APP-028)). Mitigation, in the form of early establishment of landscape planting, is set out at paragraph 4.11.1.24 of A3.4: Landscape and Visual (APP-028).</p> <p>During operation, large adverse effects were identified for these properties (paragraph 4.11.2.38 to paragraph 4.11.2. 46 of A3.4: Landscape and Visual (APP-028)), and mitigation measures set out in the form of landscape planting that will become effective over time.</p> <p>Paragraph 4.11.2.43 of A3.4: Landscape and Visual (APP-028) confirms no 'residential visual amenity assessment' was considered necessary. Therefore, there was no visual component to feed into a cumulative assessment of overall 'residential amenity'.</p> <p>Table 8.38 within Section 8.14 of A3.8: Noise and Vibration (APP-032) sets out the assessment for potential inter-related effects for noise and vibration. The result of the assessment considers that there are no significant inter-related impacts from the construction, operation or decommissioning of Hornsea Four on noise and vibration receptors.</p> <p>Section 6.14 of A3.6: Land Use and Agriculture (APP-028) assesses the potential for cumulative effects on agricultural land and disruption to farming activities as a result from effects on water resources, traffic and contaminated land/soils. It was concluded no additional inter-related effects are predicted which would</p> |
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| | | | <p>increase the standalone assessment from slight adverse (and not significant in EIA terms).</p> <p>A4.5.8: Health Impact Assessment (APP-056) brings together the conclusions of technical chapters and the relevant information in terms of population health (i.e. statistics on relevant population groups, health asset profiles, etc.), thereby identifying the scope for all effects to interact to create inter-related effects on a receptor (or group). The Health Impact Assessment concludes that Hornsea Four is not expected to have a significant effect on human health of either the general population or vulnerable groups within the population.</p> |
| LV.1.7 | ERYC Other relevant parties | <p>Outline Landscape Management Plan (LMP)</p> <p>Are you satisfied that the details of location, number, species, size and density of proposed planting around the onshore substation need not be considered during the Examination?</p> | |
| LV.1.8 | Applicant | <p>Computer-generated Zone of Theoretical Visibility (ZTV) maps</p> <p>ZTV maps are indicated [APP-028, para 4.6.2.2] as having been generated for the Onshore substation, assuming a maximum height of 25m above 'ground level' for the Onshore substation and 15m for the Energy Balancing Infrastructure.</p> <p>Are the indicative heights above the ground level datum modelled with finished ground level datum points as confirmed in [AS-024]?</p> | <p>The basis for the ZTV is set out in the notes on Figure 4.2 of A3.4 Landscape and Visual (APP-028). These notes state that:</p> <p><i>"The ZTV is calculated using the below dimensions for the proposed development:</i></p> <ul style="list-style-type: none"> - Substation: 25 m building height and 13 m AOD - Energy storage: 15 m building height and 15 AOD" <p>The ZTV for the OnSS is therefore based on the same finished ground level that has been confirmed in G1.6: Onshore Substation Site (OnSS) and Energy Balancing Infrastructure (EBI) Ground Levels Clarification Memo (AS-024) (i.e. 13.0 m AOD).</p> <p>The ZTV for the EBI is based on a finished ground level 0.5 m higher than that confirmed in G1.6: Onshore Substation Site (OnSS) and Energy Balancing Infrastructure (EBI) Ground Levels Clarification Memo (AS-024) (14.5 m AOD). This is because the ZTV was undertaken prior to the fixing of the finished ground level in AS-024. As such, the ZTV slightly over-emphasises the potential visibility of the EBI.</p> |

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| LV.1.9 | Applicant | <p>Proposed existing and finished ground levels</p> <p>The Outline Design Plan [APP-248, para 6.2.1.1] indicates that finished ground levels for onshore substation infrastructure are likely to be set at approximately 13.0m Above Ordnance Datum (AOD) for the onshore substation and at approximately 14.5m AOD for the energy balancing infrastructure. [AS-024, para 2.1.1.1] confirms that the topographical profile of the onshore substation and energy balancing infrastructure site has been established and [APP-024, para 2.1.1.2] clarifies that finished ground levels as set out above will not be 'approximate'; the Applicant proposes removal of the word 'approximate' from [APP-248, section 6.2]. Since the topographical profile of the onshore substation and energy balancing infrastructure site is confirmed, please also confirm the existing ground level(s) (AOD) of the onshore substation and energy balancing infrastructure site?</p> | <p>The existing ground levels at the OnSS and EBI site gently slope from west to east, between approximately 15.5m AOD in the west and 11.00 m AOD in the east.</p> |
| LV.1.10 | Owners/ operators of Burn Park Farm Other relevant parties Applicant | <p>Residential Visual Amenity Assessment (RVAA)</p> <p>The Applicant notes [APP-028, para 4.11.2.43] that a RVAA has not been undertaken but that it has considered the potential for effects on residential visual amenity or 'living conditions' at Burn Park Farm. The setting and context of, as well as views from, the dwelling at Burn Park Farm are described and the Applicant notes that: "It is not considered likely that these views will be so extensive or inescapable that 'living conditions' at the property would be affected."</p> | <p>Paragraph 4.11.2.38 to paragraph 4.11.2.43 of A3.4: Landscape and Visual (APP-028) discusses the view from Viewpoint 1, which is located on the Public Right of Way (PRoW) south of Burn Park Farm. This viewpoint is considered to be representative of views available from Burn Park Farm and Burn Park Cottages, as well as from the PRoW itself.</p> <p>The photography and photomontages for Viewpoint 1 are presented in Figure 1 to Figure 3 of A6.4.1: Landscape and Visual Resources Wireframes and Photomontages (APP-115). Burn Park Farm is the house on the left-hand side of the view in Figure 1. Burn Park Cottages are not visible in the photograph as they are to the south of the viewpoint, and so would be behind the viewer standing at this location.</p> |

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| | | <p>To the owners/ operators of Burn Park Farm: Does the Applicant's description of the dwelling house give a reasonable depiction of the setting, context and views from the dwelling house? Do you agree that a residential visual amenity assessment is not necessary?</p> <p>To other relevant parties: Do you agree that a residential visual amenity assessment is not necessary?</p> <p>Applicant: Can you confirm if the visual receptors referred to [APP-028, para 4.11.2.38 to para 4.11.2.43] are the ones shown in accompanying photography and photomontages [APP-115]?</p> | |
| LV.1.11 | Applicant | <p>Landscape mitigation planting The Outline Landscape Management Plan [APP-243] commits to early landscape mitigation planting, however not specifically in advance of stripping of soil and other vegetation. The Applicant's Landscape and Visual Assessment [APP-028 para 4.11.1.10] indicates that mitigation planting should ideally be established before the stripping of soil and other vegetation from site. Is the Applicant willing to update the Outline Landscape Management Plan to reflect this?</p> | <p>To facilitate the construction of the OnSS and EBI, it is considered that enabling works would need to be completed prior to the early planting of landscaping (where early planting is feasible). Works such as soil stripping and establishing site levels would need to be completed prior to the planting of landscaping, to preserve flexibility for the construction organisation in the usage of movements of soil volumes. In reference to the construction programme, any early planting would be undertaken at the earliest 10 months into the 43 month total construction duration. However, this would still enable such planting to have been established for over 2 years by the completion of the construction of the OnSS and EBI.</p> <p>Due to the routeing of the onshore ECC to the south, opportunities for early landscape planting south of the OnSS site will be subject to the construction timings of the cables at this location. As such, no commitment can be made at this time.</p> |

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| | | | <p>The area of landscaping immediately adjacent to Burn Park Farm can be planted upon completion of enabling works. F2.8: Outline Landscape Management Plan (APP-243) has been updated to reflect this and accompanies the Deadline 2 submission.</p> <p>Landscaping on the west of the OnSS site will need to be planted towards the end of the construction period, due to logistical requirements connecting the permanent and temporary sites.</p> |
| LV.1.12 | <p>Applicant ERYC Other relevant parties</p> | <p>Landscape mitigation planting</p> <p>The representative photomontage views do not appear to present a change between year 1 to year 10 and beyond which is so substantial that it would change the magnitude and significance of the visual effect of the onshore substation and energy balancing infrastructure buildings – particularly when seen from viewpoints 1 to 4 – as described in the ES. Provide further evidence to support the position that landscape mitigation as proposed would result in the change of magnitude and significance of effect described.</p> <p>In addition, there is an apparent contradiction between descriptions in the Applicant’s Landscape and Visual Assessment for the significance of effect at year 30 for viewpoints 1 to 4 [APP-028, paras 4.11.2.47, 4.11.2.56, 4.11.2.65 and 4.11.2.74] which set out that there would remain an adverse effect, but that this would not be significant and [APP-028, para</p> | <p>A3.4: Landscape and Visual (APP-028) concludes the following in relation to effects at viewpoints 1 to 4 at Year 1 and Year 10:</p> <p>VP1 PRoW South of Burn Park Farm (paragraph 4.11.2.44 to paragraph 4.11.2.47 of A3.4: Landscape and Visual (APP-028)) Year 1: large magnitude, large adverse effect, significant Year 10: medium magnitude, moderate adverse effect, significant</p> <p>VP2 Park Lane, Cottingham (paragraph 4.11.2.53 to paragraph 4.11.2.56 of A3.4: Landscape and Visual (APP-028)) Year 1: large magnitude, large adverse effect, significant Year 10: small magnitude, slight adverse effect, not significant</p> <p>VP3 Footbridge over A1079 (paragraph 4.11.2.62 to paragraph 4.11.2.65 of A3.4: Landscape and Visual (APP-028)) Year 1: medium magnitude, moderate adverse effect, significant Year 10: small magnitude, slight adverse effect, not significant</p> <p>VP4 PRoW East of A164 (paragraph 4.11.2.71 to paragraph 4.11.2.74 of A3.4: Landscape and Visual (APP-028)) Year 1: medium magnitude, moderate adverse effect, significant Year 10: small magnitude, slight adverse effect, not significant</p> <p>In justifying these changes, the above paragraphs in A3.4: Landscape and Visual (APP-028) references the maturation of landscape planting, that will help to</p> |

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| | <p>4.15.1.5] which notes that as “proposed planting matures, some of the identified effects will be reduced, though they are predicted to remain significant in EIA terms.” Provide further clarification which establishes the consistency of these statements.</p> <p>ERYC and Other relevant parties: Would the mitigation planting illustrated by the Applicant [APP-115] be effective in reducing the magnitude and significance of the visual effect of the Proposed Development? If not, why not? What other steps should be considered in order to provide the necessary change in magnitude and significance of the visual effect of the onshore substation and energy balancing infrastructure buildings and/ or structures?</p> | <p>absorb the OnSS and EBI structures into the landscape. In addition, the paragraphs referenced above within A3.4: Landscape and Visual (APP-028) notes that by Year 10 the finishes of the structures will have weathered somewhat, reducing their visual prominence. The paragraphs referenced above within A3.4: Landscape and Visual (APP-028) also refer to mitigation measures set out in F2.13: Outline Design Plan (APP-248).</p> <p>The photomontage views presented in A6.4.1: Landscape and Visual Resources Wireframes and Photomontages (APP-115) does not depict all of the proposed mitigation measures. For example, the Applicant has not shown details of finishes or colours, as these are yet to be determined (see paragraph 4.10.10.6 of A3.4: Landscape and Visual (APP-028)).</p> <p>In addition, it is not possible for the photomontages to accurately represent how the appearance of the OnSS will change over the initial 10 years of its operating period. The growth and form of mitigation planting can only be indicatively shown, and so a conservative estimate of plant growth (height and density) has been applied in order to depict a ‘worst case’. No weathering of the structures can be shown as the exact rate of weathering is an unknown. Furthermore, the photomontages are unable to depict the way that viewers will become accustomed over time to seeing the OnSS and EBI as part of the landscape.</p> <p>A3.4: Landscape and Visual (APP-028) concludes that, by Year 30, visual effects at viewpoints 1 to 4 will be slight adverse and not significant in each case [APP-028, paragraphs 4.11.2.47, 4.11.2.56, 4.11.2.65 and 4.11.2.74].</p> <p>Paragraph 4.15.1.5 of A3.4: Landscape and Visual (APP-028) states that, as the proposed landscape planting matures, “some of the identified effects will be reduced, though they are predicted to remain significant in EIA terms.” To clarify, this relates to the Year 10 effects, which are summarised in Table 4.26 which follows this statement. As noted above, some significant landscape effects are predicted to remain at Year 10.</p> |
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| LV.1.13 | Applicant | <p>Energy balancing infrastructure</p> <p>The Applicant's signposting document [OD-002] notes that the assessment presented within the ES assesses the MDS for both "enclosed" and "open yard" approaches to energy balancing infrastructure design and configuration. Provide further detail to clarify which approach each of the conclusions and the summary text set out in Table 1 and Section 4.1 [OD-002] applies to.</p> | <p>The summary text in Table 1 of Applicants Signposting Response (OD-002) draws on A3.4: Landscape and Visual (APP-028). The MDS for the LVIA is set out in Table 4.12 of A3.4: Landscape and Visual (APP-028), and it is considered that this MDS covers both "enclosed" and "open yard" scenarios.</p> <p>The MDS was used as the "worst case scenario" in all assessments used to inform the conclusions set out in Table 1 and Section 4.1 of Applicants Signposting Response (OD-002).</p> |
| LV.1.14 | Applicant Natural England | <p>Assessment of the Yorkshire Wolds as an Area of Outstanding Natural Beauty</p> <p>Could the Applicant please Provide comment, or signposting which indicates where comment is provided, in response to [RR-029, Appendix H, page 3] from Natural England on the implications of the possible designation of the Yorkshire Wolds as an AONB for its Landscape and Visual Assessment. Would a change in designation alter the significance of effects and would any additional mitigation be necessary or possible?</p> <p>Could Natural England provide an overview of the assessment process and likely timeframes for any potential decision on designation?</p> | <p>The Applicant is aware of Natural England's current proposals to consider the Yorkshire Wolds for AONB status. At the time of writing, no potential boundary or statement of special qualities has been published, and so no conclusions can be drawn as to the potential of the Hornsea Four Project to impact on this future designation.</p> <p>The effects of the OnSS and onshore ECC on landscape character are fully assessed within A3.4: Landscape and Visual (APP-028). This includes consideration of the 'Open High Rolling Farmland' landscape, which covers the Yorkshire Wolds National Character Area (NCA), and the locally designated Yorkshire Wolds Important Landscape Area (ILA). The Applicant envisages that the area covered by the Yorkshire Wolds NCA and ILA is likely to form the basis for the extent of the AONB, but this is subject to confirmation by Natural England.</p> <p>The onshore ECC passes through the 'Open High Rolling Farmland' for a short section, while the OnSS is in a different landscape, over 1.5km to the east. A3.4: Landscape and Visual (APP-028) concludes that significant effects of the OnSS on landscape character would be limited to the area east of the A164, which is outside both the NCA and the ILA. Direct effects on the 'Open High Rolling Farmland' from construction of the export cable corridor will be temporary and not significant.</p> |

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| | | | <p>The Yorkshire Wolds ILA was identified in the site selection process for the OnSS (see Table 4 of A3.3: Selection and Refinement of Onshore Infrastructure (APP-038), which has limited the effect of the OnSS on the designation through appropriate consideration of this area.</p> <p>The presence of a national designation such as an AONB indicates a high level of value placed on the landscape and may influence the effects identified in A3.4: Landscape and Visual (APP-028) by increasing the sensitivity of the landscape receptor. The magnitude of change, which is assessed as 'small' for the 'Open High Rolling Farmland', would not be altered. As such, the significance of the effects identified within A3.4: Landscape and Visual (APP-028) is unlikely to change, and no additional mitigation measures are considered likely to be required.</p> |
| LV.1.15 | Applicant | <p>Monitoring of mitigation planting The ExA notes that monitoring of mitigation planting as described in the outline Landscape Management Plan [APP-243] is secured through Requirement 9 of the draft DCO [APP-203]. Provide further detail, or signposting which indicates where further detail is provided, which clarifies what – if any – remedial action would be implemented as a result of would be implemented as a result of the proposed monitoring. If no remedial action is to be implemented, please explain why not.</p> | <p>Requirement 9 of the draft DCO states that "<i>any tree or shrub planted as part of an approved landscape management plan that, within a period of five years after planting, is removed by the undertaker, dies or becomes, in the opinion of the relevant planning authority, seriously damaged or diseased must be replaced in the first available planting season with a specimen of the same species and size as that originally planted</i>".</p> <p>The purpose of the monitoring described in F2.8: Outline Landscape Management Plan (APP-243) is to determine whether failure of planting has occurred against the criteria set out in Requirement 9 of the draft DCO. In the event that such failure has occurred, the remedial action is also set out in DCO Requirement 9, namely that all failed plants will be replaced by the Applicant (or their appointed landscape contractor).</p> |
| LV.1.16 | Applicant | <p>Wind turbine south of Poplar Farm During its Unaccompanied Site Inspection (USI) [EV-001 and EV-002], the ExA noted the presence of a solitary wind turbine generator (WTG) outwith the proposed order limits to the north of the onshore substation site, between the site and Poplar Farm. This was found to be a helpful</p> | <p>Documents relating to the wind turbine at Poplar Farm are available on the ERYC planning portal for planning permission 14/01898/PLF and subsequent variation permission 15/00087/VAR.</p> <p>The height to the top of nacelle is not stated in the documents, although the hub height (mid-point of the nacelle) is given as 30.52 m. The height to tip of blades at their highest point during rotation is given as 48.01 m.</p> |

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| | | <p>landmark for locating the onshore substation and Energy Balancing Infrastructure site during the USI. The ExA also holds the view that in the absence of other physical markers depicting the height of the onshore substation and Energy Balancing Infrastructure on site, this WTG may serve as a helpful visual device to gauge the scale of the onsite buildings.</p> <p>i. Please indicate the height of this WTG (height to top of nacelle and height to tip of blades at their highest point during rotation).</p> <p>ii. Please indicate the datum level of the base of this WTG and provide heights relative to this datum.</p> | <p>The datum level at the base of the wind turbine is not stated in the application documents. The location map provided as part of the planning application shows that the turbine is located on or very close to the 15 m contour.</p> <p>Assuming a datum level of 15.0 m, the Applicant advises that the hub height of the turbine is 45.52 m AOD, and the maximum blade tip height is 63.01 m AOD.</p> |
| LV.1.17 | Applicant ERYC | <p>Landscape maintenance recommendations and actions to remedy failure of planting scheme to achieve objectives</p> <p>Significant adverse landscape and visual effects are assessed at year one, year 10 and year 30 [APP-028] with the magnitude of effect not reducing to small until year 30 in a number of cases. Where landscape mitigation is relied upon to reduce the magnitude of effect, how is this mitigation secured if the success of planting is to be monitored and maintained for a limited period of five years after planting [APP-243, para 5.1.1.1]? How will longer term management and enhancement [APP-243, para5.2] of planting within the permanent onshore substation order limits be secured? Who will be responsible for this? In addition, please provide further explanation, or signposting which indicates where explanation</p> | <p>The Applicant has committed to a five-year landscape monitoring and maintenance period. The intention of which is to ensure the successful establishment of the proposed mitigation planting. During this period any plants which die, are removed, or become seriously damaged or diseased, in the opinion of ERYC, shall be replaced in the first available planting season with a specimen of the same species and size as that originally planted. Unless otherwise approved in writing by ERYC. This is secured in Requirement 9(2), Schedule 1, Part 3, of the draft DCO.</p> <p>Following successful establishment of the proposed planting, the woodland areas and other landscape planting will be maintained along with all other elements of the site (such as drainage). In the longer term, maintenance of the landscape planting may be required, as indicated in Section 5.2 of F2.8: Outline Landscape Management Plan (APP-243). Longer-term maintenance of the landscape planting will be secured through the Landscape Management Plan that will be submitted to ERYC for approval prior to commencement of any works (paragraph 1.2.1.2 of F2.8: Outline Landscape Management Plan (APP-243)). The nature and extent of the monitoring and maintenance required will be dependent on the location, number, species, size and planting density of the approved</p> |

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| | <p>is set out, which describes what the remedy would be if, in the opinion of the Local Planning Authority, there was significant failure of the planting scheme or if it was failing to progress to the extent that it would not achieve the objectives of the scheme.</p> <p>ERYC: Are the landscape maintenance, management and enhancement strategies proposed satisfactory? If not, set out your reasoning for this position and explain what further actions would be required.</p> | <p>landscape planting and it is therefore not appropriate to include that level of detail in the F2.8: Outline Landscape Management Plan (APP-243).</p> |
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12 Marine and Coastal Geology, Oceanography and Physical Processes

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| MC.1.1 | Natural England | <p>Numbering of Natural England's Relevant Representation</p> <p>The paragraph numbering of Natural England's Relevant Representation [RR-029] (Smithic Bank section) runs directly from 5.44 to 5.55. Could Natural England confirm if any text is missing or if this is simply a numbering error and amend the document accordingly.</p> | |
| MC.1.2 | Applicant MMO Natural England | <p>Further geophysical surveys</p> <p>Chapter 4 of the ES [APP-010] notes that pre-construction, high-resolution geophysical surveys were yet to be undertaken at the time of writing, but that they were planned for 2021 and that interpretation will be available Q4</p> | <p>The Applicant can confirm that the additional high-resolution geophysical surveys undertaken in 2021 were not available in their entirety for inclusion in the ES. Of note is that the interpretation of the nearshore geophysical survey data was available for the ES and has been included as Figure 20 in A5.1.1: Marine Processes Technical Report (APP-067). A workstream is currently underway to review the design envelope (maximum design scenarios) against this survey data.</p> |

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| | | 2021. Could the Applicant provide an update and all invited parties comment on any implications? | The Applicant will provide an update on this workstream by means of a Clarification Note on the Justification of Offshore Maximum Design Scenarios which will be submitted at Deadline 3. |
| MC.1.3 | Applicant Natural England | <p>Impacts of any further geophysical surveys</p> <p>Please respond to the MMO's question [RR-020] asking if any further geophysical surveys are proposed, and - if they involve noise generating activities such as multibeam echosounders and sub-bottom profilers - if the potential impact of these on marine wildlife been appropriately considered in the ES. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>As stated in the Applicant's response to RR-020-4.5.5 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)), the Applicant can confirm that a high-resolution side scan sonar survey will be undertaken as part of the pre-construction monitoring secured by Condition 17 of Schedules 1.1 and Schedule 12 of C1.1: Draft DCO including Draft DML (REP1-002).</p> <p>As noted in Section 3.3.2 of F2.7: Outline Marine Monitoring Plan (APP-242), standard geophysical surveys will be undertaken pre-consent. These standard seabed surveys will inform a wide range of engineering elements relevant to the marine processes assessment, including changes in seabed topography and scour around foundations. Where these surveys are being undertaken as part of the standard pre-construction geophysical survey campaign, the specification of the surveys will be agreed with the MMO and its advisors during consultation in the post-consent phase.</p> <p>See the Applicant's response to RR-020-4.5.17 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)), in relation to consideration of these surveys in the context of marine wildlife.</p> |
| MC.1.4 | Applicant MMO | <p>Sign-off of any further geophysical surveys</p> <p>Natural England [RR-029] suggests that further commitments and regulator sign-off would be necessary in relation to any pre-construction geophysical surveys. What is the Applicant's and MMO's reaction to this suggestion?</p> | The Applicant considers this to be unnecessary. Please see the Applicant's response to RR-029-5.34 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)). |
| MC.1.5 | Applicant MMO | <p>Marine modelling and climate change scenarios</p> <p>Natural England [RR-029] suggests that the marine process modelling and assessment set out in the ES should be re-run to account for various climate change scenarios. Is further</p> | <p>See the Applicant's response to RR-029-5.61 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>The Applicant considers that there is no requirement for additional modelling to be undertaken to account for various climate change scenarios. This consideration is based not only on the timescales involved with the project phases</p> |

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| | | <p>modelling required to rectify this? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>(for example the construction period, for which sediment plume impacts are relevant), has a maximum duration of five years and one month (A1.4: Project Description (REP1-004)) but also the predicted changes due to climate change in the wave regime (which may reduce over the operational period) and mean sea-level variations (predicted to be between 0.15 and 0.22 m at the end of the operational period) (Section 1.7.11.4 of A2.1: Marine Geology, Oceanography and Physical Processes (APP-013)). Furthermore, a range of everyday and extreme conditions (i.e. 50% non-exceedance to 100 year return period events) have been assessed within the wave modelling (Appendix C of A5.1.1: Marine Processes Technical Report (APP-067)) which could be considered to reasonably include both present day and future baseline scenarios.</p> <p>Further detail on the topic of climate change can be found in G1.9: Applicant's comments on Relevant Representations (REP1-038), specifically RR-029-5.61, RR-029-APDX:E-EK, RR-029-APDX:E-5, RR-029-APDX:E-12 and RR-029-APDX:E-13.</p> |
| MC.1.6 | Applicant | <p>Smithic Bank</p> <p>The MMO [RR-020] suggests an inadequate bathymetry and coastal processes baseline in some parts of the study area, notably the cable route around Smithic Bank and the coastline. The MMO proposes additional swath bathymetry and geotechnical surveys from just offshore of the cable crossing with Dogger Bank A and B area and the Holderness coastline. The MMO goes on to question part of the subsequent assessment of cumulative and inter-related effects on the physical and biological environment, especially at the Smithic Bank and in the Holderness coastal zone and suggests additional assessment. Natural England [RR-029] raises related concerns that the Proposed Development</p> | <p>Please see the Applicant's response to RR-020-3.2.3 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to the bathymetry and coastal processes baseline.</p> <p>Please see the Applicant's response to RR-020-3.2.8 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to the assessment of cumulative and inter-related effects on the physical and biological environment.</p> <p>Please see the Applicant's response to RR-029-5.44 and RR-029-APDX:E at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to impacts on the form and function of Smithic Bank and the implications for designated sites.</p> <p>The Applicant considers that, based upon the relatively high stability of Smithic Bank for the alignment of the export cable, as determined from bank profile data analysis over a 39-year period (Figure 43 of A5.1.1: Marine Processes Technical</p> |

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| | | <p>(alone and in-combination with other proposals that it lists) might adversely affect the form and function of Smithic Bank, and, in turn, affect that of other marine process receptors, including some protected sites. Additional assessments are suggested, as set out in its Relevant Representation.</p> <p>What is the Applicant's position in relation to these points?</p> <p>Natural England has also requested the avoidance of rock protection within this area. Is the Applicant willing to agree with this, and would it require a specific condition in the DML? If so, please can the Applicant provide suggested wording.</p> <p>(If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Report (APP-067)), the potential requirement for cable protection across Smithic Bank is low.</p> <p>A technical review of the MDS in relation to the potential requirements for cable protection across Smithic Bank is currently being undertaken by the Applicant. This will include further consideration of rock protection requirements inshore of the 16 m contour. The outputs from this work will be presented to Natural England and the MMO. The Applicant will provide an update on this workstream by means of a Clarification Note on the Justification of Offshore Maximum Design Scenarios which will be submitted at Deadline 3.</p> <p>As presented in paragraph 1.11.2.5 of A2.1: Marine Geology, Oceanography and Physical Processes (APP-013), a cable burial risk assessment (CBRA) will be undertaken post-consent to understand where burial of cables may be problematic and/ or susceptible to exposures over the lifetime of the development. The assessments undertaken to-date by the Applicant and within A5.1.1: Marine Processes Technical Report (APP-067) indicate that the cables over Smithic Bank are very unlikely to be exposed by natural processes over the lifetime of Hornsea Four, meaning the chance for cable reburial and rock protection would appear to be remote. However, until the completion of the CBRA, given the Applicant's conclusion of no significant effects on Smithic Bank (or wider receptors) in the unlikely event of any cable reburial/rock protection, the Applicant considers it reasonable and precautionary to maintain provision for rock protection over and around Smithic Bank within the MDS at this stage in order to ensure the future deliverability of the project.</p> <p>Further detail on the topic of rock protection on Smithic Bank can be found in G1.9: Applicant's comments on Relevant Representations (REP1-038), specifically RR-029-5.43, RR-029-5.55, RR-029-APDX:E-EF, RR-029-APDX:E-22, RR-029-APDX:E-51B and RR-029-APDX:E-63.</p> |
| MC.1.7 | MMO Natural England | <p>Rock backfill</p> <p>The ES [APP-013] says that additional material may be required in the backfilling of the eight</p> | |

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| | | Horizontal Directional Drilling [HDD] exit pits in the landfall area to make up for any loss in excavated sediment volume. It suggests that rocks may be used. Is this acceptable to the MMO and Natural England? If not, why not, and are there any alternatives that you would suggest to the Applicant? | |
| MC.1.8 | Applicant | <p>Dogger Bank A and B export cable protection</p> <p>Whilst an overarching map showing the location of various pipelines can be found in Chapter 11 of the ES [APP-023, figure 11.8], could the Applicant provide a larger scale navigational chart (or signpost where in the application documents such a chart can be found) to show the following: benthic levels related to Ordnance Datum; known benthic features; existing navigational aids; the approximate proposed location of the cable crossings of the Dogger Bank A and B export cables and the likely plan extent and configuration of proposed rock protection as noted in the Marine Processes Technical Report [APP-067, para 4.6.4.2].</p> | The Applicant will submit a new, larger scale navigational chart as requested at Deadline 3. |
| MC.1.9 | Applicant MMO | <p>Cable protection volume</p> <p>Table 4.26 of ES Volume A1 Chapter 4 Project Description [APP-010] details a total area of cable protection of 1,510,000m² and a total volume of 1,449,000m³. Is there a discrepancy between the volumes presented in the ES and Requirement 5(6) of the draft DCO [APP-203]? If so, why, and does it need to be corrected?</p> | The Applicant clarifies that there is no discrepancy in the figures. The total stated in C1.1: Draft DCO and DML (REP1-002) is the total including cable/pipe crossings, whereas the figure in A1.4: Project Description (REP1-004) does not include cable/pipe crossings, which are listed further down (last two rows) in Table 4.26 of A1.4: Project Description (REP1-004) . |

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| MC.1.10 | Applicant | <p>Exclusion of protection in the nearshore area</p> <p>Paragraphs 4.8.5.10 to 4.8.5.21 of ES Volume A1 Chapter 4 Project Description [APP-010] explain that no cable protection would be deployed within 350m seaward of the mean low water springs (MLWS) datum. This is said to be secured through DML condition 1(3)(3). However, that condition refers to MHWS tidal datum. Can the Applicant confirm the correct reference and if necessary, amend the DML?</p> | <p>The Applicant confirms that Commitment 188, which states “No cable protection will be employed within 350 m seaward of MLWS” is correct and this reference will be corrected in the draft DCO submitted at Deadline 2.</p> |
| MC.1.11 | Applicant | <p>Appropriateness of cable replenishment in the DML</p> <p>Condition 4 of the draft DMLs allow for cable replenishment. However, Natural England’s joint position with the MMO (as set out in entry 34 of Appendix A of [RR-020]) is that it is not appropriate for a marine licence to be granted allowing cable protection to be deployed throughout the operation and maintenance phase of a project, therefore a separate marine licence should be sought for any cable protection to be deployed during these phases. Will the Applicant remove ‘cable replenishment’ from Condition 4 of the draft DMLs? (If not fully addressed in the Applicant’s Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant’s response to RR-029-APDX:A-34 at Deadline 1 (G1.9: Applicant’s comments on Relevant Representations (REP1-038)).</p> |
| MC.1.12 | Applicant | <p>Cumulative assessment of cable crossings</p> <p>The MMO [RR-020] notes an outstanding pre-application request to the Applicant to undertake further modelling of the cable crossings in respect of changes to sediment transport, especially cumulatively for the 54</p> | <p>Please see the Applicant’s response to RR-020-3.2.6 at Deadline 1 (G1.9: Applicant’s comments on Relevant Representations (REP1-038)).</p> |

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| | | <p>crossings. Is the Applicant intending to comply with this request? If so, this would be required in the Examination as soon as possible. When would the results be available? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | |
| MC.1.13 | Applicant Natural England | <p>Assessment of the Flamborough Front</p> <p>The MMO [RR-020] notes a second outstanding pre-application request for further assessment through research and satellite thermal imagery of the impact of the Proposed Development on the productivity of the Flamborough Front. Can the Applicant signpost any assessment of impacts on the productivity of the Flamborough Front? Is it the Applicant's intention to undertake additional work and assessment? If so, this would be required in the Examination as soon as possible. When would the results be available? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-3.2.7 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to research and satellite thermal imagery of the impact of Hornsea Four on the productivity of the Flamborough Front.</p> <p>A marine processes analysis is underway in response to the Natural England and MMO representations, in order to provide further assurance to the position of Flamborough Front and the potential effects of Hornsea Four upon this macro-scale feature (10's to 100's of km), both in isolation and in-combination with other developments. The scope of this analysis is presented in G1.46: Marine Processes Supplementary Works Scope of Works (REP1-068) which was submitted into Examination at Deadline 1. An update on this workstream is expected to be submitted into Examination by Deadline 3.</p> <p>The Applicant intends to draw upon the findings of G1.46: Marine Processes Supplementary Works Scope of Works (REP1-068) to inform subsequent deliverables. This work will draw together the various physical and biological aspects of the Flamborough Front in relation to productivity and indirect effects as set out in Natural England and the MMOs Relevant Representations (e.g. RR-029-5.56, RR-029-APDX:B-97 and RR-020-3.2.7).</p> <p>The Applicant notes that data sources used within A2.1: Marine Geology, Oceanography and Physical Processes (APP-013) and A5.1.1: Marine Processes Technical Report (APP-067) are those most recently published and as such, provide more detailed and reliable mapping than older references. This is exemplified when compared to the marine processes documents from Hornsea</p> |

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| | | | <p>Three Offshore Wind Farm, which refer to van Leeuwen et al. (2015) which is based on a coarse model (6 nm, equivalent to 11.1 km). In contrast, Hornsea Four uses more contemporary data which refers to both a more refined model (less than 2 km) and satellite observations (resolution 1.1 km – as set out in paragraph 3.4.3.10 of A5.1.1: Marine Processes Technical Report (APP-067)).</p> <p>Further detail on the topic of the Flamborough Front can be found in G1.9: Applicant’s comments on Relevant Representations (REP1-038), specifically RR-020-3.2.7, RR-029-APDX:E-8, RR-029-5.56, RR-029-5.57, RR-029-APDX:E-73, RR-029-APDX:E-74.</p> |
| MC.1.14 | Applicant MMO Natural England | <p>Location of the Flamborough Front</p> <p>The information provided to the Examination suggests different views are held about the location of the Flamborough Front. The ES [APP-013, paras 1.7.9.2 and 1.7.9.3] suggests it is south of the proposed array area. Natural England’s Relevant Representation [RR-029, Appendix E, entries 8, 74 and 97] argues that Figure 37 of the Marine Processes Technical Report [APP-067] shows the array area to be located within a zone of 90-100% occurrence of the Front. If the location of the Front is not fixed, to what extent does it vary and over what time frame? What implications does this have for turbulent wakes and their effects? What are the implications of the inclusion of the non-cylindrical, gravity base structure foundations in the array, and what level of certainty can be applied to the consequent wakes, their interactions, and potential direct impacts on the Flamborough Front and indirect impacts on seabirds and marine mammals through changes to its productivity?</p> | <p>The Applicant considers that the interpretation of the position of the Flamborough Front is based upon the most-up-to-date and best available information as presented in A5.1.1: Marine Processes Technical Report (APP-067) (Figure 37) and A2.1: Marine Geology, Oceanography and Physical Processes (APP-013) (paragraphs 1.11.2.18 to 1.11.2.33). The Applicant considers that the information presented from different sources (satellite observations and modelling) validates the location of the Flamborough Front, which varies temporally (seasonal, annual, decadal) and spatially (10’s to 100’s of km, indicating that the front exists as a macro-scale (occurring over 10’s to 100’s of km) composite feature (water depth, water temperature, salinity and inferred productivity) Furthermore, the parameters on which the front is defined will determine its spatial and temporal extent. The latter is important and needs to be clearly defined when discussing or inferring characteristics of the feature.</p> <p>The Applicant considers that the following information, taken from A5.1.1: Marine Processes Technical Report (APP-067) and A2.1: Marine Geology, Oceanography and Physical Processes (APP-013) are pertinent to an assessment of the Flamborough Front’s location:</p> <ul style="list-style-type: none"> • The Flamborough Front is a seasonally persistent (non-permanent) feature which develops between a tidally well-mixed water body to the south and a deeper water body to the north that becomes thermally stratified in summer; • The ability of the water to the north to become stratified is partly related to a greater depth and where the magnitude of tidal flows also reduces |

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| | | | <p>(weaker tidal mixing) compared to shallower water to the south. The 40 to 50 m isobaths are a generally accepted guide to this partitioning (Suberg, 2015);</p> <ul style="list-style-type: none">• The front is not a static feature and does not exist at a fixed location. The feature moves on a daily basis with the effect of the tide to produce a 'zone' within which the front can exist. Main intra-annual (within years) variations in the location of the front are due to lunar (i.e. spring to neap) tidal cycles (Suberg, 2015);• The inter-annual (between years) location of a front is predominately controlled by differences in solar irradiance (i.e. different heating each year) (Suberg, 2015);• Satellite observations can be analysed to deduce spatial gradients in sea surface temperature to help establish the front's location. Satellite data from a 10-year period has deduced this zone as a percentage of time the front was detected. Figure 37 of A5.1.1: Marine Processes Technical Report (APP-067) represents the most frequent areas of detection in red and the least in black. The spatial variance of areas with strong fronts represented in this figure is a product of both intra-annual and inter-annual variability; and• Salinity is not an indicator for the location of the Flamborough Front. <p>Based upon observations (satellite data; Miller and Christodoulou, 2014) which remains the most accurate source of information (please see the Applicant response to MC.1.13), during the summer, there is no overlap of the array area with the 90-100% (dark red) occurrence. The majority of the 90-100% occurrence area is to the south-west of the array area off of Spurn Point. In the south-west and north-west corners of the Hornsea Four array area overlap with a 80-90% (light red) occurrence of the front during the summer. However, the majority of the array area ranges from 40-50% (dark green) to 60-70% (yellow) occurrence during the summer. The lower occurrence is within the south-east and eastern areas of the array. Of further note is that the amount of potential overlap of Hornsea Four with the Flamborough Front is small compared to the full extent of the feature.</p> |
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The Applicant has confirmed that the presence of foundations will generate small-scale turbulent wake effects in their lee which have the potential to enhance local mixing. Turbulent wakes would reach a maximum extent during times of peak tidal flow which will quickly dissipate in magnitude in a downstream direction (aligned with ebb and flood tides) and over a shorter distance than the minimum separation between an adjacent foundation in the same direction as the wake. In other words, where and when wake effects occur, their influence would be limited to the immediate vicinity of each individual foundation, and the effects would not combine or interact cumulatively to create a larger effect at an array. Turbulent wakes would also diminish in extent outside of times of peak flow reducing to nil in extent at times of slack water (when the tide is turning).

A large box-type gravity base foundation would not expect to develop a longer wake *per se*, than another type of foundation. However, given the larger diameter (i.e. the dimension facing the incident flow) of gravity base foundation types they would likely result in a wider wake (or edge generated wakes when there is flow separation) and have therefore been considered as the worst case. As noted above, wakes are not expected to interact cumulatively to lead to any greater array scale effect due to their wider spacing compared to wake scales. As detailed in paragraph 1.11.2.28 of [A2.1: Marine Geology, Oceanography and Physical Processes \(APP-013\)](#), the available evidence to help map the location of the front (from modelling and satellites) suggests the location of this feature is typically further to the south of Hornsea Four by around 11 km (at the closest point in the direction of the flood tide). During the flood tide to the south, turbulent wakes would extend to the south-east from foundations located along the southern boundary of the array, however, at the same time the front would advect over the same scales and the two features would not interact.

As concluded in paragraphs 1.11.2.18 to 1.11.2.33 of [A2.1: Marine Geology, Oceanography and Physical Processes \(APP-013\)](#), it is the Applicant's position that the magnitude of change on the Flamborough Front from the presence of structures in the Hornsea Four array is negligible. Given the magnitude of this

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| | | | <p>impact, no measurable indirect impacts on ecology including benthic ecology, birds, mammals or fish are anticipated. However, to provide further assurance, an independent study is underway, as discussed with Natural England and the MMO, seeking to satisfy this comment with respect to the position of Flamborough Front and the potential impacts of Hornsea Four upon this seasonal feature, both in isolation and in-combination with other developments. The scope of this analysis is presented in G1.46: Marine Processes Supplementary Works Scope of Works (REP1-068) which was submitted into Examination at Deadline 1. An update on this workstream is expected to be submitted into Examination by Deadline 3.</p> <p>Further detail on the topic of the location of the Flamborough Front can be found in G1.9: Applicant's comments on Relevant Representations (REP1-038), specifically RR-029-APDX:E-8, RR-029-5.56, RR-029-5.57, RR-029-APDX:E-73, RR-029-APDX:E-74.</p> |
| MC.1.15 | Applicant MMO | <p>Sensitivity of the Flamborough Front</p> <p>Natural England [RR-029, Appendix E, entry 56] suggests that the Flamborough Front feature should have a high sensitivity rather than medium (as allocated in the ES [APP-013]), given that the novelty of the situation and information gaps should lead to a precautionary approach that cannot, on current understanding, rule out more significant impacts and Adverse Effects on Integrity in relation to three European sites. Can the Applicant provide anything further to close such gaps and provide corroborative evidence for the medium sensitivity, or should this be changed to high? If so, a reassessment and further consideration of mitigation would be required. This would be required in the Examination as soon as possible. When would any results be available? (If not fully addressed</p> | <p>See the Applicant's response to RR-029-5.56 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to research and satellite thermal imagery of the impact of Hornsea Four on the productivity of the Flamborough Front.</p> <p>The Applicant notes that the Flamborough Front feature has been considered based on the best available baseline information at the time of writing, using both observational (satellite) and modelling results. In addition, expert judgement has been used to interpret these data and to inform the assessment. It should also be noted that Hornsea Two Offshore Wind Farm is present within the Flamborough Front and no monitoring was deemed appropriate, which further supports the findings of the assessment.</p> <p>The Applicant considers that there is no requirement to change the sensitivity of the Flamborough Front to high and that, on the best available evidence, it has been appropriately assigned as medium sensitivity. However, the magnitude of any impact on the Flamborough Front is assessed as negligible because the influence from any turbulent flow wakes is likely to remain spatially distant more often (see paragraph 1.11.2.31 of A2.1: Marine Geology, Oceanography and</p> |

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| | | <p>in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Physical Processes (APP-013)). Given that the magnitude of the impact is negligible (A5.1.1: Marine Processes Technical Report (APP-067) and Volume A2, Chapter 1: Marine Geology, Oceanography and Physical Processes (APP-013)), a change to high sensitivity would result in a slight (not significant) rather than neutral (not significant) impact. As such this would not change the conclusion of the EIA and a non-significant effect would still be predicted. The Applicant's position is that no re-assessment or further consideration of mitigation is required.</p> <p>Further detail on the topic of the sensitivity of the Flamborough Front can be found in G1.9: Applicant's comments on Relevant Representations (REP1-038), specifically RR-029-5.56 and RR-029-5.57.</p> |
| MC.1.16 | Applicant | <p>Dredge sediment sampling and analysis</p> <p>Could the Applicant signpost the location in the application documents of the detailed results of dredge area sediment sampling and analysis. Is it the Applicant's intention to provide these to the MMO in the MMO's preferred template [RR-020], and, if so, when? If not, why not?</p> | <p>The Applicant can confirm that the MMO has been provided with sediment sampling results in the MMO's preferred template. Additionally, the Applicant highlights that the results of the sampling regime for both the array area and ECC are presented in Appendix A and D of A5.2.1: Benthic and Intertidal Ecology Technical Report (APP-068), respectively. The Applicant has also submitted a clarification note as part of their Deadline 1 submission (G1.44: Hornsea Four Contaminated Sediments Clarification Note (REP1-066)). This clarification note collates the sediment sampling and analysis information for sediment contamination.</p> |
| MC.1.17 | Applicant MMO | <p>Dredgings disposal site</p> <p>Is there any progress in discussions between the Applicant and the MMO over the updating of application documents in respect of defining a preferred dredgings disposal site, and over the final agreement about the site or sites to be used? If this matter is not yet resolved, is it likely to be so before the close of the Examination?</p> | <p>The Applicant confirms disposal sites will be split to accommodate the Dogger Bank A&B ECC (intertidal and offshore). This will be done by excluding the Dogger Bank A&B disposal sites from the defined disposal sites for the Proposed Development. The draft DCO marine disposal sites will be updated at Deadline 2 accordingly (see RR-020-3.3.16 at Deadline 1 in G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>The Applicant submits at Deadline 2 a plan showing the overlapping Order limits between Dogger Bank Creyke Beck DCO and the application (see G2.12: Interaction Between Hornsea Four and Dogger Bank Creyke Beck DCO Order Limits).</p> |
| MC.1.18 | Applicant | <p>Monitoring of dredge sediment</p> <p>The MMO [RR-020] requests ongoing monitoring of samples of sediment from the</p> | <p>Please see the Applicant's response to RR-020-4.5.4 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |

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| | | <p>proposed dredge area until the Proposed Development's construction activities are complete. The suggestion is that this should take place every five years, starting in 2024. Can the Applicant signpost where this is committed to, or, if it is not, explain why? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | |
| MC.1.19 | Applicant Natural England | <p>Intertidal access ramp</p> <p>In its Relevant Representation [RR-029], Natural England highlights the possibility that the proposed temporary access ramp in the intertidal area could cause adverse environmental effects. Is it possible that such effects could include impacts on MCZs as well as the Dimlington Cliffs, Flamborough Head and Humber Estuary SSSIs?</p> <p>The Applicant has submitted a MCZ assessment [APP-070] that concludes that the Proposed Development would not hinder conservation objectives. Does this require updating in the light of the potential impact from the intertidal access ramp?</p> <p>Natural England has suggested that the intertidal access ramp has not been assessed in the ES. If it has, can the Applicant please signpost where? If it has not, why has it not?</p> <p>Does the Applicant intend to carry out any further assessment of the intertidal access ramp in relation to coastal processes, geomorphology, benthic and intertidal habitats, and protected sites? If so, this is required as soon as possible. When would it be</p> | <p>Please see the Applicant's response to RR-029-5.36 and RR-029-5.37 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>In addition to the responses noted above, the Applicant highlights that the artificial headlands in front of Barmston Beach Holiday Park and Barmston Drain (and the protruding outfall structure which acts like a groyne) act as permanent features (installed in the 1970s) with a far greater influence for this section of coastline.</p> <p>The Applicant has provided detailed justification in responses to RR-029-APDX:E comments from Natural England (G1.9: Applicant's comments on Relevant Representations (REP1-038) submitted at Deadline 1), noting that no measurable impacts would be observed at the designated sites such as Flamborough Head SAC, Humber Estuary SAC, SPA, Ramsar and SSSI, Holderness Inshore MCZ and Dimlington Cliffs SSSI as a result of the temporary access ramp. As such, the Applicant does not intend to update or carry out further assessment as this would be unnecessary and disproportionate to the (non-significant) impacts arising.</p> |

| | | submitted into the Examination? If not, why not? | |
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| MC.1.20 | Applicant Natural England | <p>Identification of marine process receptors</p> <p>Natural England's Relevant Representation [RR-029] notes disagreement with the Applicant's scope of marine process receptors. Has this matter been progressed between the parties? If not, why not, and will it be resolved before the close of the Examination? If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant is continuing to engage with Natural England through the SoCG process. This is one of the matters being progressed and the progress will be reported through revised SoCG documents throughout the Examination.</p> <p>A marine processes analysis is underway in response to the relevant representations, as discussed with Natural England and the MMO. The scope of this analysis is presented in G1.46: Marine Processes Supplementary Works Scope of Works (REP1-068) which was submitted into Examination at Deadline 1 and comments have been received on this scope from Natural England. These Natural England recommendations will be addressed within this workstream as appropriate and further meetings will be held with the MMO and Natural England on the outputs on this workstream. An update on this workstream is expected to be submitted into Examination by Deadline 3.</p> <p>Please also see the Applicant's response to RR-029-5.38 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to the identification of marine process receptors.</p> |
| MC.1.21 | Applicant | <p>Long-term exposure of buried infrastructure</p> <p>Given that the Applicant would intend to leave much of the Proposed Development's buried infrastructure in situ, Natural England [RR-029] believes that the assessment of impacts on marine processes should extend beyond the operational lifetime of the project. Is the Applicant intending to provide an assessment of the long-term impacts on the coastal and nearshore zone from the rock protection, jointing bays, cable and scour protection that would remain in situ at the end of the operational lifetime of the project? If so, it is required to be submitted into the Examination</p> | <p>Please see the Applicant's response to RR-029-5.41 (and also RR-029-5.60, RR-029-APDX:E-EJ, RR-029-APDX:E-F, RR-029-APDX:E-15 and RR-029-APDX:E-20) at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to the long-term exposure of buried infrastructure.</p> <p>The Applicant notes that a cable burial risk assessment (CBRA) will be undertaken post-consent to understand where burial of cables may be problematic and/ or susceptible to exposures over the lifetime of the development. Until the completion of the CBRA, the Applicant is not willing to offer an ongoing commitment to allow for the long-term management and mitigation of any infrastructure that maybe become exposed.</p> <p>If any infrastructure became exposed in the future after decommissioning (i.e., previously buried cables) then this would only develop small-scale localised</p> |

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| | | <p>as soon as possible, so please indicate when it would be available. If not, why not?</p> <p>Is it possible to predict if and when such infrastructure may become exposed, and is the Applicant willing to offer an ongoing commitment to allow for the long-term management and mitigation of any infrastructure that later becomes exposed and might cause adverse environmental effects as a result? If so, how would this be secured? If this would be through a requirement or condition, please provide some draft wording. If not, why not?</p> | <p>effects proportional to the scale of the object's capacity to interfere with waves or flows. In deeper water, any exposed infrastructure would not interfere with waves. Climate change effects would have a more direct and global effect on marine processes than small-scale localised exposed infrastructure.</p> |
| MC.1.22 | Applicant | <p>Issues raised by Natural England</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond to the issues relating to marine geology, oceanography and physical processes set out by Natural England in Appendix E to its Relevant Representation [RR-029], focussing on those graded as red or amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has provided a detailed point by point response to all issues relating to marine geology, oceanography and physical processes set out by Natural England in G1.9: Applicant's comments on Relevant Representations (REP1-038).</p> |

13 Marine Ecology

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| ME.1.1 | Applicant Natural England | <p>European and national sites</p> <p>The ES [APP-014 and APP-015] notes that where an internationally designated site</p> | <p>The Applicant notes that the following sentence was missing from paragraph 2.10.1.8 and paragraph 3.10.1.6 of A2.2: Benthic and Intertidal Ecology (APP-014) and A2.3: Fish and Shellfish Ecology (APP-015), respectively: "Where a</p> |

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| | | <p>coincides with a nationally protected site, only the international site has been taken forward for assessment, on the assumption that the potential effects on the integrity and conservation status of the nationally designated site are inherent in the assessment of the internationally designated site.</p> <p>Where has this assumption been applied, and is it valid, given that SSSIs citations may include a broader range of notified special interest features than the qualifying features of a corresponding European site?</p> | <p><i>national site forms a component of an international site, but the latter designation does not list a qualifying feature that is present on the SSSI citation, the individual SSSI will be taken forward for further assessment for that particular feature or the species."</i></p> <p>The Applicant can confirm that the assessments within the relevant offshore chapters of the Hornsea Four ES were undertaken on this basis. As such, the Applicant can confirm that both direct and indirect impact pathways have been considered for all features of SSSIs within the associated study areas and no SSSI features have been omitted from the assessments. The Applicant can also confirm that the onshore assessment of SSSI features explicitly considers all features of the relevant SSSIs.</p> |
| ME.1.2 | Applicant | <p>Assessment of turbine cleaning</p> <p>Table 2.4 of the ES [APP-014] notes that the regulators consider that cleaning of turbines during operation and maintenance should be considered in the assessment. The table suggests that the activity is addressed in the Impact Register [APP-049], but this is not apparent. Clarify.</p> | <p>This is noted by the Applicant. The omission from the Impacts Register represents a minor typographic omission and detail is presented below in relation to turbine cleaning.</p> <p>As noted in Table 4.45 of A1.4: Project Description (REP1-004), marine growth and bird waste will be physically brushed off turbines by hand, using a brush to break down the marine growth/organic waste (where required) followed by high-pressure jet wash (sea water only). Technicians and equipment will be deployed from a CTV or similar vessel. There are no impacts expected to occur on the benthos from these works as jack-up vessels will not be used and anchoring is unlikely to be required (disturbance estimates for jack-up vessel maintenance have sufficient redundancy to accommodate any rare occasions when a CTV would need to anchor). Additionally, as cleaning of offshore infrastructure would involve jet washing with seawater, only natural materials such as marine growth, bird guano and sea water would enter the marine environment (at a very small scale). As such, it is not necessary to assess these works directly, but rather considered them under the general impacts from operations and maintenance works (Section 2.14 of A2.2: Benthic and Intertidal Ecology (APP-014)).</p> |
| ME.1.3 | Applicant | <p>Responsive and remedial actions</p> <p>The Outline Marine Monitoring Plan [APP-242] provides for a range of monitoring measures in</p> | <p>In relation to pre-construction surveys, in the event that any unexpected issue is encountered, for example the identification of new habitats of principal importance in accordance with section 41 of the Natural Environment and Rural</p> |

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| | | <p>relation to benthic and other marine ecology features. However, it seems to make very limited provision for responsive and remedial action should any unexpected issue be recorded. Can the Applicant explain: if any triggers are being considered; whether any responsive or remedial action would be implemented as a result of the proposed monitoring; and where such information can be found. If it is not being considered, why not?</p> | <p>Communities Act 2006(a), construction works would be micrositied around these habitats, as per the mechanism set out in relation to the submission and approval of the design plan (Condition 13(1)(a) of Schedules 11 and 12 of C1.1: Draft DCO including Draft DML (REP1-002). This design plan requires approval from the MMO.</p> <p>In relation to construction surveys, feedback loops apply in a similar way to that mentioned above for pre-construction surveys. For example, if an unexpected issue was recorded in the monitoring of the noise generated by the installation of the first piled foundations, details of the issue would be presented in the results of this noise monitoring which must be submitted to the MMO within six weeks of the completion of the installation of the monitored piles in line with Condition 18(3) of Schedules 11 and 12 of C1.1: Draft DCO including Draft DML (REP1-002). The MMO would then determine whether any further noise monitoring was required and discussions would commence with the Applicant on the associated issue. Similarly for post-construction surveys, monitoring reports will be submitted to the MMO and discussions will take place with the MMO and any relevant parties in order to address any unexpected issues and agree next steps.</p> <p>In summary, feedback loops are inherent in the monitoring process as monitoring reports are required to be submitted to the MMO in line with Condition 14(2) of Schedules 11 and 12 of C1.1: Draft DCO including Draft DML (REP1-002). After submission of the monitoring reports, the MMO can choose to consult with relevant parties such as the relevant statutory nature conservation bodies, and discussions can take place with all parties (including the Applicant), in the event that any responsive and remedial actions are required.</p> |
| ME.1.4 | Applicant | <p>Seasonal exclusion period for piling</p> <p>A seasonal piling restriction is proposed to mitigate underwater noise and vibration effects on herring during installation of the offshore substation. Is any further evidence available to help define an appropriate and informed 'sensitive' exclusion period for the area of the</p> | <p>As detailed in RR-029-5.65 of G1.9: Applicant's comments on Relevant Representations (REP1-038), the Applicant has submitted G1.10: Clarification Note on Peak Herring Spawning Period and Seasonal Piling Restriction (REP1-039) to provide further analysis and justification of the "peak" spawning period for herring, using the methodology proposed by Cefas as part of the Hornsea Four Evidence Plan process. The aim of this note is to agree the timing of this "peak" spawning period and the associated piling restriction timing. A response to this</p> |

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| | | <p>Proposed Development, and, if so, when will it be submitted into the Examination?</p> <p>Are changes necessary to the start and finish dates for the proposed period during which piling for Works No. 3 would be restricted, as suggested by the MMO? (Schedule 12 of the draft DCO, Condition 23 of the draft DML [APP-203].) If not, why not?</p> | <p>clarification note was provided by the MMO at Deadline 1 (Written representation, Comments on Relevant Representations, Initial Statements of Common Ground (SoCG), Comments on revised documents (REP1-076)). The Applicant has provided responses to the MMO's comments at Deadline 2 (G2.19: Applicant's Comments on Any Other Submissions at Deadline 1) and has submitted an updated clarification note at Deadline 2, taking into account the MMO's feedback.</p> <p>Based on the evidence and analysis in the clarification note, the Applicant considers it appropriate to conclude that the proposed seasonal restriction for Hornsea Four (1st September – 16th October – secured by Condition 23 of Schedule 12 of C1.1: Draft DCO including DML (REP1-002)) acts to effectively cover the "peak" of the spawning season, with additional conservatism incorporated into the proposed dates beyond that required based on the back-calculations as informed by available literature (and as requested by the MMO), and as a result provides a robust mitigation of the potential effects of piling of the HVAC booster station on herring spawning.</p> <p>The Applicant is continuing to engage with the MMO through the SoCG process. This is one of the matters being progressed and the progress will be reported through revised SoCG documents throughout the Examination.</p> |
| ME.1.5 | Applicant MMO | <p>Mitigation of suspended sediment impacts on herring</p> <p>The MMO [RR-020] disagrees with the Applicant's ES in relation to the magnitude of impact on herring spawning grounds in the ECC through direct damage and temporary increases in suspended sediment. It points to the International Herring Larvae Surveys data reproduced in the Applicant's Fish and Shellfish Ecology Technical Report [APP-071] to support its position that the impact would be greater than minor. Could the Applicant indicate</p> | <p>Please see the Applicant's response to RR-020-3.6.20 to RR-020-3.6.23 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to the assessment of impacts from seabed preparation and cable installation along the ECC. As such, the Applicant does not consider that there is a need for further assessment or mitigation.</p> <p>The Applicant considers that a seasonal restriction for the cable installation activities during the herring spawning season is excessive and unwarranted due to the expected minor impacts on the herring spawning grounds from cable installation and the previously stated short-term impacts at any one point which would arise from the cable installation works (as described above) and the clear evidence of no overlap with the core Banks herring spawning grounds with</p> |

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| | | <p>whether further assessment and mitigation is necessary, and, if not, why not?</p> <p>Would the extended seasonal piling restriction (for noise effects) proposed by the MMO adequately mitigate these direct damage and suspended sediment effects, or would further spatial restrictions also be considered necessary? The MMO's position on this is not clear in its Relevant Representation, so could clarification be provided please?</p> | <p>Hornsea Four. The Applicant considers that the assessment undertaken is robust and that no significant effects were identified. It is therefore not considered appropriate to introduce cable installation seasonal restrictions.</p> <p>The Applicant is continuing to engage with the MMO through the SoCG process. This is one of the matters being progressed and the progress will be reported through revised SoCG documents throughout the Examination.</p> |
| ME.1.6 | Applicant | <p>Sandeel habitat monitoring</p> <p>For the reasons set out in its Relevant Representation [RR-020], the MMO requests that the proposed pre- and post-construction monitoring of sandeel habitat be extended to include the windfarm array and adjacent areas. Does the Applicant believe that this is necessary? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-4.5.12 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) in relation to the assessment of impacts from seabed preparation and cable installation along the ECC. Considering the Applicant's response, it is the Applicant's view that further investigation and monitoring of sandeel habitat, over and above the targeted PSA surveys as set out in Table 5 of F2.7: Outline Marine Monitoring Plan (APP-242), is not necessary or appropriate.</p> |
| ME.1.7 | Applicant | <p>Natural England's points about fish and shellfish ecology</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond to the issues relating to fish and shellfish ecology set out by Natural England in Appendix G to its Relevant Representation [RR-029], focussing on those graded as amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has provided a detailed point by point response to all issues relating to fish and shellfish ecology set out by Natural England in G1.9: Applicant's comments on Relevant Representations (REP1-038).</p> |

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| ME.1.8 | Applicant | <p>Interpretation of benthic ecology survey results</p> <p>The MMO's Relevant Representation [RR-020] questions the Applicant's interpretation and presentation of benthic ecology survey results, and whether more of the information from the technical annex [APP-068] should be brought into the relevant ES chapter [APP-014]. There is said to be a knock-on lack of confidence in the accuracy and completeness of the subsequent assessment. What is the Applicant's view on the points and suggestions raised? Are changes required, and, if so, when would they be made available for the Examination? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-3.4.3 to RR-020-3.4.7 and RR-020-3.4.13 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>The Applicant strongly disagrees with the assertion of a knock-on lack of confidence in the accuracy and completeness of the assessment. Highly technical detail is set out in the ES technical reports, to ensure the ES chapters are not disproportionately long and unwieldy and so they remain accessible to non-specialists as well as specialists. The Applicant does not consider it appropriate or proportionate to replicate the significant detail across both the ES technical report and ES chapter documents. The location of where information is presented does not preclude the MMO from considering it. As such, it is the Applicant's position that no changes are required.</p> |
| ME.1.9 | Applicant | <p>Monitoring of non-native invasive species</p> <p>In its Relevant Representation [RR-020], the MMO suggests that monitoring of non-native invasive species is required and should be added to the Outline Marine Monitoring Plan [APP-242]. Would it be the Applicant's intention to instigate monitoring of the turbines for non-native invasive species colonisation and to add this to the Outline Marine Monitoring Plan? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-3.4.18 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |
| ME.1.10 | Applicant | <p>Seabed gravel removal</p> <p>During decommissioning, would gravel that was added to the seabed during site preparation be removed? Please signpost where any comparison of retention or removal is assessed.</p> | <p>Please see the Applicant's response to RR-020-3.4.19 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |

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| | | Would the assessment outcome be different depending on whether it was left or was removed? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) | |
| ME.1.11 | Applicant | <p>Retention of rock protection post-decommissioning</p> <p>Natural England has noted [RR-029] that leaving rock protection in situ beyond the end of the operational lifetime of the Proposed Development would represent a permanent change to benthic habitats. Can the Applicant confirm whether this is the intention, and whether this was taken fully into account in determining the significance of effects in the EIA? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | Please see the Applicant's response to RR-029-5.41 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)). |
| ME.1.12 | Applicant | <p>Sabellaria reef and micro-siting</p> <p>While Sabellaria spinulosa aggregations were not recorded in surveys, Natural England has noted [RR-029] that individuals were the dominant taxon in grab samples at export cable corridor stations 17 to 21. In order to target the mitigation commitments Co48 and Co84 [APP-050] correctly so as to avoid habitats of principal importance, can the Applicant signpost its intended approach to verification of the absence or presence of Sabellaria spinulosa reef (Annex I) from areas with high numbers of the species in sample returns? How would the Applicant take potential Sabellaria reef features into consideration in the pre-</p> | Please see the Applicant's response to RR-020-3.4.5, RR-020-3.4.29, RR-029-APDX:F-L and RR-029-APDX:F-4 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)). |

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| | | <p>construction surveys and - if found - how would the Applicant's Commitment Register commitments (Co48 and Co84) to micro-siting during both the construction and operation and maintenance phases be secured?</p> <p>Should a condition that achieves this be included in the draft DMLs? If so, please provide suggested draft wording. If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | |
| ME.1.13 | Applicant | <p>Assessment of effects on <i>Amphiura filiformis</i></p> <p>The MMO suggests [RR-020] that the ES lacks an assessment of effects on the echinoderm <i>Amphiura filiformis</i>. Could the Applicant provide signposting to the relevant information and assessment? If there is no such assessment, why not, and is additional assessment required? If so, when would this be provided? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-3.4.5 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |
| ME.1.14 | Applicant | <p>Output from biotope modelling</p> <p>Biotope modelling was undertaken to fill some benthic survey gaps. The MMO questions [RR-020] whether some of the biotopes would be as extensive as predicted in light of more recent sediment data. Is it the Applicant's intention to review the model output, and, if so, when would this be provided to the Examination? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-3.4.3 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>The primary purpose of creating the predictive habitat model was to address data gaps identified at PEIR, due to planned further survey work not being available at that time. The model was generally well-received by consultees, so it remained within the DCO Application, despite the data gaps being filled. Since the PEIR version of the model, further geophysical and benthic site-specific survey data (particularly with reference to the ECC) has been added to the model. Therefore, the review of the model output was undertaken following Section 42 consultation and a further review is not required.</p> |
| ME.1.15 | Applicant | <p>Verification of grab survey results</p> | <p>Please see the Applicant's response to RR-020-3.4.25 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)) and detail</p> |

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| | | <p>The use of a Hamon grab to collect sediment samples for contaminant analysis has been questioned by the MMO [RR-020]. A comparison with relevant results using a Day grab is suggested to verify the results. Has this been done? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>provided within G1.44: Clarification Note on Marine Sediment Contaminants (REP1-066).</p> |
| ME.1.16 | Applicant | <p>High-resolution side scan sonar survey for any biogenic or geogenic reef habitats</p> <p>The Outline Marine Monitoring Plan [APP-242] commits the Applicant to monitor any biogenic or geogenic reef habitats identified in the proposed swath bathymetry. Can the Applicant respond to the MMO's question [RR-020] as to whether a high-resolution side scan sonar survey would be undertaken and, if not, why not. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-4.5.5 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>The Applicant can confirm that a high-resolution side scan sonar survey will be undertaken as part of the pre-construction monitoring secured by Condition 17 of Schedules 11 and Schedule 12 of C1.1: Draft DCO including Draft DML (REP1-002).</p> |
| ME.1.17 | Applicant | <p>The effect of gravity base structures and scour on benthic habitats</p> <p>The MMO [RR-020] suggests that further information and monitoring studies are required in respect of the use of gravity base structures and their scour impacts on benthic habitats. It is suggested that this monitoring should be added to the Outline Marine Monitoring Plan [APP-242]. Can the Applicant provide the further information requested and respond to the suggestion of monitoring? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-4.5.6 to RR-020-4.5.7 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |

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| ME.1.18 | Applicant | <p>Natural England's points about benthic and intertidal ecology</p> <p>In addition to the issues highlighted in the ExA questions above, could the Applicant respond to the issues relating to benthic and intertidal ecology set out by Natural England in Appendix F to its Relevant Representation [RR-029], focussing on those graded as amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has provided a detailed point by point response to all issues relating to benthic and intertidal ecology set out by Natural England in G1.9: Applicant's comments on Relevant Representations (REP1-038).</p> |
| ME.1.19 | Applicant | <p>Additional monitoring for marine mammals in the Southern North Sea SAC</p> <p>Should Table 6 of the Outline Marine Monitoring Plan [APP-242] include the additional monitoring that may be required for marine mammals in the Southern North Sea SAC (referred to in section 3.6.2.2), as suggested by the MMO in its Relevant Representation [RR-020]? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-4.5.16 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |
| ME.1.20 | Applicant | <p>Natural England's points about marine mammals</p> <p>Could the Applicant respond to the issues, discrepancies and questions set out by Natural England in relation to marine mammals in Appendix D to its Relevant Representation [RR-029, entries 1 to 10 and 44 to 52], focussing on those graded as amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has provided a detailed point by point response to all issues relating to marine mammals set out by Natural England in G1.9: Applicant's comments on Relevant Representations (REP1-038).</p> |

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| ME.1.21 | Applicant | <p>Possible document layout error</p> <p>Towards the end of Table 5.4 of the ES [APP-017], at the top of page 32, there appears to be an orphan comment in relation to evidence about mortality rates and a range-based approach. What is the context and response to this?</p> | <p>The Applicant confirms the comment at the top of page 32 carries over from the comments on page 31 in relation to 04 March 2021 EP Technical Panel Meeting 14.</p> |
| ME.1.22 | Applicant | <p>Application of the model used to analyse baseline characterisation data</p> <p>Natural England's and the RSPB's Relevant Representations [RR-029 and RR-033] raise possible errors in the application of the MRSea model used to analyse the baseline offshore ornithological characterisation data to produce the density and abundance estimates that underpin the EIA. Natural England offers options to resolve these concerns. Has the Applicant engaged with Natural England and the RSPB subsequently, has progress been made towards a resolution, and will further assessment be submitted into the Examination? If so, when, given the fundamental importance this has for the offshore ornithological assessment? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see Applicant's response to HRA.1.10 in relation to progress made towards resolution of baseline characterisation.</p> |
| ME.1.23 | Applicant | <p>Cumulative impact assessment</p> <p>Following on from Natural England's concerns about the application of the offshore ornithological model, its Relevant Representation [RR-029] notes that it does not wholly agree with the Applicant in regard of cumulative effects and is unable to rule out</p> | <p>In relation to EIA scale impacts, the Applicant's position remains that no significant adverse impacts arise for all offshore and intertidal ornithology receptors assessed (gannet, kittiwake, great black-backed gull, guillemot, razorbill and puffin), from Hornsea Four alone predicted impacts and cumulatively with all current planned and consented projects as detailed in A2.5 Environmental Statement A2.5: Offshore and Intertidal Ornithology (APP017).</p> |

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| | | <p>significant adverse impacts on kittiwake, razorbill, guillemot, gannet and greater black-backed gull due to cumulative collision mortality or displacement effects. Has any progress been made towards resolution of these matters, and will further assessment be submitted into the Examination? If so, when? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>As detailed in Applicant's response to HRA.1.11, 1.10 & 1.09 the Applicant worked on a number of elements to provide greater justification to the Applicant's position with regards to displacement from the project alone and cumulatively. These are submitted in the form of two scientific reports, the first with regards to auk displacement and consequent mortality rates (G1.47) and gannet displacement and consequent mortality rates (G2.9), respectively. These represent the only empirical led analyses of displacement and consequent mortality rates for auks and gannets in response to offshore wind farms. The Applicant considers that provision of such additional supporting evidence to the examining authority and Natural England will alleviate concerns and bring about agreement that the Applicant's cumulative assessments are accurate reflections of potential impact levels that provide for sufficient precaution.</p> <p>With regards to collision risk to kittiwake and great black-backed gull, the Applicant's position remains that no significant adverse impacts arise from Hornsea Four alone and cumulatively with other offshore wind farms. Having agreed on the values for all other projects with Natural England and also agreed on the input values for use in the PVA modelling for both species the Applicant's conclusions for no significant adverse impact remain an accurate reflection of the BDMPS level impacts for both species. It is the Applicant's understanding that Natural England's concerns relate to the baseline compiled from the MRSea modelling and therefore the values put forward for Hornsea Four alone within the cumulative impact assessments. The Applicant has committed to undertake revised PVA modelling on completion of the MRSea modelling review process, where a range of impact values for cumulative collision risk for kittiwake and great black-backed gull will be provided, as well as incorporating any revisions to impact values for other projects and updates to guidance on how to run the PVAs.</p> |
| ME.1.24 | Applicant | <p>Natural England concerns about assessment methodology</p> <p>In its Relevant Representation [RR-029], Natural England raises concerns in relation to the</p> | <p>Please see Applicant's response to HRA.1.11 in response to all points raised.</p> |

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| | | <p>assessment methodology adopted by the Applicant. Briefly, these are:</p> <ul style="list-style-type: none"> • including birds in flight in auk displacement analysis; • seasonal definitions for gannet and kittiwake displacement; • inclusion of statistical confidence intervals and a range-based approach; • inclusion of counterfactual of final population size in final population viability analysis. <p>(A further concern is raised that applies only to the HRA: this is considered in the HRA section of ExQ1 at HRA.1.11)</p> <p>Has any progress been made towards resolution of these matters, and will further assessment be submitted into the Examination? If so, this is required as soon as possible: when would it be submitted? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | |
| ME.1.25 | Applicant | <p>RSPB concerns</p> <p>In its Relevant Representation [RR-033], the RSPB raises concerns around:</p> <ul style="list-style-type: none"> • inclusion of counterfactual of final population size in final population viability analysis; • apportioning of predicted mortalities to SPAs; • gannet avoidance rates; • including birds in flight in auk displacement analysis; • seasonal definition for kittiwake breeding. <p>Has any progress been made towards resolution of these matters, and will further</p> | <p>In relation to inclusion of counterfactual of final population size in population viability analysis, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-18).</p> <p>In relation to apportioning of predicted mortalities to SPAs, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-82).</p> <p>In relation to gannet avoidance rates, please see the Applicant's response to the Relevant Representation (RR-033-K).</p> <p>In relation to inclusion of birds in flight, please see the Applicant's response to the Relevant Representation (RR-029-5.9B).</p> |

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| | | <p>assessment be submitted into the Examination? If so, this is required as soon as possible: when would it be submitted? If not, why not? (If not fully addressed in the previous question in response to Natural England's Relevant Representation, or in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>In relation to seasonal definitions, please see the Applicant's response to the Relevant Representation (RR-029-APDX:B-82).</p> <p>The Applicant is working on the production of an Assessment Sensitivity Report that set out the key assessment parameters (including those highlighted by RSPB). The Applicant currently intends to submit this report to the ExA at Deadline 3 to allow the ExA to understand the different assessment outcomes from using a range of approaches in comparison to the Applicant's preferred approach. If necessary it can be updated and resubmitted at various points during the examination, as discussions evolve.</p> |
| ME.1.26 | Applicant | <p>Indirect effects on seabirds through impacts on prey species</p> <p>Natural England disagrees [RR-029] with the basis on which the ES assesses indirect effects on seabirds as a result of impacts on their prey species and suggests that the Applicant undertakes an assessment of key seabird forage fish abundance and distribution in and around the area of the Proposed Development, with a focus on guillemot and razorbill in August and September. Has any progress been made towards this suggestion, and will further assessment be submitted into the Examination? If so, when? If not, why not? (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Forage fish, like key bird species, exhibit varying spatial and temporal patterns of distribution and any localised impacts on fish species are not anticipated to be directly relatable to seabirds as they exhibit resilience to these small-scale fluctuations in prey availability. Redistribution or local declines that could impact specific seabirds at certain times of the year would therefore not be attributable to the construction and/or operation of the Hornsea Four.</p> <p>The Applicant is giving further consideration to potential supplementary work on indirect effects (to be confirmed and anticipated to be delivered at Deadline 5). The Applicant will also signpost relevant sections of the ES which it is hoped will help clarify and confirm the work has been concluded to date.</p> |
| ME.1.27 | Applicant | <p>Other Natural England concerns</p> <p>In addition to the issues highlighted in the questions above, could the Applicant respond to the issues, discrepancies and questions relating to marine ornithology (entries 1 to 69)</p> | <p>The Applicant has provided a response to Natural England's Relevant Representation in G1.9: Applicant's Relevant Rep Response (REP1-038).</p> |

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| | | set out by Natural England in Appendix B to its Relevant Representation [RR-029], focussing on those graded as red or amber risk by Natural England. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) |
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14 Navigation and Radar (Marine and Air)

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| NAR.1.1 | DFDS | <p>Navigation between Proposed Development and Dogger Bank</p> <p>Is DFDS satisfied with the separation distance between the Proposed Development and the Dogger Bank navigational constraints (and consequential assessment of navigational safety)? [APP-019 pages 17,18, 34, 66, 69, 70] and [APP-081, APP-133]. If not, why not and what distance do you consider would be required?</p> | <p>The Applicant notes that pre and post Section 42 consultation concerns were raised regarding vessel deviations to both the north and south of Hornsea Four including increases in route length but also increases to navigation safety risk associated with the Dogger Bank and in combination with other developments north of the Dogger Bank (Dogger Bank A, B, C and Sofia offshore wind farms). However, following consideration of the Section 42 feedback, the Applicant has made changes to the development boundary to create the gap which allows direct access between Hornsea Four and Hornsea Project Two therefore minimising the need for the majority of DFDS Seaways vessels to transit north of Hornsea Four and in proximity to the Dogger Bank and other developments.</p> <p>Routeing north of Hornsea Four has still been assessed within A5.7.1: Navigational Risk Assessment (APP-081 – APP-083), including in adverse weather (Table 7.16) and found that none of the scenarios assessed required a commercial ferry to make transit any closer to the Dogger Bank than is already the case resulting in residual impacts being considered slight (Table 7.21).</p> |
| NAR.1.2 | UK Chamber of Shipping (UKCoS) and | <p>Consultation with shipping operators</p> <p>Noting the Applicant's point [APP-133] that ""DFDS Seaways were identified as the principle regular operator and were the only contacted</p> | <p>The Applicant notes that the process of identifying and contacting Regular Operators is outlined in A5.7.1: Navigational Risk Assessment (APP-081 – APP-083). The vessel traffic survey data was analysed and Regular Operators identified with the full list provided. Regular Operators were contacted to provide</p> |

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| | Applicant | <p>party to express an interest in participating in consultation"" would UKCoS please confirm if it is satisfied with the extent of the Applicant's consultation with shipping operators? If UKCoS considers other specific regular shipping operators should have been consulted, please provide details and explain why they should have been consulted.</p> <p>Would the Applicant please confirm how many times unsuccessful attempt at consultation contact with Finnlines was repeated and what steps were taken to establish if communication was received.</p> | <p>feedback and invited to participate in consultation including the Hazard Workshop as part of the NRA process. DFDS Seaways were engaged in the NRA process throughout while Sea-Cargo and Boston Putford Offshore Safety also provided feedback. Additionally, the United Kingdom (UK) Chamber of Shipping and Danish Shipping provided consultation responses, noting that both organisations represent the interests of many vessel operators.</p> <p>Although Finnlines operated vessels were identified in the vessel traffic survey data, they were not in sufficient quantities to be deemed a Regular Operator. During consultation, Associated British Ports (ABP) Limited noted Finnlines as a vessel operator of interest (see A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)). Subsequently, the Applicant liaised with ABP to establish a suitable contact at Finnlines. The Applicant emailed the contact provided by ABP (once) and was subsequently copied in on an email distributed internally by Finnlines. However, Finnlines did not provide any response to the information provided or queries posed by the Applicant.</p> |
| NAR.1.3 | MCA | <p>Operational Safety Zone for accommodation structures</p> <p>Confirm if you are satisfied with the proposed operational safety zones around offshore accommodation structures and if not, why not and what dimension would you want to be secured?</p> | <p>As per The Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007 the Applicant will apply for any required safety zones post consent once a final layout has been agreed. For the purposes of navigational safety the A5.7.1: Navigation Risk Assessment (APP-081 to APP-083) has concluded that safety zones around operational and manned platforms are not required to mitigate risk to shipping and navigation users (in transit) and therefore are not considered a commitment. From a health and safety perspective there remains a question as to whether these safety zones may be required to protect personnel on those platforms noting that will depend on the final location of the array layout and the design of the platform. A risk assessment (safety case) will be completed as required to confirm this at the time of the Safety Zone Application and this is noted within Section 2.1.1.7 of F1.2: Safety Zone Statement (APP-230). The impact of any safety zones however was retained within the project envelope so that the impact or restrictions of those safety zones (if required post consent) on other users could be assessed for example in A2.6: Commercial Fisheries (APP-018).</p> |

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| NAR.1.4 | MCA | <p>Single Line of Orientation justification</p> <p>Are you satisfied with the Safety Justification for Single Line Orientation [APP-047], with particular reference to aircraft Search and Rescue operations (SAR) and other flying within the proposed array? If not, why not and what measures would be needed to address this?</p> | <p>The Applicant notes that A4.9: Safety Justification for Single Line of Orientation Layout (APP-047) has been completed in line with Marine Guidance Note (MGN) 654 requirements. As part of these requirements, the Applicant has discussed the plans for a single line of orientation layout with the Maritime and Coastguard Agency (MCA), with the MCA providing specific guidance to the Applicant regarding topics which should be addressed within the safety justification.</p> <p>A detailed review of SAR aviation operations has been undertaken in the safety justification, led for the Applicant by a SAR helicopter specialist with extensive experience, and includes consideration of (but not limited to) turning within the array, response times and historical incidents.</p> |
| NAR.1.5 | MCA & THLS | <p>Layout principles and Search and Rescue</p> <p>Are you satisfied that the draft DMLs in the draft DCO [APP-203] would secure the commitment made in pre-application consultation between the Applicant and TH that after post-consent design development ""Micro-siting ... would not compromise the 500m minimum width required for the SAR lanes as required by Layout Principle 3"" [APP-047, page 16] and if not, why not and what additional drafting would you wish to see inserted?</p> | <p>The Applicant notes that consideration for micro-siting is given in A4.7: Layout Principles (APP-045) which has been produced and agreed in consultation with the Maritime and Coastguard Agency and Trinity House. Additionally, the agreement of the Layout Principles is included as a shipping and navigation commitment (A2.7: Shipping and Navigation (APP-019)).</p> |
| NAR.1.6 | Maritime and Coastguard Agency (MCA) and Trinity House (TH) and UK Chamber of Shipping | <p>Definition of separation distance between Hornsea Four and Hornsea Two</p> <p>Confirm if you are satisfied with the exclusion of blade overfly from the proposed separation distance between Hornsea Four and Hornsea Project Two (June 2020), the distance definition between WTCs centre-to-centre and the potential for ancillary equipment (eg jack-up plant) to reduce the navigable gap width between the two developments. If you are not satisfied, why not?</p> | <p>The Applicant notes that the gap was designed using a rigorous process of consultation and assessment and Section 19.3 of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083) includes a safety case demonstrating the suitability and safety of the gap for all users – this includes discussions on the effect of blade overfly on the gap design. The Maritime and Coastguard Agency (MCA), Trinity House, the United Kingdom (UK) Chamber of Shipping, international regulators, and key operators in the area were involved in the risk assessment process and considering the positive feedback from the consultation process and commitments included as part of Hornsea Four, A5.7.1: Navigational Risk Assessment (APP-081 – APP-083) concludes that the gap does not pose a significant risk to safe navigation.</p> |

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| | | | <p>With regards to works being undertaken in the gap, commitments included as part of Hornsea Four include the use of marine coordination to manage project operations (such as the use of jack ups vessels) and ensure that they do not impact on third party vessels in transit (see Co179 - A4.5.2: Commitments Register (APP-050)); this will work alongside the regulations in place as part of the International Regulations for the Prevention of Collisions at Sea (COLREGS) which safely manage vessel encounters.</p> |
| <p>NAR.1.7</p> | <p>Maritime and Coastguard Agency (MCA) and Trinity House (TH) and UK Chamber of Shipping</p> | <p>Navigational risk assessment for gap between arrays</p> <p>Please confirm whether you are satisfied with:</p> <ul style="list-style-type: none"> the navigational risk assessment conclusions for shipping transit through the proposed gap between Hornsea 4 and Hornsea 2 with a 'pinch-point' of 2.2nm width (centre to centre of proposed WTGs); and the appropriateness and sufficiency of additional safety measures proposed in the ES [APP-082] during construction or maintenance of the proposed OWF when the width could be reduced by the presence of construction vessels and safety zones and noting TH's concern that the given width does not account for WTG blade overfly. <p>If you are not satisfied with this explain why and what actions you would wish to see to address your concerns.</p> | <p>The Applicant notes that the gap was designed using a rigorous process of consultation and assessment and Section 19.3 of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083) includes a safety case demonstrating the suitability and safety of the gap for all users – this includes discussions on the 2.2 nautical mile separation.</p> <p>The gap offers benefits not applicable to a navigational corridor noting that a 2.2 nautical mile corridor was requested post section 42 by stakeholders (Section 19.3.9.3 – 19.3.9.4 of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)). The most notable advantages are greater flexibility for vessels to make course adjustments and increased sea room.</p> <p>The Maritime and Coastguard (MCA), Trinity House, the United Kingdom (UK) Chamber of Shipping, international regulators, and key operators in the area were involved in the risk assessment process and considering the positive feedback from the consultation process and commitments included as part of the Project (additional safety measures proposed in the ES (A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)), the NRA concludes that the gap does not pose a significant risk to safe navigation.</p> <p>The Applicant continues to engage with the MCA through the Statement of Common Ground (SoCG) process. (see G1.25: Statement of Common Ground between Hornsea Project Four and the Maritime Coastguard Agency (REP1-053)).</p> |

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| NAR.1.8 | Maritime and Coastguard Agency (MCA) and Trinity House (TH) and UK Chamber of Shipping | <p>Traffic Monitoring</p> <p>Are you satisfied with the Applicant's response and commitment to Traffic Monitoring ""for the duration of the construction period"" [APP-133, page 355]? If not, why not?</p> | <p>The Applicant notes that F2.7: Outline Marine Monitoring Plan (APP-242) states whilst the assessment did not predict any significant effects, the Applicant will comply with the requirements of Marine Guidance Note (MGN) 654 which contains standard requirements for pre- and post-construction monitoring to ensure that commitments (embedded mitigation) are deployed effectively and are managing navigation safety including that the routeing patterns around the site have aligned with the predictions of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083). Commitment for construction monitoring (all shipping traffic) is secured in Condition 18(2)(b) of Schedule 11 and Condition 18(2)(a) of Schedule 12 of C1.1: Draft DCO including Draft DML (REP1-002).</p> |
| NAR.1.9 | Applicant | <p>Blade tip clearance controlling dimensions (air draught)</p> <p>With reference to MCA Guidance Note MGN654 (cited in [APP-019] and [APP-081]) which advises a minimum dimension for wind turbine blade tip clearance from Mean High Water Springs (MHWS), please clarify:</p> <ul style="list-style-type: none"> i. Why, in the draft DCO [APP-203], Lowest Astronomical Tide (LAT) is proposed rather than Highest Astronomical Tide (HAT) or MHWS to define minimum clearance under turbine blade tip in the Maximum Design Scenario (MDS) [APP-175]. ii. The differential sea level height between LAT and HAT across the array area, citing source(s). iii. If this definition of air draught or blade tip clearance in the MDS has been agreed with shipping and navigation stakeholders. iv. Why Figure 4.5 in the Project Description [APP-010 page 28] indicates minimum blade tip height as ""42.43m (40m above Mean Sea Level, (MSL)"". | <p>As confirmed in the response to RR-029-APDX:A-4, in G1.9: Applicants comments on Relevant Representations (REP1-038), the Applicant uses LAT when referring to distances in design in relation to sea level as standard across its portfolio. The minimum blade distance at sea level is:</p> <p>LAT: 42.43m MSL: 40.00m HAT: 37.72m</p> <p>The difference between LAT, HAT and Mean Sea Level, calculated from VORF model data from the UK Hydrographic Office and indicative Project layout is:</p> <p>LAT: 0.00m MSL: 2.43m HAT: 4.71m</p> <p>The Applicant confirms that wind turbine blade tip clearance from Mean High Water Springs (MHWS) will be a minimum of 22 m. This is in line with shipping and navigation stakeholders.</p> |

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| NAR.1.10 | Applicant | <p>WTG spacing and safety justification</p> <p>Please clarify why the Safety Justification in [APP-045] uses a minimum WTG spacing of 1,100m while the proposed MDS has 810m, and justify how this difference does not undermine the relevance of the Safety Justification.</p> | <p>The Applicant has assessed two separate minimum spacing values to ensure the Maximum Design Scenario (MDS) or worst case for each impact has been assessed. This is detailed as follows.</p> <p>The MDS considered within A4.4.9: Safety Justification for Single Line of Orientation Layout (APP-047) includes consideration of a layout with a minimum spacing of 1,100 metres (m) given that this spacing value maximises build-out and number of structures, and subsequently maximises the level of risk considered relating to vessel displacement, collision risk and allision risk.</p> <p>The assessment of internal allision risk (vessels navigating within the array) and emergency response capability within A2.7: Shipping and Navigation (APP-019) and A4.4.9: Safety Justification for Single Line of Orientation Layout (APP-047) considers the 810 m minimum spacing scenario given these impacts are required to fully assess the potential effects of a single line of orientation layout.</p> <p>In summary, assessment of both of these values has been undertaken to ensure MDS (worst case) assessments have effectively considered all variations of layout design to ensure all impacts are considered and the 810m in no way undermines the relevance of A4.4.9: Safety Justification for Single Line of Orientation Layout (APP-047).</p> <p>The minimum spacing of 810 m is also associated with Hornsea Four’s consented value and is therefore reflected in A4.4.7: Layout Principles (APP-045) which are outlined in A4.4.9: Safety Justification for Single Line of Orientation Layout (APP-047).</p> |
| NAR.1.11 | Applicant | <p>Layout principles for spacing between structures</p> <p>Please clarify the minimum spacing proposed between surface infrastructure (eg platforms or substations), in particular how separation distances would be measured if an accommodation platform is connected to</p> | <p>The 810 metre (m) minimum spacing referenced in A4.4.7: Layout Principles (APP-045) refers to all possible surface infrastructure for the array area, including Wind Turbine Generators (WTGs), offshore transformer substations, High Voltage Direct Current (HVDC) converter substations and accommodation platforms.</p> <p>For the purposes of the Navigation Risk Assessment (A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)), bridge linked structures are not specifically</p> |

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| | | <p>another offshore structure, and where this is secured.</p> | <p>referenced but would be considered as one structure. The placement of any bridge linked structures will be discussed post consent as part of the commitments included as part of Hornsea Four (i.e., layout principles – commitment Co96 - A4.5.2: Commitments Register (APP-050)) to ensure structures are safely sited for the purposes of navigation safety.</p> <p>The Applicant will review the Layout Principles in consultation with the MCA and should it be deemed necessary an updated document will be submitted at Deadline 3.</p> |
| NAR.1.12 | Applicant | <p>Location of wave buoys</p> <p>The ES Project Description [APP-010 para 4.8.8.15] notes that two wave buoys would be required for the construction period, but that the exact locations are currently undefined. What are the implications of these for the shipping and navigation assessment, at what stage of the design process would their location be fixed, and how would these locations be agreed with the MMO in consultation with relevant stakeholders?</p> | <p>The Applicant confirms that wave buoys as described in the A1.4: Project Description (REP1-004) will be located within the wind farm array area Order Limits. The precise location is not known at this stage but will be consulted with the MMO and relevant stakeholders ahead of deployment in the pre-construction phase of the project. The Navigation Risk Assessment considers risks associated with installation of structures within the Array Area and whilst wave buoys have not been individually highlighted they can be considered within the wider assessment of allision risk and any proposed locations will be discussed in detail post consent with the MMO in consultation with the MCA and Trinity House during the layout approval process.</p> |
| NAR.1.13 | Applicant | <p>Vessel allision risk with existing infrastructure</p> <p>Please clarify:</p> <p>i. How you have concluded the assessment of low sensitivity of receptor (shipping) and minor magnitude of impact due to “short-term duration in the risk of allision with existing infrastructure”, with specific reference to diversion of shipping to the west and south of the proposed array [APP-019 paras 7.11.1.44 to 7.11.1.48 and 7.11.2.47 to 7.11.2.51].</p> <p>ii. The phrasing of [APP-019 para 7.11.1.48] that neutral or slight effects are both considered</p> | <p>i) The receptors have been deemed not vulnerable to the risk of allision due to commitments included as part of Hornsea Four (i.e., deployment of aids to navigation – commitment Co93 - A4.5.2: Commitments Register (APP-050)), the sea room available for vessels to safely distance themselves from any partially constructed or constructed structures, and the outputs of consultation including the hazard log (A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)). Section 7.10 of A2.7: Shipping and Navigation (APP-019) details the assessment methodology for the impact assessment contained within Section 7.11; a key part of this methodology is consideration of the Hazard Workshop (Section 7.10.2) which allows the Applicant to gather expert opinion and knowledge which is used alongside baseline assessment, qualification, and quantification to assess significance. Appendix B of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083) details the outputs of</p> |

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| | | <p>significant in EIA terms and whether the word “not” has been omitted in error.</p> | <p>the Hazard Workshop in the form of a hazard log. All impacts were found to be tolerable or broadly acceptable.</p> <p>ii) In the phrasing of para 7.11.1.48 within A2.7: Shipping and Navigation (APP-019), the Applicant can confirm the word “not” has been omitted in error.</p> |
| NAR.1.14 | Applicant | <p>Assessment of vessel-to-vessel visibility</p> <p>Please explain why Table C1 in the Navigational Risk Assessment (NRA) part 3 [APP-083 page 285] does not have a compliance check mark against Offshore Renewable Energy Installation(s) (OREI) structures assessment in the following item: "d. Whether structure (sic) block or hinder the view of other vessels or other navigational features"; and if such a specific assessment of such vessel-to-vessel visibility effects of offshore structures, individually and cumulatively, has been made, please provide it or signpost where it can be found in the application documents.</p> | <p>The Applicant can confirm that the compliance check mark has erroneously been omitted from the noted entry in the Marine Guidance Note (MGN) 654 Checklist table contained within Appendix C of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083). As stated in the noted entry, impacts relating to the use of existing aids to navigation (Section 17.10 of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)) and detection of vessels including within the gap between Hornsea Four and Hornsea Project Two are considered within the NRA (Section 19.3.6 of A5.7.1: Navigational Risk Assessment (APP-081 – APP-083)).</p> |
| NAR.1.15 | Applicant | <p>Impact of Proposed Development on ports</p> <p>Please provide confirmation from Associated British Ports (ABP) that it is now satisfied in regard to its pre-application concerns [APP-012] about how the commercial impact of the Proposed Development on ports has been assessed or signpost where in the application documents such confirmation can be found.</p> | <p>The Applicant has consulted with ABP at various stages of the project, most notably through the Navigation Risk Assessment Process as set out in A5.7.1: Navigational Risk Assessment (APP-081 – APP-083). ABP were invited to both Hazard Workshops, with ABP attending the second Hazard Workshop during which they advised that they would be guided by the views of their customers and port users who are navigational users of the North Sea, but added that they consider the gap between Hornsea Four and Hornsea Project Two to be very helpful and should greatly assist commercial shipping stakeholders. Consultation with ABP is set out in Table 7.4 of A2.7: Shipping and Navigation (APP-019).</p> |
| NAR.1.16 | National Air Traffic Service (NATS) | <p>Claxby Primary Surveillance Radar (PSR)</p> <p>The Applicant’s ES chapter on Aviation and Radar effects [APP-020, paras 8.11.2.21 to 8.11.2.23] indicates that suitable mitigation of the effects of the Proposed Development on the Claxby PSR has been identified by NATS and</p> | <p>The Applicant is currently awaiting receipt of a Mitigation Services Contract (MSC) template from the National Air Traffic Service (NATS). The MSC will cover the implementation of a technical mitigation solution for the Claxby PSR. The Applicant is proceeding on the basis that a signed MSC, and an agreed DCO requirement, will enable NATS to remove the objection to the proposal as stated in its Relevant Representation.</p> |

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| | | <p>that this would be implemented by the Applicant. This approach is secured in the draft DCO [APP-203, Requirement 28]. The Relevant Representation [RR-028] received from NATS, establishes that NATS remains opposed to the Proposed Development because the "proximity, physical size and relative orientation of the development, is sufficient to generate false tracks".</p> <p>Has suitable mitigation been agreed with the Applicant?</p> <p>Would the implementation of mitigation as proposed by the Applicant be sufficient to reduce the level of false tracks to an acceptable level?</p> <p>If not, what other measures should be agreed and implemented in order for the Proposed Development to be acceptable to NATS?</p> | |
| NAR.1.17 | Applicant NATS | <p>Cromer Primary Surveillance Radar (PSR)</p> <p>Chapter 8 of the ES [APP-020, Table 8.6] notes that dialogue is continuing between NATS and the Applicant with the aims of understanding the implications of the unexpected detection of Hornsea Project One by both the Claxby and Cromer PSRs as well as ascertaining the validity of a mitigation requirement linked to the potential for the Cromer PSR to detect the WTGs linked to the Proposed Development.</p> <p>Provide an update on this process. In addition, if no agreement has been reached, please provide a timescale for the resolution of this matter within the Examination period.</p> | <p>The Applicant has sought to engage NATS on a number of occasions in an attempt to ascertain the validity of a mitigation requirement linked to the potential for the Cromer PSR to temporarily detect the Proposed Development. To date, no further information on this topic has been forthcoming from NATS.</p> <p>The Applicant continues to engage constructively with NATS concerning the need for a mitigation requirement secured through the DCO, linked to the Claxby PSR. The Applicant will continue to engage with NATS on these discussions through the statement of common ground process and intends to submit updates to the Examining Authority throughout the Examination Process. It is currently anticipated that all outstanding issues will be resolved by Deadline 5.</p> |

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| NAR.1.18 | Applicant Ministry of Defence (MoD) | <p>Staxton Wold Air Defence Radar (ADR)</p> <p>The Applicant's ES chapter on Aviation and Radar effects [APP-020, paras 8.6.1.2 and 8.7.6.3] set out the agreement of the use of a theoretical TPS-77 ADR in order to inform the aviation and radar baseline study. This was done in the absence of data from the LR-25 ADR which the Applicant notes has been undergoing Site Acceptance Testing at Staxton Wold, with an expected acceptance anticipated in October 2021.</p> <p>Have operating parameters and specific radar technical information applicable to the LR-25 installation now been released?</p> <p>If not, is this information expected to be released during the Examination period?</p> <p>What impact will this information have on the conclusions presented in the Applicant's ES?</p> | <p>With regard to the specific operating parameters and radar technical information applicable to the LR-25 installation, the Applicant wishes to clarify that it is the Ministry of Defence (MoD) who are responsible for determining which information relevant to the performance of the LR-25 can be made public. The Applicant is not currently able to confirm if, or when, this information will be made publicly available. However, the Applicant is liaising closely with the MoD on this issue.</p> <p>The Applicant is proceeding in line with the MOD's Section 42 response, which states that wind turbines linked to the Proposed Development will be detectable to an air defence radar located at Staxton Wold, and that impacts on a Staxton Wold air defence radar will require appropriate technical mitigation. The Applicant is a leading member of the Defence and Offshore Wind Windfarm Mitigation Task Force, which brings together the MoD, the Department for Business, Energy & Industrial Strategy (BEIS), The Crown Estate, and members of the Offshore Wind Industry Council (OWIC), and which reports to a Joint Programme Board. The ultimate aim of the Joint Task Force and the Joint Programme Board is to enable the co-existence of air defence and offshore wind. A status update entitled 'Air defence and offshore wind: working together towards Net Zero' was published on the Government's website on 29 September 2021. A .pdf version of this is provided at Deadline 2 (see G2.19: Air Defence and Offshore Wind: Working Together Towards Net Zero). Following completion of a number of concept demonstrations, the current focus of the Joint Task force is the identification of one or more technical mitigation solutions.</p> |
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15 Noise, Vibration, Electro Magnetic Fields (EMFs) and Light

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| NVL.1.1 | Applicant MMO | <p>Transboundary noise effects on fish</p> <p>Could the MMO clarify its position in relation to potential transboundary effects from underwater construction noise. On one hand, the Relevant</p> | <p>Please see the Applicant's response to RR-020-3.6.12, RR-020-3.6.13 and RR-020-3.7.23 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |

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| | | <p>Representation [RR-020] seems to suggest that the Proposed Development has the potential to affect fish in Netherlands waters (though in the absence of behavioural response impact range noise contours it is said not to be possible to determine the extent). On the other hand, the Relevant Representation states that, given the distances involved, “the MMO agree that the risk of significant impact of potential transboundary effects is likely to be low.”</p> <p>Does the Applicant intend to provide any further analysis to test for any such transboundary underwater noise impacts, and, if not, why not?</p> | <p>In line with the responses detailed above, it is the Applicant’s position that transboundary effects on fish and shellfish receptors within the Netherlands have been adequately assessed within the EIA and no further analysis is required.</p> |
| NVL.1.2 | Applicant Natural England | <p>Cetacean sensitivity to Permanent Threshold Shift</p> <p>The MMO [RR-020] takes the position that cetaceans should be assessed as having a high sensitivity to Permanent Threshold Shift rather than the medium sensitivity allocated in the Applicant’s ES [APP-016]. Should this be changed, and the assessment updated accordingly? If not, why not?</p> | <p>Please see the Applicant’s response to RR-020-3.7.5 at Deadline 1 (G1.9: Applicant’s comments on Relevant Representations (REP1-038)).</p> <p>In line with the response detailed above, it is the Applicant’s position that no updates are required to the assessment.</p> |
| NVL.1.3 | Applicant | <p>Piling noise assessment</p> <p>Could the Applicant confirm the accuracy of the MMO’s interpretation that the underwater noise modelling assumes that only a single monopile would be installed in a 24-hour period, whereas up to three pin piles could be installed in a 24-hour period. If so, is a further subsea noise assessment of the effects of sequential monopiling necessary, is the Applicant proposing to do this, and when would it be submitted into the Examination? If not, please explain why not. (If not fully addressed</p> | <p>Under consideration by the Applicant. The Applicant will prepare a response on this matter and will submit this into Examination by Deadline 3.</p> |

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| | | in the Applicant's Deadline 1 response to Relevant Representations.) | |
| NVL.1.4 | Applicant | <p>Modelling of other noise sources</p> <p>Can the Applicant comment on the MMO's suggestion [RR-020] that the modelling of 'other continuous sources' such as dredging, cable laying and vessels [APP-043, Section 6] may not be realistic, and whether further modelling and assessment is necessary. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-3.7.11 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>In line with the response detailed above, it is the Applicant's position that no further modelling is necessary.</p> |
| NVL.1.5 | Applicant | <p>Mitigation of underwater noise for cetaceans</p> <p>In its Relevant Representation [RR-020], the MMO disagrees that the Outline Marine Mammal Mitigation Protocol should focus on mitigating only the instantaneous SPLpeak PTS-onset impact ranges. It suggests that the SELcum impact ranges should also be considered. The Applicant is asked to respond to this, to advise if any reassessment or modification to the proposed mitigation would be necessary. If no changes are considered necessary, explain why. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>Please see the Applicant's response to RR-020-4.3.4 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>In line with the response detailed above, it is the Applicant's position that no changes are considered necessary.</p> |
| NVL.1.6 | Applicant MMO Natural England | <p>At-source mitigation of underwater noise for cetaceans</p> <p>Co110 of the Commitment Register [APP-050] is noted, but is it necessary in addition for the Applicant to refer specifically and to commit to the at-source underwater noise reduction measures that were included as mitigation measures in the underwater noise assessment? If such commitments are not made, what are the</p> | <p>Please see the Applicant's response to RR-020-4.3.5 and RR-020-4.3.6 at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>In line with the responses detailed above, it is the Applicant's position that it is not appropriate or necessary to include such commitments within the DML at this stage. The Applicant notes that this does not have any implications on the harbour porpoise features of the Southern North Sea SAC as F2.11: Outline Southern North Sea Special Area of Conservation Site Integrity Plan (SNS SAC</p> |

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| | | <p>implications for the EIA and the HRA in relation to the harbour porpoise interest feature of the Southern North Sea SAC?</p> | <p>SIP) (APP-246) sets out the available mitigation and management measures that could be brought forward during the development of the final SNS SAC SIP prior to the construction of Hornsea Four, to ensure that a conclusion of no Adverse Effect on Integrity (with respect to significant disturbance of harbour porpoise in relation to the conservation objectives of the SNS SAC) can be maintained. The SIP process includes provision for at-source mitigation, if required and offers comfort that the necessary mitigation will be secured.</p> |
| NVL.1.7 | Applicant MMO Natural England | <p>Concurrent piling</p> <p>The MMO [RR-020] notes the Outline Marine Mammal Mitigation Protocol statement that there would be no concurrent piling between the array area and the HVAC booster stations in the export cable corridor but suggests that this is not made clear in Co85 of the Commitment Register [APP-050]. Does this need to be clarified in the Commitment Register? If not, why not?</p> | <p>Please see the Applicant's response to RR-020-4.3.3, RR-029-APDX:A-9 and RR-029-APDX:D-B at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> |
| NVL.1.8 | Applicant MMO | <p>Effects of electromagnetic fields (EMF) on marine wildlife</p> <p>On the one hand, the MMO's Relevant Representation [RR-020] suggests that recent research on the effects of EMF on marine wildlife means that the decision to scope out its effects should be revisited. Elsewhere the Relevant Representation suggests that the MMO agrees with the decision to scope it out. What is the MMO's position?</p> <p>Is it the Applicant's intention to revisit EMF in the light of the new research findings and to update the assessment if necessary? If not, why not?</p> | <p>Please see the Applicant's response to RR-020-3.4.12B at Deadline 1 (G1.9: Applicant's comments on Relevant Representations (REP1-038)).</p> <p>In line with the response detailed above, it is the Applicant's position that no update to the assessment is necessary.</p> |
| NVL.1.9 | Applicant ERYC | <p>Baseline noise monitoring locations</p> <p>For the onshore ECC, only CMP1 and CMP2 are shown as representative locations [APP-032,</p> | <p>In line with normal practice for long, linear schemes baseline noise measurements at every receptor are not made, but representative locations are selected to represent the baseline. Therefore, in consultation with ERYC, the Applicant presented and agreed the proposed representative baseline noise measurement</p> |

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| | | <p>Figure 8.6]. What is the rationale for the choice of these?</p> <p>CMP1 and CMP2 are on major roads, so will have a higher background noise level than the more rural stretches of the corridor, which may have a significant number of sensitive receptors eg, Rotsea Manor, Acres Farm, Manor Farm in Lissett, and properties to the west of Bentley.</p> <p>Are these two locations therefore representative and sufficient for a robust noise assessment?</p> <p>ERYC:</p> <p>Are you satisfied that the baseline monitoring locations are sufficient for a robust noise assessment? If not, please set out your reasoning for this position and clarify what further information you believe to be required.</p> | <p>positions. The Applicant confirms that CMP1, CMP2 and CMP3 were agreed with ERYC as 'spot' baseline noise monitoring locations.</p> <p>Baseline noise measurement locations CMP1, CMP2 and CMP3 are representative of the nearest noise sensitive receptors for which the Applicant obtained landowner access for. These locations were selected to be representative of:</p> <ul style="list-style-type: none"> • the proposed logistics compound, • the ECC alignment; and • the OnSS. <p>These locations are considered by the Applicant to represent the noise sensitive receptors most likely to be affected by transport routes accessing the locations, and/or mobile and stationary plant.</p> <p>Assessment of construction phase noise sensitive receptors has been undertaken, using the 'ABC' methodology set out in Annex E of British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites'.</p> <p>Ambient noise levels at noise sensitive receptors along the onshore ECC have been assumed to be low such that the Category A threshold values are applicable. These values are the lowest which could be applied using this methodology; hence the noise assessment presented in A3.8: Noise and Vibration (APP-032) considers a potential worst-case. Additional baseline noise measurements would not result in the noise assessment being any more robust, as these could only result in the application of higher construction noise level limits.</p> |
| NVL.1.10 | Applicant | <p>Trenchless installation approach</p> <p>The noise assessment [APP-032, para 8.7.4.6 and tables 8.16 & 8.18] appears to assume that HDD would be used for trenchless installations and calculations appear to be made on that basis. Other types of trenchless technologies could</p> | <p>The MDS for the noise assessment was developed using the details of typical and representative plant including numbers of equipment, on-time and operational hours of the proposed equipment that would be used for trenchless installation activities.</p> |

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| | | <p>possibly be used in the context of the draft DCO and application documents as submitted (eg thrust boring, auger boring, and pipe ramming are all specifically mentioned).</p> <p>Is HDD the worst-case noise scenario of all of these possible technologies?</p> <p>If not, what is and how would assessment of this worst-case affect the conclusions of the ES?</p> | <p>The use of HDD is considered to be 'worst-case' due to noise impacts with a potential level of 107dB(A) for the HDD drilling rig. The dB levels for the auger bore unit are approximately 40% less than a HDD rig; however, the same associated equipment such as pumps, plant, generators etc. would still be required, which will have the same noise levels regardless of the trenchless methodology utilised.</p> <p>Furthermore, the preference for HDD method is presented in the introductory tables of A4.4.1: Offshore Crossing Schedule (APP-039) under "proposed crossing method" where three of the four listed methods utilise HDD.</p> <p>As part of the noise and vibration MDS, the assessment of HDD works was undertaken to represent a reasonable worst case i.e. up to three HDD units operating simultaneously at the landfall and two HDD units operating simultaneously along the ECC.</p> |
| NVL.1.11 | Applicant ERYC | <p>Mitigation of temporary noise and vibration impacts during haul road construction</p> <p>The Applicant's noise assessment [APP-032, table 8.1.6] notes the potential for significant temporary noise and vibration impacts from constructing the haul road access points at various receptors, without mitigation. (Bridge Farm Holiday Cottages, Arms Farm and Elm Tree Farm, in Brigham, Driffield, are excluded from the Co135 commitment to locate the works at least 150m from receptors.) This is said not to be considered further in the ES following consultation with ERYC as sufficient mitigation would be possible.</p> <p>Applicant: Confirm what this mitigation is, and how it would be secured.</p> | <p>Co124 states that a Code of Construction Practice will be developed in accordance with the outline CoCP, which is secured by Requirement 17 of the draft DCO.</p> <p>Section 6.9 of F2.2: Outline Code of Construction Practice (REP1-027) sets out the mitigation measures that are considered appropriate for all phases of the onshore construction works. The good construction practices and appropriate management measures as detailed in Section 6.9.3.3 of F2.2: Outline Code of Construction Practice (REP1-027) will enable noise to be controlled through both the actions of site operatives and mechanical processes. These measures include the following:</p> <ul style="list-style-type: none"> • Informing local residents about the construction works, including the timing and duration of any particular noisy elements, and providing a contact name and number of who to contact if required; • Avoiding operating particularly noisy equipment at the beginning and end of each day; • Locating noisy static plant, such as diesel generators, away from residential properties, where reasonably practicable; and |

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| | | <p>ERYC: Is this correct?</p> | <ul style="list-style-type: none"> Ensuring engines are switched off when machines are idle. <p>Co36 (relating to working hours) will ensure that onshore works occur during normal working hours with exceptions to this being covered in F2.2: Outline Code of Construction Practice (REP1-027).</p> <p>In addition to the measures listed in Section 6.9.3.3 of F2.2: Outline Code of Construction Practice (REP1-027), at locations deemed necessary (through consultation with ERYC) and/or identified in the detailed CoCP(s), screening and appropriate temporary noise barriers will be used.</p> |
| NVL.1.12 | Applicant | <p>Noise management plan Requirement 21 of the draft DCO [APP-203] refers to the production of a 'noise management plan' to control operational noise from Work No. 7. There is therefore no submitted outline plan and apparently no reference to this in the Commitment Register [APP-050]. It is unclear what measures would be used to ensure that the noise effects fall within the scope of those predicted in the ES. Please clarify.</p> | <p>Co159 secures the maximum operational noise levels at receptors, which will ensure that no significant adverse effects arise from the OnSS and EBI. Details regarding the specific noise mitigation measures are not provided at the point of application and are instead developed during the detailed design stage. However, Section 6.5 of F2.13: Outline Design Plan (APP-248) sets out the hierarchy of mitigation measures associated with operational noise, identifying the selection of low noise equipment as the primary method, followed by engineered solutions. These measures are further secured via Requirement 7(1)(i), which stipulates that the means to control operational noise from Work No.7 will need to be submitted and approved in writing by ERYC prior to construction of connection works.</p> |
| NVL.1.13 | Applicant ERYC | <p>Temporary noise and vibration from construction of the onshore substation The Applicant's noise assessment [APP-032, table 8.16] notes that the temporary impact of noise and vibration from construction of the onshore substation was assessed as part of the EIA, as set out in PEIR (Orsted, 2019) and that no likely significant effect was identified. The Applicant notes that:</p> | <p>The mitigation measures referred to in this question are those contained in the oCoCP.</p> <p>As set out in Section 8.7.4.8 of A3.8: Noise and Vibration (APP-032), an additional noise assessment was carried out during Spring/Summer 2021 that considered the increased number of piles at the OnSS. The increase in the number of piles per day is approximately 25% over the same 11 hour working period. To enable the additional piling work to be undertaken efficiently the number of piling rigs has also increased.</p> |

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| | | <p>“...it was agreed to not consider this impact further in the ES through consultation with ERYC, on the 5th November 2019 (ON-HUM-3.5).”</p> <p>The Applicant goes on to clarify that proposed changes to the onshore substation piling works: “which includes the increased number of piles to be installed and the number of piling rigs, were re-assessed in spring/summer 2021. The outcome of this re-assessment has shown no significant change to the conclusions of the previous assessment with the implementation of the appropriate noise mitigation measures.”</p> <p>Describe the mitigation measures mentioned in the last sentence quoted above and confirm how this mitigation is to be secured.</p> <p>Does the proposed change to the onshore substation piling works have an impact on the agreement made on 5 November 2019 (ON-HUM-3.5) to not consider the impact of noise and vibration from construction of the onshore substation?</p> | <p>The noise assessment undertaken in 2021 involved the prediction of piling noise emissions from four rigs working simultaneously, all located no less than 180 m from the nearest noise sensitive residential property. The revised noise assessment determined no significant impacts based upon implementation of the mitigation measures set out in F2.2: Outline Code of Construction Practice (REP1-027) along with the project commitments Co36 and Co169. Hence, the agreement made with ERYC to exclude these impacts from the ES remains valid and unchanged.</p> |
| NVL.1.14 | Applicant | <p>Horizontal drill entry and exit points</p> <p>The Applicant’s Project Description [APP-010, table 4.35] notes that up to 240 transition joint bays and up to 240 link boxes would need to be installed. Their locations would be dependent on horizontal drill entry and exit points, which would be subject to detailed design at a later date. Please confirm the assumptions made in relation to the location of these in the construction noise and vibration assessment.</p> | <p>The MDS for the jointing bay works was developed using the details of the typical and representative plant including numbers of equipment, on-time and operational hours of that would be used for this element of works.</p> <p>To represent a worst-case scenario and using the proposed alignment of the onshore ECC, the equipment was positioned within the jointing bay footprint located at the closest position to a noise sensitive receptor. The noise levels from the proposed jointing bay works were then calculated at the noise sensitive receptor to determine the level of effect.</p> <p>The predicted noise impact from the construction of the jointing bays was determined as being negligible. Therefore, further assessment of the jointing bay</p> |

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| | | | works was not considered in detail in A3.8: Noise and Vibration (APP-032) . Justification for this conclusion is presented in A4.5.1: Impacts Register (APP-049) , reference NV-C-4. |
| NVL.1.15 | Applicant | <p>Energy balancing infrastructure</p> <p>The Applicant’s signposting document [OD-002] notes that the assessment presented in the ES assesses the MDS for both ‘enclosed’ and ‘open yard’ approaches to energy balancing infrastructure design and configuration. Clarify which approach each of the conclusions and the summary text set out in Table 1 and Section 4.1 [OD-002] applies to, with more detail.</p> <p>Has the worst case been assessed in terms of noise impacts from energy balancing infrastructure?</p> | <p>The MDS was used as the “worst case scenario” in all assessments used to inform the conclusions set out in A3.8: Noise and Vibration (APP-032) and presented in Table 1 and Section 4.1 of the Applicants Signposting Response (OD-002).</p> <p>The noise model that was built to assess the noise effects of the OnSS (including the EBI) took information from the MDS to inform the noise levels of the equipment that would be used. Layout plans showing where the equipment and buildings could be located were also incorporated to ensure the appropriate layout and heights of the various components was considered. With the exception of any embedded mitigation within the detail provided, no additional mitigation measures were included and as such the model was considered to represent a worst-case. This means that the assessment considered noise sources that were not fully enclosed.</p> |
| NVL.1.16 | Applicant | <p>Lighting of the onshore substation</p> <p>Clarify, graphically if possible or alternatively with a written description, which areas would require permanent lighting (and clarify why this is required) alongside areas where lighting would only operate when required – as described in [APP-248, para 9.5.1.1].</p> | <p>Permanent lighting is required for operations and maintenance personnel to safely access and conduct activities, when required.</p> <p>Permanent lighting will be installed on lighting masts, building walls, and equipment compounds within the substation area, and along access ways for personnel and vehicles.</p> <p>The permanent lighting will be directed at locations inside of only the substation site and will only be activated when personnel are on-site to conduct activities.</p> <p>As set out in F2.3: Outline Ecological Management Plan (APP-238) in Section 4.4.2, a ‘Dark Corridor’ will be established to avoid impacts on bats. This will be developed during the detailed design stage.</p> <p>A graphical model depicting the projected areas of illumination is currently not available. It will be developed during detailed design.</p> |

16 Onshore Ecology

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| OE.1.1 | Natural England ERYC | <p>Survey methodology – field survey dates</p> <p>The field surveys for the Extended Phase 1 Habitat Survey [APP-100] and the individual species were undertaken in 2019. Given the time that has now elapsed since these field surveys were completed, and noting that Requirement 19 of the draft DCO [APP-203] requires pre-construction surveys for European protected species, are you satisfied with the validity of the various surveys for individual species that have been submitted? If not, why not?</p> | |
| OE.1.2 | Applicant | <p>River Hull Headwaters SSSI</p> <p>In paragraph 3.3.1.10 of the Ecological Management Plan [APP-238] you describe mitigation measures for this SSSI and also state that “further ecological advice will be provided to manage the impacts identified” should the measures identified by the Ecological Clerk of Works not be sufficient. How would the efficacy or not of the mitigation measures be assessed and consulted upon? How would the trigger point for needing any additional measures be determined and what additional mitigation measures could be implemented? For example, would it be feasible to undertake works within this SSSI entirely outside the bird breeding/nesting season?</p> | <p>The Applicant can confirm that a timing restriction of works to cross the River Hull Headwaters SSSI is not possible; however, and subject to the findings from the pre-construction breeding bird survey, the appointed Ecological Clerk of Works (ECoW) will advise on the requirement for any additional mitigation measures should they be identified as being required. Such additional mitigation measures may include altering the orientation of the acoustic barriers as per Co123 at the River Hull Headwaters SSSI HDD crossing location or the installation of acoustic barriers both at the source (i.e. HDD entry and exit pit) and at the closest receptor (i.e. at the bank of the River Hull and at the point of the crossing location). The implementation of these additional mitigation measures, or others, will be determined by the ECoW and agreed with Natural England and ERYC.</p> <p>As presented in Section 7.2.1.2 of the F2.3: Outline Ecological Management Plan (APP-238), the ECoW will be responsible for the production of the pre-construction survey reports, including the breeding bird pre-construction survey. This report detailing the results from the pre-construction breeding bird surveys will be shared</p> |

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| | | | <p>with stakeholders and presented in the final EMP that will be submitted to fulfil Requirement 10.</p> <p>As presented in Section 7.2.2 of the F2.3: Outline Ecological Management Plan (APP-238), the ECoW will maintain a record of all ecological works that are undertaken during the construction period. This will include the reporting on any ecological watching briefs or protected species surveys and findings from any site visits. These reports will be provided to both the Applicant, Natural England and ERYC.</p> |
| OE.1.3 | Applicant Natural England | <p>Mitigation measures for bat species – hedgerows</p> <p>Applicant: In the Ecological Management Plan [APP-238, para 3.3.2.16] you refer to employing moveable features on a nightly basis for sections of hedgerow that have been removed along bat commuting and foraging routes. Would these features remain in situ at times when construction operations are not taking place, including after construction operations have ceased and until the replacement sections of hedgerow have become established? If so, then how would this be secured in the draft DCO and how has the post-construction reinstatement of hedgerows been assessed in the ES? Furthermore, in [APP-238, para 4.3.3.2] you refer to replacement hedgerows being of a comparative age. Is this feasible for all sections of hedgerow that are scheduled to be removed?</p> <p>Natural England: The ExA notes the comments you have made in regard to onshore ecology in [para 5.66 of RR-</p> | <p>The Applicant confirms that for those sections of hedgerow that have been removed, the employment of the moveable features will be deployed for the duration of the construction and/or operational phase. They will not be removed until such time that that the reinstatement/replaced hedgerow has been deemed by the appointed ECoW to have become established. This is secured through Co26, Requirement 10 (F2.3: Outline Ecological Management Plan (APP-238)) and Requirement 8 and 9 (F2.8: Outline Landscape Management Plan (APP-243)).</p> <p>The post-construction reinstatement of hedgerows has been assessed from their point of establishment.</p> <p>The Applicant confirms that as committed to through Co26, and Requirement 10 (F2.3: Outline Ecological Management Plan (APP-238)), sections of hedgerows and trees which are removed will be replaced using like for like hedgerow species. In respect of the age of hedgerow replacement it is noted that this is only relevant to hedgerows utilised by bats as commuting corridors. This will be subject to plant stock availability at the time and cannot be committed to at this time for specific instances; however, it is included in the Outline Ecological Management Plan for consideration, where feasible, as part of the detailed version to discharge Requirement 10.</p> |

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| | | 029]. Are you therefore satisfied that the Applicant's mitigation measures, as summarised in Table 3.23 of ES Vol. A3 Chapter 3 [APP-027], would address the effects on bats? If not, are there any other approaches that you consider would be effective in terms of mitigation measures for bats? | |
| OE.1.4 | ERYC Natural England Yorkshire Wildlife Trust | Biodiversity net gain - methodology The ExA notes that on 11 January 2022 DEFRA opened a Consultation on Biodiversity Net Gain Regulations and Implementation, and this closes on 5 April 2022. Having regard to this Consultation and the comments made by the Environment Agency [RR-010] including that the proposed net gain only related to the onshore substation area, are you content with the methodology and measures for biodiversity net gain that have been proposed in the Outline Net Gain Strategy [APP-251]? If not, why not, and what other measures would you wish to see? | |
| OE.1.5 | Applicant | Biodiversity net gain Respond to the comments regarding biodiversity net gain made by the Environment Agency [RR-010] and assess the proposals you have outlined in the Outline Net Gain Strategy [APP-251] in light of DEFRA's Consultation on Biodiversity Net Gain Regulations and Implementation. | Please refer to Relevant Representation response RR-010-R, in G1.9: Applicant's comments on Relevant Representations (REP1-038) . |
| OE.1.6 | Applicant | Badger mitigation In para 4.4.3.3 of the Ecological Management Plan [APP-238] you state that badger excavations more than 0.5m deep would be fenced or covered overnight. Can you clarify this and amend if required? | The Applicant advises that there is an error in paragraph 4.4.3.3 of the F2.3: Outline Ecological Management Plan (APP-238) and the reference to "badger excavations" should be removed. The Applicant confirms that the sentence should read: <i>"Excavations more than 0.5m deep would be fenced or covered overnight."</i> |

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| | | | This update was made to the F2.3: Outline Ecological Management Plan (APP-238) and resubmitted at Deadline 1 (REP1-029 and REP1-030). |
| OE.1.7 | Applicant | <p>Post-construction monitoring and remedial measures</p> <p>The Ecological Management Plan [APP-238] and the Outline Net Gain Strategy [APP-251] make reference to a range of biodiversity mitigation and net gain measures. How would these be monitored and what factors would be used to determine whether they are working or not, and whether remedial actions or other measures would be necessary?</p> | <p>As presented in Section 5.3.2 of the F2.16: Outline Net Gain Strategy (APP-251), the details of the proposed monitoring of the reinstated and/or created habitats are unable to be provided at this time as the post-development calculations have not been undertaken. The detailed monitoring plan will be presented within the final Net Gain Strategy that will be submitted pre-construction to fulfil Requirement 6 of the draft DCO. The detailed monitoring plan will include the criteria for ensuring the proposed measures have been successfully implemented and the requirement for any remedial measures should they be identified as being required.</p> <p>During the initial five year period any plants which die, are removed, or become seriously damaged or diseased, in the opinion of ERYC, shall be replaced in the first available planting season with a specimen of the same species and size as that originally planted. Unless otherwise approved in writing by ERYC. This is secured in Requirement 9(2), Schedule 1, Part 3, of the draft DCO.</p> |

17 Onshore Water Environment

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| OWE.1.1 | Applicant | <p>Submission of Position Paper</p> <p>In your 'Applicant response to Section 51 Advice, Section 51 update, Date 14 January 2022' document [AS-021] you make reference to a Position Paper on 'Hydrology and Flood Risk - Assessment of modelled water levels for Onshore Substation and Attenuation Feature' being updated and appended to the Flood Risk</p> | <p>The Applicant has prepared G2.17: Position Paper on Hydrology and Flood Risk - Assessment of Modelled Water Levels for Onshore Substation and Attenuation Feature which accompanies the Deadline 2 submission.</p> |

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| | | Assessment. However, this updated Position Paper does not appear to have been provided; please submit it. | |
| OWE.1.2 | Applicant | <p>NPPF 2021 and the Sequential Test</p> <p>NPPF 2021 and the Sequential Test</p> <p>The ExA notes that the NPPF was published in July 2021 and the approved date for the Onshore Infrastructure Flood Risk Assessment (FRA) [APP-098] is September 2021. The NPPF now requires that all sources of flooding need to be taken into account when undertaking the Sequential Test. However, in paragraph 2.2.1.1 of the FRA [APP-098] you refer to the NPPF 2019. Whilst also having regard to paragraph 5.7.4 of NPS EN-1, comment on this in relation to your submitted FRA and whether it would alter the conclusions you have reached in this regard.</p> | <p>With regard to the updated NPPF, the Applicant notes that throughout the assessment of Hornsea Four all sources of flooding have been considered during the siting of the various project elements, as set out in A6.2.2: Onshore Infrastructure Flood Risk Assessment (APP-098).</p> <p>Design amendments, taking into account all sources of flood risk, were discussed during the Onshore Water and Flood Risk Technical Panel Meeting 5 on 5th November 2019 (full minutes of this meeting are presented in B1.1.1: Consultation Report Evidence Plan (APP-130)) where it was confirmed that, for example, the location of the York Road logistics compound had been reviewed and amended to address the surface water flood risk in this location.</p> <p>Furthermore, a meeting was held with the Environment Agency on the 7 September 2021 (full minutes of this meeting are presented in B1.1.1: Consultation Report Evidence Plan (APP-130) (ON-HYD-7.9). During this meeting the Applicant discussed the updated NPPF and potential impact on Hornsea Four, specifically in relation to climate change allowances. It was noted and agreed during this meeting that despite updates to the information and guidance available there is no change to the present and future flood risk, at the OnSS site.</p> <p>On the basis of the above, the Applicant can confirm that all sources of flooding have been taken into consideration throughout the assessment when considering the siting of Hornsea Four and therefore the updates to NPPF in July 2021 do not alter the conclusions with regard to flood risk.</p> |
| OWE.1.3 | Applicant | <p>Elements of the Proposed Development in Flood Zone 3</p> <p>The Flood Risk Assessment [APP-098] does not demonstrate whether any options exist that could wholly avoid siting the Proposed Development outside of Flood Zone 3.</p> | <p>As noted in G1.1.4 Applicant's Response to Section 51 Advice (AS-021), Paragraph 5.2.1.3 of A6.2.2: Onshore Infrastructure Flood Risk Assessment (APP-098) confirms that above ground compounds / structures and permanent elements of Hornsea Four are primarily located within Flood Zone 1 and that the elements located in Flood Zone 3 are either temporary in nature or have to be sited in this location to pass over existing watercourses. Subterranean development is also</p> |

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| | | <p>Furthermore, there are elements of the overall Proposed Development that would be located within Flood Zone 3, such as the south-eastern corner of the onshore substation site and that part of the permanent access track that crosses the existing Atkin's Keld watercourse. How do you intend to secure and agree the detailed design for these areas with the Environment Agency and with ERYC as the Lead Local Flood Authority?</p> | <p>located primarily in Flood Zone 1, with some locations in Flood Zone 2 and 3 where it is required to pass under, or in proximity to, existing watercourses. Further to this, A6.2.2: Onshore Infrastructure Flood Risk Assessment (APP-098) notes that based on the modelling information available the built elements of the permanent OnSS area will be located within Flood Zone 1, and the only element of the OnSS infrastructure located within Flood Zone 3 is the attenuation feature. This will be sized to accommodate both flood storage and runoff from the OnSS.</p> <p>The permanent access track is located primarily in Flood Zone 1, except for the location where it passes over the existing Atkin's Keld watercourse where it will be within Flood Zone 3 and at 'High' surface water flood risk. This area of flood risk is limited to the location where the permanent access track passes over the existing watercourse.. This was agreed with the Environment Agency on the basis that the design of the access track would ensure that there is no impact on floodplain storage or the conveyance of flood waters ((B1.1.1: Consultation Report Evidence Plan (AS-011) (ON-HYD-4.13)). This is reflected in Co184 of A4.5.2: Commitment Register (APP-050).</p> <p>It is not possible to wholly avoid all areas of Flood Zone 3 due to the nature and scale of Hornsea Four, which crosses multiple watercourses and associated flood zones. However, the Applicant has sequentially located the onshore infrastructure to avoid areas of increased flood risk wherever possible, ensuring that those elements most likely to be affected by flooding are within Flood Zone 1 and at low risk from surface water flooding.</p> <p>A6.2.2: Onshore Infrastructure Flood Risk Assessment (APP-098) notes that the construction of the permanent access track, over the existing Atkin's Keld watercourse should be designed to ensure continued floodplain capacity and / or flow conveyance, where reasonably practicable. This was discussed and agreed with the Environment Agency, and Beverley and North Holderness IDB at the Hornsea Four water and flood risk Evidence Plan Technical Panel meeting held on 5 November 2019 (ON-HYD-3.12).</p> |
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| | | | <p>All watercourse crossings will be subject to the relevant permitting requirements and consultation on the proposed designs will be undertaken with the Environment Agency and ERYC (as the LLFA).</p> <p>The above commitment by the Applicant is subsequently reflected in Co184 and Co185 of A4.5.2: Commitment Register (APP-050). Additionally, the Applicant considers that Requirements 13 and 15 adequately secure flood mitigation measures.</p> |
| OWE.1.4 | Applicant Environment Agency | <p>Watton Beck</p> <p>Having regard to the comments made by the Environment Agency in [RR-010] please provide any updates on your discussions regarding the crossing of the Watton Beck. (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.) (You may wish to combine this with your response to question CA.1.10.)</p> | Please see the Applicant's response to CA.1.10. |
| OWE.1.5 | Environment Agency ERYC as Lead Local Flood Authority Beverley and North Holderness Internal Drainage Board | <p>Applicant response to Section 51 Advice [AS-021]</p> <p>Please confirm whether or not you are in agreement with the comments submitted by the Applicant in pages 9 to 13 of its 'Applicant response to Section 51 advice' document [AS-021] in relation to advice about the Flood risk Assessment. If not, then please state why.</p> | |
| OWE.1.6 | Applicant | <p>Sustainable Drainage Systems (SUDS)</p> <p>In section 3.2.2 of the Outline Onshore Infrastructure Drainage Strategy [APP-241] you state that the detailed surface water scheme would be developed post-consent. Having regard</p> | The Applicant confirms that there is sufficient space within the Order Limits for the OnSS and EBI to accommodate the required SuDS, as part of the drainage design. It is considered that Figure 2 of F2.8: Outline Landscape Management Plan (APP-243) provides a scaled indicative layout that demonstrates the indicative location |

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| | | <p>to the other mitigation and compensation measures, including screen mounding and biodiversity net gain measures, can you demonstrate that there would be sufficient space within the Order limits at the onshore substation for SUDS to be implemented.</p> | <p>of the surface water attenuation zones, earthwork mitigation proposals, screening and buffer zones, in relation to the OnSS and EBI site.</p> <p>Further to the above, the Applicant notes in F2.6: Outline Onshore Infrastructure Drainage Strategy (APP-241) that a series of SuDS measures will be provided including filter drains, swales, attenuation and flow control structures for the operational drainage of the OnSS. These measures are in addition to the surface water attenuation feature shown on Figure 2 of F2.8: Outline Landscape Management Plan (APP-243). This commitment by the Applicant is subsequently reflected in Co19 and Co191 of A4.5.2: Commitment Register (APP-050). Additionally, the Applicant considers that Requirements 13 and 15 adequately secure appropriate mitigation measures.</p> <p>Therefore, the Applicant reiterates that there is sufficient space within the Order limits for the OnSS and EBI to accommodate the required SuDS, as part of the drainage design.</p> |
| OWE.1.7 | Mr and Ms Taylor | <p>Natural Flood Area</p> <p>In your Relevant Representations [RR-017 and RR-019] you mention that 3 acres of land along the north-eastern boundary of the farm acts as a natural flood area. Can you please provide further detail of what you mean by a natural flood area and a plan or map showing the location of this area?</p> | |

18 Proposed Development and Site Selection

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| PDS.1.1 | Applicant | <p>Choice of technology</p> <p>A number of other recent wind farm projects, for example East Anglia ONE North and Norfolk Vanguard, have specified the use of either a</p> | <p>In order to continue to deliver reductions in the price of offshore wind energy Hornsea Project Four requires flexibility in the choice of transmission technology. This flexibility encourages competition within the supply chain across a greater number of potential suppliers and ensures that an economic and efficient</p> |

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| | | <p>HVAC or a HVDC electrical system for the onshore cabling from the outset. Justify why you have yet to decide as to whether HVAC or HVDC would be your preferred option and, based on the worst-case scenario, set out clearly side by side in a table format a summary of what the implications of each technology would be in regard to the worst-case onshore cable construction operations and project design parameters, including the number and size of buildings at the onshore substation site. (You may wish to combine the answer to this question with the answer to question CA.1.1.)</p> | <p>transmission system can be delivered within project timescales that reduces the cost to the UK consumer. This in turn can be reflected in any CFD auction bid strategy that Ørsted may take forward and volume and pricing levels that are proposed/delivered.</p> <p>Notwithstanding the above, Ørsted does not maintain a technology bias to either HVAC or HVDC transmission systems. Hornsea Project Four is currently engaged in a detailed technology assessment exercise and is in discussions with key supply chain players to determine the most suitable transmission system for the project which will not conclude prior to the end of the consent examination phase.</p> <p>Ørsted is aware of other offshore wind projects that have publicly stated a commitment to solely using HVDC technology (and have limited themselves as such in their respective DCO applications). Ørsted is concerned that the current supply chain does not possess suitable capacity to deliver multiple HVDC transmission systems to numerous developers concurrently but acknowledges that this may change over time.</p> <p>In light of the above, Ørsted is of the view that committing to solely HVDC now could restrict or even prevent the development of Hornsea Project Four in the future. Thus, in Ørsted's opinion a decision on which transmission system to adopt for Hornsea Project Four (HVDC or HVAC) should not be made until after extensive engagement with potential systems suppliers has taken place.</p> <p>The selection of transmission technology is then only expected to be made public when Hornsea Project Four completes a Final Investment Decision, which is likely to be after a successful CfD auction allocation or after the exploration of alternative funding mechanisms. This public decision point will, however, occur sometime prior to any commencement of works and after the project has entered into major supply contracts for the transmission system."</p> <p>Implications of each technology regarding the worst-case onshore cable construction operations and project design parameters is provided separately, in Appendix C.</p> |
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| PDS.1.2 | Applicant | <p>Relay stations</p> <p>Should you choose to use HVAC as your preferred onshore cabling electrical system, indicate whether this would require the installation of a cable relay station or stations onshore. If so, set out how these have been accounted for in the ES?</p> | <p>No onshore cable relay station (termed booster station in the Hornsea Four application) are considered, these would only be required offshore as described in A1.4: Project Description (REP1-004) para 4.8.2.13.</p> |
| PDS.1.3 | Applicant | <p>Primary project design commitments</p> <p>Clarify what Table 4.1 of Chapter 4 of the ES [APP-010] is intended to include. Paragraph 4.3.1.2 says it summarises primary design commitments. However, it seems to include some that are not primary. Is it intended to be a comprehensive list? Why have these specific commitments been selected for inclusion here?</p> | <p>The commitments listed in Table 4.1 of A1.4: Project Description (REP1-004) are not considered to be a comprehensive list of all design related commitments; however, they provide a condensed list of commitments considered to be of most relevance to the Project Description of Hornsea Four. This list has been condensed to avoid an unnecessarily long table.</p> <p>Co191, a secondary commitment, has been included due to the influence on the detailed design of the OnSS and EBI site.</p> <p>Co192, a secondary commitment, has been included as it relates to the design of the landfall, inclusive of the trenchless technology selection.</p> <p>It is noted that the inclusion of commitments in the Project Description, or lack thereof, does not reflect the influence each commitment has had on the design of Hornsea Four.</p> |
| PDS.1.4 | Applicant | <p>Onshore cable corridor</p> <p>The ExA notes that the proposed maximum working width of the onshore cable corridors for East Anglia ONE North and East Anglia TWO is 32m (16.1m in certain sensitive locations) and for Norfolk Boreas it is 45m width with a permanent easement of 20m, to cover both Norfolk Boreas and Norfolk Vanguard. Having regard to these other projects justify your proposal for a working width of 80m for the onshore cable corridor and a 60m permanent easement.</p> | <p>The working width of 80m and permanent easement of 60m facilitates the installation of up to six cable circuits, each installed within its own trench, with a required separation distance of 10m between each circuit. Additional space within the 80m working width would be utilised to install the haul road and provide area for temporary storage and segregation of excavated topsoil and subsoil.</p> <p>The working width for East Anglia Two (two cable circuits within a permanent easement of 20m) is considered to be proportionate to Hornsea Four, when scaled up to six circuits, as per the maximum design scenario.</p> |

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| | | | <p>The Norfolk Boreas and Norfolk Vanguard projects have committed to a HVDC solution for their projects and as such direct comparison cannot be made to the HOW04 HVAC proposal for the working width and permanent easement required. The HVDC solution would allow for a reduced circuit separation due to the thermal operating properties of the cables which are much lower than an HVAC solution. We understand it is the intention to install 2 circuits, or 1 pair of cables, in one trench for each of those other developers' projects. The HOW04 project for an HVAC solution assumes a 10m circuit separation.</p> |
| PDS.1.5 | Applicant | <p>Clarify potential location of HDD exit pits and compound at landfall</p> <p>ES Project Description [APP-010, para 4.9.2.9] states that horizontal directional drilling exit pits "may be located above mean high water (MHW) within the Hornsea Four intertidal area (intertidal punch-out)".</p> <p>Please clarify:</p> <p>i. The minimum distance landward from Mean High Water the landfall horizontal directional drilling compound would be located.</p> <p>ii. If "above mean high water" in this context is intended to mean landward of the intertidal area or more specifically landward of the coastline/cliff zone.</p> | <p>i The landfall compound will be located behind the active coastal cliff and will enclose the HDD entry locations which will, along with the respective indicative HDD drill lengths, take cliff erosion and at least 35 years design life into consideration.</p> <p>ii The reference in A1.4: Project Description (REP1-004), para 4.9.2.9 is not correct. The wording "The HDD exit pit may be located above mean high water (MHW), within the Hornsea Four intertidal area (intertidal punch out) or below mean low water (MLW)." should be replaced with "The exit pits will be below Mean Low Water (MLW)." That is in line with reference in A1.4: Project Description (REP1-004) para 4.9.2.5 "The HDD exit pits will be located at a minimum of 400 m and a maximum of up to 1,500 m from the TJB." The A1.4: Project Description (REP1-004) will be updated to clarify this and submitted at a future deadline.</p> |
| PDS.1.6 | Applicant | <p>Securing HDD detail and delivery</p> <p>The location of all proposed lengths of HDD is presented in the Onshore Crossing Schedule [APP-040]. In general, across the Proposed Development, how would the detail and delivery of these be secured?</p> | <p>Proposed HDD locations are identified on the basis of the characteristics of the obstacle to cross, for example, railway crossings, rivers, environmentally sensitive areas, certain underground utility assets, roads etc. This is in the absence of any site-specific information relating to ground conditions, depth of the obstacle, asset owner requirements at the identified location which would be required to confirm the depth and length of the intended HDD at each identified location. The location of the HDDs are secured within the A4.4.2: Onshore Crossing Schedule (APP-040) which is a certified document under Schedule 15 of the C.1.1: Draft DCO including Draft DML (REP1-002).</p> |

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| PDS.1.7 | Applicant | <p>Other trenchless technology</p> <p>Co1 of the Commitment Register [APP-050] refers to the use of "HDD or other trenchless technology". Clarify what other trenchless technology could be utilised instead of HDD and how these have been assessed in the ES.</p> | <p>In the unlikely event that an HDD would not be a suitable methodology then another trenchless technology to be considered would be Auger Boring. It has not been specifically assessed within the ES but HDD is considered the worst case scenario due to noise impacts with a potential level of 107dB(A) for the HDD drilling rig. The dB levels for the auger bore unit are approximately 40% less than a HDD rig; however, the same associated equipment such as pumps, plant, generators etc. would still be required, which will have the same noise levels regardless of the trenchless methodology utilised.</p> |
| PDS.1.8 | Applicant | <p>Cable burial parameters</p> <p>ES Table 6.14 [APP-030] identifies maximum depth of cable trench for the 400kV onshore export cables. Please confirm:</p> <p>i.If "associated fibre optic cables" referenced in the draft DCO [APP-203] are laid within the same ducts or at the same depth as the 400kV cables and if there are any other cables to be laid within the ECC.</p> <p>ii.Why there is no minimum depth of cover specified for cables or ducts.</p> | <p>i. The associated fibre optic cables will be installed within their own ducts which are separate from the 400kV cables but in the same trench. The fibre optic cables will be installed at the same depth as the 400kV cables. No additional cables would be required within the ECC. However as part of the earthing requirements to connect the Orsted substation and National Grid Substation additional earthing cables may be required to connect the infrastructures and would be requested by National Grid for the 400kV connection. If any additional cables are required they will be installed within the same trench at the same depth as the 400kV cables.</p> <p>ii. Table 6.14 in A3.6: Land Use and Agriculture (APP-030) highlights the potential impacts and ground disturbance for the elements that have the potential to disrupt agricultural land and as such no minimum depth of cover has been specified within this table. However a target depth of cover of 1.2m has been highlighted and can be found in Table 4.38 of A1.4: Project Description (REP1-004).</p> |
| PDS.1.9 | Applicant | <p>Joint Bays and Link Boxes</p> <p>ES Volume A4 Annex 5.1 Impacts Register [APP-049] LUA-O-6 states: ""The potential effects resulting from the Transition Joint Bays, Joint Bays and Link Boxes would be fragmented and would not result in the direct loss or severance of fields used for agricultural use."" Please confirm or signpost the minimum soil depth between</p> | <p>The target soil depth or depth of cover to the installed apparatus, which includes ducts, cables and concrete lids, within the Transition Joint Bays and Joint Bays has been stated at 1.2m. The target depth of cover is highlighted in Table 4.38 of A1.4: Project Description (REP1-004).</p> <p>It is not the Applicant's intention to reinstate the ground above the link boxes with the excavated soils. The soils would be replaced with an access chamber and a surface mounted manhole for access to the link box. The link box would also be</p> |

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| | | reinstated ground level and covers of transition joint bays and link boxes (other than where access would be provided via manholes or access chambers) and how this dimension would be secured in the DCO. | classed as apparatus and have a target depth of cover of 1.2m..Please refer to paragraph 6.11.1.13 (APP-030) which states that agricultural uses will be excluded above link boxes |
| PDS.1.10 | Applicant | <p>Construction timetable</p> <p>Notwithstanding Figure 4.4 of ES Vol A1. Chapter 4 Chapter [APP-010] please provide further clarification regarding the construction sequencing and timings. In particular, set out the proposed order and timescales for the construction operations associated with the sections of the onshore export cable corridor and their associated respective logistics and HDD compounds, including the reinstatement timescales. If this is not yet possible then justify why and also explain when this information is likely to be available. (You may wish to answer this question in conjunction with ExQ1 PDS.1.20 (temporary reinstatement)).</p> | This level of detail is not yet available regarding the sectionalised construction activities and timescales for each activity at a specific location along the cable route. This level of detail will not be available until near construction when an Installation Contractor is appointed to provide a programme of works based on the overall timescales to construct the project within the 30 months stated for the onshore ECC (noting the timeframe is 36 months including logistics compound establishment and removal). |
| PDS.1.11 | Applicant | <p>Primary logistics compound</p> <p>In paragraph 4.10.1.22 (page 94) of Volume A.1 Chapter 4 of the ES [APP-010] you refer to the need for one primary logistics compound and seven secondary logistics compounds. In Appendix F of the Traffic and Transport Technical Report [APP-125] you list the Primary Logistics Compound as being that which is located accessed off Access Point 015, ie to the east of Lockington close to the junction of Station Road and the A164. Confirm if this is the case.</p> | That is correct, the Primary Logistics Compound as listed in Appendix F of the A3.7: Traffic and Transport Technical Report (APP-125) is located and accessed off access point 015 on Station Road which is east of Lockington and west of the junction for the A164. |
| PDS.1.12 | Applicant | <p>Compound details</p> | i. Provisions have been made and are listed in paragraph 5.10.1.4 for the logistic compounds and paragraph 5.10.1.10 for the HDD compounds within F2.2: Outline |

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| | | <p>Paragraph 5.10.1.4 of the Outline Code of Construction Practice [APP-237] details a number of facilities and infrastructure that the logistics compounds “would potentially include” and in paragraph 4.10.1.23 of Volume A.1 Chapter 4 of the ES [APP-010] “would include, but not (be) limited to.” Having regard to this, can you:</p> <p>i.Set out how approval of the final details for the layout and activities to be undertaken within each of the logistics and HDD compounds is secured in the draft DCO.</p> <p>ii.Explain the difference between how the primary logistics compound and the secondary logistics compounds would be used.</p> <p>iii.Clarify whether you propose to undertake materials crushing, screening or recycling operations at any of these compounds. If so, then explain out how this has been assessed in the ES.</p> | <p>Code of Construction Practice (REP1-027) detailing the potential use and activities. The final details, layout and its intended use will be dependent on the construction programme and methodology provided by the appointed Installation Contractor conducting the works.</p> <p>ii. The primary logistic compound would potentially serve as the focal hub for the main site works and provide enough office space and facilities for all parties to be based there during the project timescale. In addition to this the compound will also provide enough hardstanding space for the initial delivery of all cable drums, plant and equipment and provide general material storage. The secondary logistic compounds could be utilised to reduce traffic movements along the roadway networks and provide a localised focal hub for contractors, sub-contractors and the client as the works progress in the vicinity of its location. The secondary logistics compounds could also store the cable drums for installation for the sections in that area as well as providing storage for plant and equipment and general material storage. Similar provisions and activities have been assumed for both types of compounds.</p> <p>iii There is no intention to undertake materials crushing, screening at any compound, and aggregates and sand will be imported to site. Recycling units may be utilised in HDD compounds as part of the HDD operations process where units recycle the drilling fluids so that they can be reused.</p> |
| PDS.1.1.13 | Applicant ERYC (Highways) | <p>Logistics Compound at Lockington</p> <p>In its Relevant Representation [RR-018], Lockington Parish Council raised concerns about the location of the proposed Logistics Compound close to the junction of Station Road and the A164. The Parish Council suggested an alternative site on the eastern side of the A164 immediately to the north of the junction of Station Road and the A164. Please respond to the views expressed by Lockington Parish Council in [RR-018]. (If not fully addressed in the</p> | <p>Please refer to Relevant Representation response RR-018-A for detail regarding the site selection process and other responses to RR-018 for other comments made by Lockington Parish Council, in G1.9: Applicant’s comments on Relevant Representations (REP1-038).</p> |

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| | | Applicant's Deadline 1 response to Relevant Representations.) (You may wish to combine the answer to this question with the answer to question CA.1.22.) | |
| PDS.1.14 | Applicant ERYC | <p>Work outside core hours</p> <p>The Commitment Register [APP-050, Co36] in relation to agreed working hours states: "In circumstances outside of core working practices, specific works may have to be undertaken outside the core working hours. ERYC will be informed in writing." Should a request for planned specific work of this nature be made in advance and be approved in writing by the local authority? Is there a need for a Requirement in the draft DCO in respect of this?</p> | In addition to Co36, further context is provided in Section 5.1 of F2.2: Outline Code of Construction Practice (REP1-027) . This includes a description of instances where continuous working hours will be required (including those that will and will not require correspondence with ERYC), in addition to planned activities outside of the core working hours (which will all require correspondence with ERYC). It is not considered appropriate that 'approval' will need to be sought for all of these activities, as such activities will be necessary to ensure the successful construction of Hornsea Four (such as unplanned extension of trenchless crossing activity). It is considered that this level of detail will be approved via the discharge of Requirement 17 of the DCO. |
| PDS.1.15 | Applicant | <p>Maximum height of lightning protection offshore substations and booster stations</p> <p>Please clarify the apparent contradiction between Table 4.5 and Figure 4.7 and paragraph 4.8.2.16 in ES A2 Chapter 4 Project Description [APP-010, pages 28, 32 and 34]. The MDS topside height of 100m for offshore substations and HVAC booster stations excludes antennae, radar and masts, yet Figure 4.7 shows the maximum height of lightning protection would be 100m above LAT an exception noted at [APP-010].</p> | <p>A topside for a substation, booster station, or accommodation platform, will not exceed 100m in height above LAT, inclusive of all auxiliary structures.</p> <p>The A1.4: Project Description (REP1-004) will be updated to reflect the following amendments:</p> <ul style="list-style-type: none"> • Table 4.5 – remove the exemption "excluding antennae... (mLAT)" • Figure 4.7 – the height label should just say "maximum height" • Paragraph 4.8.2.16 – remove the phrase "the only difference being that the maximum topside height includes antennae and masts." |
| PDS.1.16 | Applicant | <p>Energy balancing infrastructure (EBI)</p> <p>Further information about the proposed energy balancing infrastructure was provided prior to the Examination and a document was received [AS-006] that confirmed that the energy balancing infrastructure would be located at the onshore substation and that electrolysis/ hydrogen was</p> | <p>The behaviour of both the electricity grid and electricity markets are dynamic and will change between now and the timing of the final design of the EBI. This means that the performance needs and therefore the dimensioning of the EBI will not be fully understood until closer to that time.</p> <p>In addition, EBI technology such as battery energy storage is advancing and improving rapidly thanks to many parameters such as the mass uptake of electric vehicles.</p> |

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| | | no longer under consideration. In order to inform the Examination of the Proposed Development and to demonstrate how the energy balancing infrastructure has been assessed, please provide further information about the nature, capacity, design, size, location and potential effects of the proposed energy balancing infrastructure. | This situation means that it is not possible to fix the capacity dimensioning now. However regardless of what happens the MDS in relation to footprint and environmental impact will not be increased/worsened. |
| PDS.1.17 | Applicant | <p>Commitment to energy balancing infrastructure</p> <p>The energy balancing infrastructure is a substantial part of the benefits case made in the Planning Statement [APP-229, section 8.4]. Clarify the commitment to include energy balancing infrastructure in the Proposed Development, and how that commitment is secured.</p> | <p>The behaviour of both the electricity grid and electricity markets are dynamic and will change between now and the timing of the final design of the EBI. This means that the performance needs and therefore the dimensioning and associated costs of the EBI will not be fully understood until closer to that time.</p> <p>In addition, EBI technology such as battery energy storage is advancing and improving rapidly including becoming ever more affordable to provide more services. This is mainly thanks to many parameters such as the mass uptake of electric vehicles.</p> <p>Commitment to the EBI is linked to the Hornsea Four project being realised as well as what will be the electricity grid and market requirements closer to the time.</p> |
| PDS.1.18 | Applicant | <p>Haul road details</p> <p>In Table 4.36 of ES Vol A1, Chapter 4 [APP-010] you state that the maximum haul road width could be up to 10m and that would include hard standing, soil storage and fencing. However, in the indicative layout depicted in Figure 4.20 of [APP-010] you show a centrally positioned haul road with soil storage areas and temporary fencing located away from the haul road. Please clarify this.</p> | <p>Within Table 4.36 of the A1.4: Project Description (REP1-004) two line values are stated for the potential width of the haul road along with the rationale behind the associated widths. The first line item for the haul road width states 10m which includes the hard standing (haul road), soil storage and fencing, this width would be applicable for the temporary off easement access tracks that are required outside of our 80m working width. These access tracks are identified as works No 9a within D1.4.2: Works Plan Onshore [APP-212] and would not be representative of Figure 4.20 of A1.4: Project Description (REP1-004). The second value associated with the haul road states the actual haul road construction width of 6m with an increase to 7m for passing places, this would be applicable to works area No 9a (temporary access tracks) and works area No 6 as shown in D1.4.2: Works Plan Onshore (APP-212) and would be representative as depicted as in Figure 4.20 of A1.4: Project Description (REP1-004) where the soil storage and fencing are stored and positioned to facilitate the overall cable route construction works.</p> |

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| PDS.1.19 | Applicant | <p>Reinstatement timescale</p> <p>In paragraph 4.10.1.11 of ES Vol. A1 Chapter 4 [APP-010] you state that although discrete works at any location would take a considerably shorter period than the expected 30 months in total for the overall cable installation works, “the entirety of the cable route corridor would be expected to be required for most of the 30 months...”. Explain why you do not consider it possible to undertake earlier reinstatement, either temporarily or permanently, once each section of the onshore export cable corridor has been completed.</p> | <p>Reinstatement would not be possible once each section has been completed as access along the route would still be required to all joint bay locations along the cable route until the final testing of the fully installed and jointed cable has been completed. Access would also be required via the haul road to HDD locations to install the thermal surround within the HDD ducts after final cable testing. In general, the haul road would remain in place for the duration of the works and would be removed prior to final reinstatement. Fields that would not require access to these locations could be assessed on a field-by-field basis for early reinstatement, however these areas could not be determined at this stage.</p> |
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19 Socio - economic and Land Use

| PINS Question Number: | Question is addressed to: | Question | Applicant’s Response: |
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| SEL.1.1 | ERYC | <p>Assessment of cumulative socio-economic effects</p> <p>Entries SE-A-8 to SE-A-11 in the Applicant's Impact Register [APP-049] relate to the assessment of cumulative socio-economic effects, tourism impacts, pressure on social services and pressure on housing. In each case, the Applicant identifies that there would be no likely significant effects and such an assessment is not required in the ES. Do you agree with this?</p> | |
| SEL.1.2 | Applicant | <p>Financial contributions</p> | <p>As identified in B1.1.3: Applicant Regard to Section 47 Consultation Responses (APP-132) “any decision to establish a community benefit fund for Hornsea Four</p> |

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| | | <p>In the Case Study you have provided in Appendix A of the Outline Employment and Skills Plan [APP-253] it is indicated that Ørsted has provided financial support to a long-term Community Benefit Fund and the Grimsby Youth Zone, Horizon. Do you propose to undertake financial contributions to support community projects as part of this Proposed Development, and if so, how would this be determined and when would such details be provided? Explain how any financial contributions in this regard would meet the tests for planning obligations as referenced in paragraph 57 of the NPPF.</p> | <p>could be made post-financial investment decision (FID).” It is not a decision that the Applicant is able to make at this time; however, the Ørsted group has a track record of providing Community Benefit Funds (CBF) for past development projects as demonstrated through the case study.</p> <p>The use of a CBF is not considered to constitute a planning obligation as defined under paragraph 57 of the NPPF and the tests therefore relating to planning obligations do not apply. The CBF is typically established via an independent third-party and is open to members of the public to propose uses of proportions of the funding allowance at various stages of the project’s lifecycle. It is not a mechanism to make the project acceptable in planning terms.</p> |
| SEL.1.3 | <p>ERYC HCC Hull and East Riding Local Enterprise Partnership Greater Lincolnshire Local Enterprise Partnership</p> | <p>Employment and Skills Plan</p> <p>Are you content with the examples of measures to promote employment and skills that are set out in Table 2 of the Outline Employment and Skills Plan [APP-253] and if not, why not and what measures would you wish to see?</p> | |
| SEL.1.4 | <p>ERYC</p> | <p>Tourism and recreation impacts</p> <p>Are you content with the Applicant’s assessment of ‘no likely significant effects’ on tourism and recreation activities as detailed in ES Vol. A3 Chapter 6 [APP-030] and Vol. A3 Chapter 10 [APP-034]?</p> | |
| SEL.1.5 | <p>Natural England</p> | <p>ALC surveys</p> <p>Does Natural England now agree with the ES Chapter 6 on Land Use and Agriculture [APP-030]:</p> | |

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| | | <p>"Assessment has been undertaken using publicly available agricultural land classification (ALC) data...[a] conservative and protective approach which overestimates the area of BMV land. As such it is considered that ALC surveys are not required..." and if not, why not?</p> | |
| SEL.1.6 | ERYC | <p>Effects on mineral resources</p> <p>Can you confirm if you are satisfied with the approach to the assessment of likely effects on Mineral Safeguarding Areas noted in the Impacts Register, GGC-OC-3 [APP-049], and if not, why not.</p> | |
| SEL.1.7 | Applicant | <p>Criteria and thresholds for assessing loss and disturbance of best and most versatile (BMV) soils Please explain:</p> <p>i. The criteria used for evaluating the magnitude of change in relation to loss of BMV soils and how the maximum figures set out in Table 6.14 of the ES [APP-030] (maximum design parameters) have been derived.</p> <p>ii. Why the magnitude thresholds used in Table 6.16 of the ES [APP-030] appear to differ significantly from those suggested in the design Manual for Roads and Bridges (DMRB) and what would be the outcome for impact assessment (both alone and cumulatively) if thresholds in the DMRB guidance were applied to the loss and temporary disturbance of BMV soils.</p> <p>iii. The projected total maximum loss of BMV land resulting from construction of the Proposed Development.</p> <p>iv. If the calculated permanent losses noted in ES 6.11.1.7 [APP-030] include agricultural land</p> | <p>The Applicant provides the following response:</p> <p>i) Magnitude of change</p> <p>The derivation of the Maximum Design Scenario (MDS) parameters in Table 6.14 of A3.6: Land Use and Agriculture (APP-030) is provided in the last column of the table, namely:</p> <p><i>"These parameters represent maximum ground disturbance conditions both in terms of potential area affected and in duration for Hornsea Four project elements that have the potential to disrupt agricultural land and farm holdings."</i></p> <p>ii) Magnitude Thresholds</p> <p>The Design Manual for Roads and Bridges (LA109 Geology and Soils – Revision 0, October 2019) provides no specific quantitative magnitude metric for BMV soils but relies on a wider interpretation for all soils where physical removal or permanent sealing of >20ha of agricultural land is considered an impact of major magnitude, and physical removal/permanent sealing of 1 to 20 ha, or permanent loss/reduction in soil functioning is of moderate magnitude. Additionally, Part E1 of LA109 states that consultation should be undertaken with Natural England where development;</p> <p><i>"1) is not for agricultural purposes;</i></p> |

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| | <p>converted to landscape mounds, tree planting, SUDS attenuation features, and other non-agricultural proposed land uses.</p> <p>v. How the unused and temporarily used land within the Order limits would be returned to agricultural use with BMV status unimpaired.</p> <p>vi. If the BMV grading and agricultural viability of agricultural land could be compromised if the "target depth" for cable burial is not achieved.</p> <p>vii. What is meant by the note to Table 6.14 [APP-030]: "Details related to the intertidal working area, and specific details on project infrastructure within the onshore working area is not relevant to this assessment. This is because the maximum extent of ground disturbance has been assessed".</p> | <p><i>2) is not in accordance with the provisions of a development plan; and</i></p> <p><i>3) involves the loss of not less than 20 hectares of grades 1, 2 or 3a agricultural land (BMV) which is for the time being used (or was last used) for agricultural purposes."</i></p> <p>Hornsea Four is forecasted to temporarily affect much more than 20 ha of BMV land (as set out below) but with less than 20 ha of BMV land affected permanently. Using the DMRB methodology this would constitute an effect of moderate magnitude, and with the receptor value being very high (due to BMV soils being present, notably at the OnSS) a significant impact would be predicted. The following mitigation is then considered in relation to the temporary construction phase (as incorporated into the Outline Soil Management Strategy – see response to part v of this question below) which ensures that soils are stored (Co 8) and reinstated (Co 10) appropriately with the oversight of an Agricultural Liaison Officer (ALO) (Co 61) in order to determine the residual impact.</p> <p>The Applicant considers that the mitigation proposed is comprehensive and conforms to DEFRA Construction Code of Practice for Sustainable Use of Soils on Construction Sites, and with the addition of the commitment to undertake soil condition surveys and intrusive soil survey trial pits to identify and describe the physical and nutrient characteristics of the existing soil profiles (as part of Co61) to inform reinstatement (Co 8) the impacts would be reduced to a negligible magnitude resulting in a temporary non-significant residual effect.</p> <p>The permanent works within the OnSS and 400 kV NGET connection area will cover 18.91 ha, and this represents the vast majority of the permanent reduction in agricultural land use during operation of Hornsea Four. Using the DMRB definition a moderate magnitude of impact would occur. Soils at the OnSS are classified as BMV on a precautionary basis (as they are Grade 3, which may be 3a = BMV, or 3b = non-BMV) and would therefore equate to a very high receptor sensitivity. A large (significant) adverse effect would therefore arise at this specific location if the DMRB definitions are applied.</p> |
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| | | | <p>The Applicant has liaised with Natural England regarding this matter, which has resulted in methodology used for assessment being amended. Discussions have largely focussed on the need for BMV soil surveys; with a sustained disagreement between parties; however, it is noted that as reflected in the statement of common ground (APP-258), Natural England acknowledge that whilst not agreed, it is no material impact.</p> <p>iii) Total maximum impact on BMV Land</p> <p>The projected total maximum impact on BMV land during construction is set out in paragraphs 6.11.1.3, 6.11.1.4 and 6.11.1.6 of A3.6: Land Use and Agriculture (APP-030) which state that:</p> <ul style="list-style-type: none"> • approximately 34 ha of BMV land at the landfall will be temporarily lost or restricted for agricultural practice over a maximum 32 month construction period; • temporary disturbance along the onshore ECC includes approximately 349.05 ha of BMV land within the Onshore ECC area, including logistics compounds and accesses, restricting agricultural use during the construction period (a maximum period of 36 months); and • temporary disturbance of BNV land at the OnSS will comprise of the 13 ha temporary works area plus the areas affected permanently (16.38 ha for the permanent works and 2.53 ha for the permanent access tracks). <p>iv) Permanent losses of BMV Land</p> <p>All of the permanent OnSS area is included in the calculation, and this incorporates the tree planting, landscaping and SuDS attenuation features at this location as well as the permanent access road. This location accounts for the vast majority of the permanent impact in BMV land from Hornsea Four.</p> <p>v) Land returned to BMV status</p> |
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A Code of Construction Practice (CoCP) (Requirement 17 of the draft DCO) will be developed based on [F2.2: Outline Code of Construction Practice \(REP1-027\)](#). Appendix B of this document sets out an Outline Soil Management Strategy which presents the measures that the appointed Principal Contractor(s) will take to manage soil resources associated with agricultural land impacted by the temporary and permanent onshore elements of Hornsea Four (landward of Mean High Water Springs (MHWS)). By following this strategy BMV soils will be re-established, noting that the following commitments are included within the strategy:

- Co8 ensures that soil will be stored and managed in accordance with DEFRA Construction Code of Practice for Sustainable Use of Soils on Construction Sites (Ref PB1328) or the latest relevant available guidance. Such a commitment ensures that soils are not compacted or otherwise significantly affected by storage before reinstatement, helping to retain their characteristics.
- Co10 states that post-construction, the working area will be reinstated to pre-existing condition as far as reasonably practical in line with DEFRA 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites PB13298 or latest relevant available guidance.
- Co61 provides that prior to the commencement of works, the contractor (or project appointed Agricultural Liaison Officer) will undertake soil condition surveys and intrusive soil survey trial pits to identify and describe the physical and nutrient characteristics of the existing soil profiles. Such work will inform the reinstatement under Co10.

vi) Achieving Target Depth

If target depth is not reached then there is the possibility that there would be limitations to the land's future use for agriculture (including crop yield, cultivation or harvesting) thus affecting the potential for the land to reach BMV status.

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| | | | <p>However, F2.2: Outline Code of Construction Practice (REP1-027) sets out the target depth and this will be a requirement for the contractor and their responsibility to reach this depth unless in locations otherwise agreed. The Applicant is not aware of any specific reasons why target depth cannot be achieved along the onshore ECC. Individual variations to the target depth will be agreed with landowners through the voluntary agreements if required.</p> <p>vii. Intertidal Working Area</p> <p>The comment in Table 6.14 of A3.6: Land Use and Agriculture (APP-030) relates to the Maximum Design Scenario for the landfall area (including both the intertidal and onshore parts of this area). The Applicant has taken disturbance to land across the whole of the 4 ha within this area as the Maximum Design Scenario to represent the maximum ground disturbance condition that could occur. Therefore, no specific details of the exact infrastructure (such as cable circuits), construction methodologies, soil stripping, excavations or any other methods to be employed at landfall have been included in the definition of MDS.</p> |
| SEL.1.8 | Applicant | <p>Concerns that parcels of land may be left unworkable</p> <p>Please respond in detail to the concerns expressed in [RR-017] and [RR-019] (part) that: "... land disturbed by the wide cable corridor will leave parcels of land unworkable by modern agricultural machinery" (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant has secured voluntary agreements with both the landowner and the occupier of the land affected by the cables at Burn Park Farm. The Applicant as part of the voluntary agreements and in F2.2: Outline Code of Construction Practice (APP-237) has committed, where reasonably practicable, to allow access during construction, through management measures or other means. Some areas of land lying adjacent to Burn Park Farmhouse may be temporarily unworkable by modern agricultural machinery during the construction works, and compensation will be payable to the relevant landowner and occupier of the land at the time. The Applicant would highlight that Mr Taylor and Mrs Taylor are not the relevant landowners or occupiers of this land.</p> <p>Following construction, the Applicant has committed to reinstating disturbed agricultural land to pre-existing conditions as far as reasonably practical (Co10, see A4.5.2: Commitments Register (APP-050)). The assessment within the ES (Section 6.11 of A3.6: Land Use and Agriculture (APP-030)) provides further detail on the</p> |

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| | | | mitigation to be employed to minimise the impacts of disturbance on the ability of the land to return to its former usage in as short a period as possible. |
| SEL.1.9 | Applicant | <p>Decommissioning assessment</p> <p>The Applicant's Impact Register [APP-049] notes that there was a disagreement at scoping with PINS about a need for assessment of ground conditions at decommissioning. While the Applicant suggested there would be no likely significant effect, in section 13 of [APP-049] it is noted that draft submission documentation has been sent to the relevant stakeholders (ERYC and the Environment Agency) for review. Has a review response been received from ERYC or the Environment Agency? If so, are any updates to the ES required?</p> | A draft of A3.1: Geology and Ground Conditions (APP-025) was submitted to ERYC and the EA for comment prior to DCO submission. No issues or disagreements were raised during this process and therefore the Applicant stands by its statement that there would be no likely significant effect on ground conditions during the decommissioning phase of Hornsea Four |
| SEL.1.10 | Applicant ERYC | <p>Assessment of likely significant effects</p> <p>Table 1.7 of the ES Volume A3 Chapter 1 [APP-025] notes that the approach to assessment of likely significant effects on the sterilisation of future mineral resources, dewatering of trenches, physical intrusion into groundwater resources, and impacts on groundwater resources was sent to ERYC for agreement, but that this has not been reached.</p> <p>What was the outcome in each case?</p> <p>Are any updates to the ES required?</p> <p>For those areas that remain to be agreed, please provide an update on discussions and whether agreement will be reached before the end of the Examination.</p> | A draft of A3.1: Geology and Ground Conditions (APP-025) was submitted to ERYC and the Environment Agency for comment prior to DCO submission. No issues or disagreements were raised during this process. The Applicant has included positions to be agreed in the latest iteration of the ERYC SoCG, submitted at Deadline 1 (REP1-035) and are awaiting input from ERYC. It is noted that in the Local Impact Report (REP1-072), ERYC acknowledge the onshore ECC passes through some areas identified as Mineral safeguarding Areas; however, it avoids areas that are currently being worked for minerals and the mineral resource within the authority is generally sand and gravel. The Applicant does not therefore consider any updates to the ES are necessary. |
| SEL.1.11 | Applicant | <p>Land restoration</p> | The Applicant recognised during the Heads of Terms process that there were factors particular to individual holdings which would have an impact on the |

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| | | <p>The ExA notes that Appendix B of the Outline Code of Construction Practice [APP-237] contains an Outline Soil Management Strategy and that section 8 contains some details on ‘Aftercare – Cultivations’ which states that “The reinstatement and aftercare period will be agreed with individual landowners during the Heads of Terms process.” Can you explain why this matter would be dealt with on an individual basis and outside of the DCO process?</p> | <p>reinstatement and aftercare period and that these should be negotiated on a case by case basis. Examples include soil type, crop rotation and land drainage design or additional works. Therefore, in addition to the reinstatement provisions at paragraph 8.1.1.1. of F2.2: Outline Code of Construction Practice (REP1-027) it was agreed that factors such as timing should be settled by agreement between the Applicant, the Agricultural Liaison Officer (ALO), the Drainage Expert and the relevant landowner/occupier.</p> |
| SEL.1.12 | Applicant | <p>Future site investigations</p> <p>Paragraph 4.2.1.8 of the Outline Pollution Prevention Plan (Appendix D of the Outline CoCP [APP-237]) states that site investigations would be conducted at regular intervals along the onshore ECC, likely at large HDDs and sensitive locations. However, there is currently no stipulation in the Outline Pollution Prevention Plan that the results of these investigations would need to be submitted to the relevant authority for its approval before works can commence. Please justify this.</p> | <p>Site investigations referenced in paragraph 4.2.1.8 of the Outline Pollution Prevention Plan are typically undertaken at large and/or sensitive HDD locations, to confirm local geological conditions to inform the construction works from a technical perspective. As such, it is not considered necessary or justified to submit such results to ERYC for approval.</p> <p>In respect of ground contamination, a contaminated land and groundwater scheme will be prepared, secured by DCO Requirement 14. This will identify any contamination and any remedial measures which may be required. The wording of the commitment stipulates that no stage of the construction works may commence until a scheme to deal with the contamination of any land (including groundwater) that is likely to cause significant harm to persons or pollution of controlled waters of the environment has been submitted to, and approved by, the relevant planning authority. This scheme must include an investigation and assessment report to render the land fit for its intended purpose, together with a management plan. The Applicant considered this sufficient and robust.</p> |
| SEL.1.13 | Applicant | <p>Historic landfill sites</p> <p>Table 11 of the Land Quality Preliminary Risk Assessment [APP-089] states that there are no records of landfills within 250m of the study area in the information available. However, Figures 1.2 to 1.7 of ES Vol. A3 Chapter 1 Geology and Ground Conditions [APP-025] depict a number of</p> | <p>The Applicant presumes the reference in the question to APP-089 means APP-088.</p> <p>The Applicant can confirm that potential impacts in relation to landfills have been considered in A3.1: Geology and Ground Conditions (APP-025) and A6.1.1: Land Quality Preliminary Risk Assessment (APP-088). No formal landfills have been identified. There are numerous areas of backfilled mineral workings (extraction for gravel, sand and chalk) within the Geology & Ground Conditions search area. If</p> |

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| | | <p>"Possible Landfill" sites that are within or close to the Order limits. Also, in its RR [RR-010], the Environment Agency states that the Scoping Report highlights that a number of authorised, historic or possible landfills are in close proximity. Comment on the Environment Agency's response and outline what mitigation measures are secured in the draft DCO should any historic landfill sites be encountered?</p> | <p>during pre-construction survey works any potential impact is identified, then localised ground investigation will be undertaken to determine what if any plausible pollutant linkage exists in accordance with the Contaminated land and groundwater scheme (DCO Requirement 14) and the measures outlined in paragraph 6.2.2.2 F2.2: Outline Code of Construction Practice (REP1-027). There is always the potential for unforeseen landfilling activities to have taken place and this will be dealt with as an unforeseen contamination during the construction phase and suitable mitigation will be implemented as required.</p> |
| SEL.1.14 | Environment Agency | <p>Possible Landfill sites Figures 1.2 to 1.7 of ES Vol. A3 Chapter 1 Geology and Ground Conditions [APP-025] depict a number of "Possible Landfill" sites that are within or close to the Order limits. Are any of these sites of concern to you and, having regard to Requirement 14 of the draft DCO and the Outline Pollution Prevention Plan [Appendix D of APP-237], do you consider that any further assessment is necessary at this stage?</p> | |

20 Traffic and Transport and Public Rights of Way (PRoW)

| PINS Question Number: | Question is addressed to: | Question | Applicant's Response: |
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| TT.1.1 | Applicant | <p>Methodology used to assess severance In relation to the methodology used to assess severance, the ES states [APP-031, para 7.10.2.11] that: "GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate and substantial respectively."</p> | <p>Section 7.10.3 of A3.7: Traffic and Transport (APP-031) notes that "These [magnitude] thresholds are guidance only and provide a starting point by which transport data will inform a local analysis of the impact magnitude in the traffic and transport assessment." Section 7.10.4 of A3.7: Traffic and Transport (APP-031) details the significance of effect is determined by assessing the magnitude of impact on receptor sensitivity (Table 7.16).</p> |

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| | | <p>The Guidelines for the Environmental Assessment of Road Traffic (GEART) actually says these figures come from the Manual of Environmental Appraisal (as was), and that they should be used cautiously, and that full regard should be paid to specific local conditions. How have local conditions affected your assessment of severance?</p> | <p>In accordance with the GEART, a comprehensive desktop exercise informed by site visits has been undertaken by the Applicant to determine local conditions (affected groups and special interest) that would influence receptor sensitivity and therefore, the assessed significance of effect. Table 7.17 of A3.7: Traffic and Transport (APP-031) summarises the link specific local conditions that have influenced sensitivity including local amenities, schools, places of worship, residential settlements and any other groups or special interest sites that would influence sensitivity to increases in traffic.</p> <p>It is therefore evidenced that specific local conditions have been intrinsic in the assessment of the significance of effect of Hornsea Four's construction traffic for severance (and all scoped in effects).</p> |
| TT.1.2 | Applicant | <p>Impacts Register</p> <p>The Applicant's Impacts Register [APP-049, page 62, TT-C-1] notes disagreement with PINS at scoping about the consideration and assessment of the road transport of offshore project components.</p> <p>In [APP-049] you note that some large electrical equipment for the onshore substation would be delivered by sea to a port to be transferred as an Abnormal Indivisible Load via the local road network to the development site. Please confirm that your reference here is to onshore rather than offshore infrastructure.</p> | <p>A4.5.1: Impacts Register (APP-049), page 62, TT-C-1 confirms the base port for offshore construction activities will not be finalised until post DCO determination. As such, the DCO application for Hornsea Four does not include development activities at potential construction ports. Where necessary, any such development activity would be subject to separate consent(s) such as a planning permission or a Harbour Revision Order.</p> <p>The Applicant confirms that A4.5.1: Impacts Register (APP-049), page 62, TT-C-1 reference to large electrical deliveries by road to the <u>onshore</u> substation is correct. The assessed impact of this activity is minor adverse as set out in A4.5.1: Impacts Register (APP-049), page 63, TT-C-9.</p> |
| TT.1.3 | Applicant ERYC | <p>ES methodology – summary of potential impacts for traffic and transport</p> <p>Applicant:</p> <p>In Table 7.29 of Vol. A3 Chapter 7 of the ES (Traffic and Transport) [APP-031] a number of</p> | <p>The Applicant's justification for assessed outcomes are as follows:</p> <p><u>Driver delay (local roads) – Links 3, 38 and 40</u></p> <p>Without mitigation, it is assessed that these links would be subject to significant adverse driver delay impacts during Hornsea Four peak HGV demand resultant from</p> |

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| | <p>residual impacts are set out. After mitigation, you have assessed all of the residual impacts as being either not significant or slight adverse. This includes occasions when the receptor value sensitivity has been assessed as being high, the magnitude of the impact has been assessed as being major and the significance of the impact has been assessed as being large. Having regard to these assessments and the potential mitigation measures that have been listed in Table 7.29 justify how you have reached your conclusions in regard to the following impacts and links:</p> <ul style="list-style-type: none"> •driver delay (local roads) – Links 3, 38 and 40; •pedestrian amenity – Link 9; and •accidents and road safety – Links 57, 58, 59 and 61. <p>In addition, clarify how a residual impact assessment of slight adverse compares in terms of being considered either significant or not significant.</p> <p>ERYC: Do you agree with the Applicant’s assessment of impacts (including the effects of the mitigation measures) as summarised in Table 7.29 of ES Vol. A3 Chapter 7 [APP-031]? If not, please explain why?</p> | <p>HGVs attempting to pass within a narrow highway corridor (potentially requiring reversing and/or manoeuvring slowly on unmetalled surfaces).</p> <p>The mitigation outlined in Table 7.21 of A3.7: Traffic and Transport (APP-031) consists of road widening, introduction of passing place and/or escort vehicles. This mitigation package would enable HGVs to pass with minimum delay to the travelling public thus ensuring residual effects are not significant.</p> <p><u>Pedestrian amenity – Link 9</u> The GEART suggests that a threshold of a doubling of total traffic flow or the HGV component may lead to a negative impact upon pedestrian amenity. Table 7.18 of A3.7: Traffic and Transport (APP-031) details the forecast Hornsea Four peak HGV demand would lead to a 157% increase in daily HGV traffic giving rise to assessed significant adverse impacts. Paragraphs 7.11.1.23 to 7.11.1.25 of A3.7: Traffic and Transport (APP-031) sets out further mitigation in the form of amending the construction activity schedule to reduce delivery intensity from 84 two-way HGV movements per day to 23 two-way HGV movements per day (a 43% increase in daily HGV traffic flow). In addition, further mitigation includes a commitment to suspend HGV deliveries during school pick up and drop off times. With these measures /commitments in place the residual effects are assessed as not significant.</p> <p>The limit on HGV movements and delivery hours (via link 9) are secured through controls and measures are embedded within the outline Construction Traffic Management Plan (Co144) submitted as Appendix F of F2.2: Outline Code of Construction Practice (REP1-027).</p> <p><u>Accidents and road safety – Links 57, 58, 59 and 61 (Killingwoldgraves Lane/Coppleflat Lane)</u> Killingwoldgraves Lane and Coppleflat Lane are identified as having a collision rate above the national average for comparable roads. A detailed review of the collisions has identified a pattern of collisions at the crossroad junction with Newbald Road and Walkington Heads, involving vehicles pulling out into the path of oncoming vehicles</p> |
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| | | | <p>on the main carriageway. This could be exacerbated by Hornsea Four construction traffic leading to the potential for significant adverse road safety effects. Paragraphs 7.11.1.10 to 7.11.1.14 of A3.7: Traffic and Transport (APP-031) set out further mitigation in the form of; vegetation maintenance (to maintain driver visibility), hazard warning signs (to raise driver awareness), and the introduction of a 30 mph speed limit on all arms (to slow approaching main road traffic to improve driver gap acceptance). With these measures in place the residual effects are assessed as not significant.</p> <p><u>Slight adverse impact in EIA terms</u></p> <p>Table 7.16 of A3.7: Traffic and Transport (APP-031) details the assessment matrix for the Traffic and Transport assessment and the accompanying paragraph 7.10.3.8 clarifies “For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in terms of the EIA Regulations”.</p> |
| TT.1.4 | ERYC HCC | <p>ES methodology – assessment of cumulative impacts</p> <p>In paragraph 7.15.1.4 of ES Vol. A3 Chapter 7, Traffic and Transport [APP-031, page 99] the Applicant states that “No cumulative or inter-related effects have been identified which increase the significance of any standalone assessment set out in this chapter.” Do you agree with this?</p> | |
| TT.1.5 | Applicant | <p>Definitions of vehicle movements</p> <p>Notwithstanding the explanation you have provided in, for example, para 3.2.1.5 of the Traffic and Transport Technical Report [APP-125], for the sake of clarity please confirm the meaning you have applied to the terms ‘vehicle movements’, ‘vehicles one-way’, ‘two-way vehicle movements’ and ‘HGV deliveries’ that you have used at times in various documents, and also</p> | <p>As set out in the glossary of terms table in A3.7: Traffic and Transport (APP-031) a movement and two-way movement are defined as follows:</p> <p>“A movement is the process of transporting goods from a source location to a predefined destination. A two-way movement represents the inbound (laden trip from source) and the outbound unladen trip (back to source). For example, 20 two-way movements comprise 10 laden trips from source and 10 outbound unladen trips back to source.”</p> |

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| | | <p>confirm that these terms have been applied consistently across all submitted documents.</p> | <p>The term vehicle movement occasionally has the suffix 'one-way' in calculations to clarify the data only includes trips from source. These movements are multiplied by two to calculate two-way movements on links.</p> <p>A delivery is a collective term for a HGV trip from source and the HGV trip back to source. Data expressed as deliveries are also multiplied by two to calculate two-way movements on links.</p> <p>This traffic derivation has been applied consistently throughout the Hornsea Four DCO application documents.</p> |
| TT.1.6 | Applicant ERYC | <p>Traffic mitigation measures</p> <p>Section 4.4, page 24, of the Outline Construction Traffic Management Plan (Appendix F of the Outline Code of Construction Practice (OCoCP) [APP-237]) lists some mitigation measures that could be adopted including road and junction widening, formalising existing passing places or using an escort vehicle.</p> <p>In regard to the proposed mitigation measures:</p> <p>i. Would the widening of any proposed road or junction lie entirely within the Order limits for the Proposed Development?</p> <p>ii. If not, then how has this been assessed within the scope of the ES in terms of potential effects on matters such as onshore ecology, landscape and hydrology? If this has not been assessed then provide an assessment of any significant effects.</p> <p>iii. The Applicant has proposed that mitigation measures would be agreed and formalised via the Construction Traffic Management Traffic Management Plan Co-ordinator. What would be the mechanism for obtaining community input into this process?</p> | <p>The Applicant submits the following clarification:</p> <ol style="list-style-type: none"> i. Any widening of a junction or road would be designed to fall entirely within the public highway and would be subject to technical approvals by the relevant highway authority in accordance with Article 14 of the draft DCO. Article 13 of the draft DCO enables a legal agreement between the Applicant and the relevant highway authority to be entered into regarding who carries out the works, timeframes and payment. ii. A3.7: Traffic and Transport (APP-031) sets out a range of mitigation measures that could be adopted including, road / junction widening, formalising existing informal passing places or using an escort vehicle to guide HGVs along roads and past oncoming traffic. It is proposed that prior to the commencement of the relevant part of the connection works, the Applicant will formalise and agree the measures to be adopted for each road within a finalised Construction Traffic Management Plan pursuant to the discharge of Requirement 18 of the draft DCO (C.1.1: Draft DCO including draft Deemed Marine Licence (DML) (REP1-002)). At this stage, the mitigation strategy will be informed by contractor input to refine fleet composition and daily demand and in turn optimise the measures to be introduced. During this discharge process the potential effects on ecology, landscape, hydrology and other relevant effects will be assessed and will influence both the micro siting and form of mitigation. It is anticipated that any alterations to the public highway will be minor in nature (small passing bays or areas of widening) and designs will be developed by selecting |

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| | | <p>iv. What would be the process for including input from the Highway Authority and receiving its technical approval?</p> <p>v. Should it be required, what is the dispute resolution mechanism?</p> <p>vi. Who would fund and carry out these works and would all mitigation measures that involve physical works, such as new passing places, be reinstated once construction operations have ceased or would they remain in place?</p> <p>vii. If they were to remain in place then who would be responsible for their long-term management?</p> <p>"</p> | <p>materials to mitigate environmental impact where required (e.g., permeable surfacing, conservation appropriate materials, grasscrete, etc.). It is therefore considered that the environmental impact of any highway measures can be managed through the CTMP approvals and are likely to be of negligible magnitude of impact.</p> <p>iii. In accordance with Requirement 18 of the draft DCO (C.1.1: Draft DCO including draft Deemed Marine Licence (DML) (REP1-002)), the finalised suite of highway measures for any stage of the connection works will be subject to approval in writing by the relevant planning authority in consultation with the relevant highway authority before any discrete stage of the connection works can commence. The community will be engaged throughout the construction process and the CoCP via a Community Liaison Officer and an established Communications Plan (see APP-237 for further details).</p> <p>iv. Prior to the commencement of the relevant parts of the connection works, the technical approvals for the highway designs will be submitted to and agreed with ERYC as provided for in Article 14(3) of the draft DCO.</p> <p>v. Article 39 of the draft DCO provides a dispute resolution mechanism that would apply to any dispute relating to Article 14.</p> <p>The Applicant would fund the highway mitigation and appoint an agent to implement the works. All road/junction widenings are proposed to be temporary and following completion of construction will be reinstated to their former state unless otherwise agreed with ERYC. Should ERYC determine that any measures are to be left in place they would assume asset management responsibility in accordance with their statutory powers and duties. These matters would be covered in the legal agreement referred to in Article 13 of the draft DCO.</p> |
| TT.1.7 | Applicant | <p>Use of Link 3 (Sands Road) and associated landfall compound access points</p> <p>In Figure 2 of the Traffic and Transport Technical Report [APP-125] you depict Link 3 ending at the point where Sands Road bends sharply to head in a northerly direction. From that bend the Order limits commence even though on Sheet 1 of 28 of</p> | <p>With regard to the HGV movements to AP_002 and AP_003 the Applicant submits the following clarification:</p> <p>Appendix G of A6.7.1: Traffic and Transport Technical Report (APP-125) shows the assignment of the full HGV demand (93 two-way daily HGV movements) to links 3 and 5 serving both AP_002 and AP_003. This is to facilitate the assessment of the option of early landfall access via AP_002 prior to the haul road being established</p> |

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| | | <p>the Public Rights of Way Plan [APP-215] this is labelled as being part of Sands Road. Please clarify the nature of this stretch of Sands Road that falls within the Order limits, ie is this a private track and is there currently any public access along it?</p> <p>Also, in Appendix F of the Traffic and Transport Technical Report under the category of 'Landfall Compound' you attribute 69 'Two-way daily HGV movements per access' to Proposed Access Points AP-002 and AP-003. However, AP-002 is located at the end of Link 3 whereas AP-003 is located further to the south near to the proposed Logistics Compound, which would be accessed off the A165. Having regard to this, and to the figures you have provided in Table 7.18 of ES Vol. A3 Chapter 7 [APP-031], clarify the traffic movements that would be associated with the construction and use of the landfall compound and to what extent these would use either AP-002 or AP-003.</p> | <p>from AP_003. After which, it is anticipated all HGV access will be from AP_003. This strategy is reflected in the figures presented in Table 7.18 of A3.7: Traffic and Transport (APP-031).</p> <p>The Applicant confirms that the stretch of track within the Order Limits (Sands Road) is not a PRoW based on data received from ERYC. The Applicant would therefore assume that it is a private track and if it is used for public access [to the PRoW network / coastal access] then it is done so informally.</p> |
| TT.1.8 | Applicant | <p>Traffic and Transport Technical Report</p> <p>Explain the figures you have provided in Table 2 of Annex 7.1 Traffic and Transport Technical Report [APP-125], especially those calculated for the various totals from month 6 onwards.</p> | <p>Table 2 of A.7.1: Traffic and Transport Technical Report (APP-125) identifies in the green cells the peak month (three) daily HGV demand for an optimised programme (a total of 515 daily two-way HGV movements). However, it is acknowledged that programmes can slip/accelerate, and Table 2 also identifies the peak HGV daily demand per activity (orange cells) to enable a Maximum Design Scenario (MDS) peak HGV daily demand to be calculated whereby these activities overlap. The aggregating of peak daily HGV demand per activity in Table 2 and 3 has resulted in a MDS of 838 two-way HGV movements per day being adopted for the Traffic and Transport assessment presented in A3.7: Traffic and Transport (APP-031).</p> |
| TT.1.9 | Applicant | <p>Traffic and Transport Technical Report – Appendices D, E and F</p> | <p>Appendix D of A.7.1: Traffic and Transport Technical Report (APP-125) Item 2, Secondary Logistics Compounds is the calculated HGV deliveries for all seven sites.</p> |

In Appendix D of the Annex 7.1 Traffic and Transport Technical Report [APP-125], clarify the figures you have provided for Item 2, Secondary Logistic Compounds, in particular in regard to the 'duration of deliveries, months'. Are these figures for a single compound or for the sum of all seven compounds, and does the four months duration of deliveries that you have predicted mean that there would only be deliveries within a four-month period or that the sum of all delivery days over the entire construction period would equate to four complete months (ie approximately 120 days)? In a similar manner, provide an explanation for the figures you have cited in Appendix D in regard to '7. Ducts' and '9. HDD installation'.

The ExA notes that the figures in Appendix E correlate with the peak figures in Tables 2 to 4 of [APP-125]. However, please explain how you have arrived at the figures you have detailed in Appendix E of [APP-125]. In particular, please explain the figures you have given for the Primary and Secondary Logistics Compounds and the landfall compound. For example, in terms of daily Personnel Movements per Month you have predicted the maximum total number of persons as being 184 and yet there are only a predicted eight light vehicle movements for all of the compounds combined. If the compounds are to contain parking, welfare and office facilities then would these not need to be visited by the teams that were undertaking other elements of the construction process? How have such movements been accounted for?

Appendix E, Graph 3 (Daily Material Movements per Month) of **A.7.1: Traffic and Transport Technical Report (APP-125)** details that for Activity 2, Secondary Logistics Compounds, the deliveries will occur between months 0 to 3 (four months) at the start of the programme and there will be a reciprocal four month of removal export HGV movements (months 27 to 30) at the end of the programme. The same logic and cross referencing applies to item 7, Ducts and item 9, HDD installation.

Appendix D and Table 2 to Table 4 of **A.7.1: Traffic and Transport Technical Report (APP-125)** refer to the total daily personnel numbers to undertake a discrete activity. With regard to Primary and Secondary Logistics Compounds a total of 8 personnel per day are required to establish the facility.

To gain an understanding of the total Primary and Secondary Logistic Compound personnel traffic attraction the Applicant refers to **A6.7.1: Traffic and Transport Technical Report (APP-125)** Section 3.2 (Material and Personnel Demand) and Appendix J.

Paragraph 3.2.1.8 details a maximum design scenario of 54 personnel per day that could be travelling to a point of access. Appendix J assigns that attraction from each point of access to the links on the highway network in the Traffic and Transport study area. This includes Primary Logistic Compound access AP_015 and Secondary Logistics Compounds AP_040, AP_004, AP_007, AP_011, AP_037, AP_017, AP_022, AP_028 and AP_030.

Peak HGV movements have been assessed for a MDS of one month. Average HGV movements are calculated by averaging monthly HGV movements during the most intense year for deliveries (year 1) of construction materials.

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| | | Also, in Appendix F of the Traffic and Transport Technical Report [APP-125] you provide figures for both peak and average Heavy Goods Vehicle (HGV) movements per access. For how long would each of the 'peak' periods last and how has the 'average' been calculated? | |
| TT.1.10 | ERYC | <p>Automated traffic counts</p> <p>Are you content that the seven-day period in March 2019 during which the automated traffic counts at 26 locations were undertaken (as reported in paragraph 2.2.1.6 of [APP-125]) represents an acceptable and representative time period? If not, then explain why.</p> | |
| TT.1.11 | Applicant ERYC | <p>Road Safety Audit</p> <p>In paragraph 4.3.1.4 of the Outline Construction Traffic Management Plan [Appendix F of the Outline Code of Construction Practice, APP-237] the Applicant states that:</p> <p>"The technical approval documentation will also include a Stage 1/2 Road Safety Audit and designer's response."</p> <p>Applicant: Explain why a Road Safety Audit has not already been undertaken and submitted to accompany the application.</p> <p>ERYC: Are you content with this? If not, why not?</p> | <p>A6.7.1: Traffic and Transport Technical Report, Appendix L (APP-125) contains a suite of access and crossing concepts which are specific to road classification but not site location. It has been agreed with ERYC that these concepts can form the basis for micro-siting and detailed design at which time the Road Safety Audits (RSAs) would be carried out to inform the process.</p> <p>It should be noted that proposed OnSS Access (A1079 Northbound Layby Extension) has been subject to micro siting and outline design as part of the DCO application and accordingly a stage 1 RSA has been undertaken.</p> |
| TT.1.12 | ERYC | <p>Monitoring and enforcement measures for construction traffic</p> <p>The Outline Construction Traffic Management Plan (Appendix F of the Outline Code of</p> | |

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| | | Construction Practice, [APP-237]) details the Applicant's approach to monitoring and enforcement measures for construction traffic. Are you satisfied with this? | |
| TT.1.13 | Applicant ERYC | <p>Impacts with other Highways works</p> <p>Provide an update in relation to the following statement from the East Riding of Yorkshire's RR [RR-008]:</p> <p>"... objection to the DCO on behalf of the Council until such time as either a collaboration agreement is in place or appropriate protection contained within the DCO in accordance with clause 5.4.1.2 of the Statement of Case dated September 2021."</p> | |
| TT.1.14 | Applicant ERYC | <p>A164/ Jocks Lodge Junction Improvement Scheme</p> <p>RR-013 has raised a concern that there is a potential for the proposed A164/ Jocks Lodge Junction Improvement Scheme to undermine the traffic data.</p> <p>Applicant:</p> <p>Can you confirm if the application traffic data was adjusted to allow for the proposed improvement scheme? If it wasn't, why not and how would this affect the outcomes?</p> <p>ERYC (Highways):</p> <p>Are you satisfied with the traffic data submitted with the application?</p> <p>(You may wish to combine the answer to this question with the answer to question CA.1.21.)</p> | <p>The Applicant confirms that the A164 Jocks Lodge Highways Improvement scheme was included in the cumulative effects assessment (CEA) for Hornsea Four. Analysis of vehicle movements arising from the scheme has been included in Section 7.12.4 of A3.7: Traffic and Transport (APP-031).</p> <p>The outline Construction Traffic Management Plan (Co144) submitted as Appendix F of F2.2: Outline Code of Construction Practice (REP1-027) notes the potential for cumulative impacts with the A164/Jocks Lodge Junction Improvement Scheme and proposes the following management strategy:</p> <p><i>"Due to uncertainties regarding the timings of the start of construction of these projects, it has been agreed with ERYC (during a meeting on 2 October 2019, (ON-HUM-4.3) and Highways England (during a meeting on 5 September 2019, (ON-HUM-4.2) that the potential for cumulative effects can be managed through measures within the finalised CTMPs for the respective projects."</i></p> |

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| TT.1.15 | Applicant ERYC | <p>Logistics compound at Lockington</p> <p>In its RR [RR-018], Lockington Parish Council raised concerns about the location of the logistics compound that is proposed to be located close to the junction of Station Road and the A164. The Parish Council has suggested an alternative site that would be located on the eastern side of the A164 immediately to the north of the Station Road/ A164 junction.</p> <p>What implications would this have for driver delay on this part of the highways network?</p> | <p>The Applicant's full response to Lockington Parish Council's RR (RR-018) can be found at G1.9: Applicant's comments on Relevant Representations Annex 4 (REP1-038). The relevant information has been extrapolated from REP1-038 to inform responses to ExA Questions TT.1.15 to TT.1.17.</p> <p>During the evidence plan process (Table 7.4 of A3.7: Traffic and Transport (APP-031)) the screening exercise held with ERYC identified this junction had low baseline traffic flows and therefore, low sensitivity to the proposed increases in traffic. Recognising these baseline conditions, it was agreed that the junction was screened out of detail capacity assessment (Section 7.7.4 of A3.7: Traffic and Transport (APP-031)). Therefore, it is implicit that there are no traffic queuing and delay impacts that would favour the eastern side from the western side.</p> |
| TT.1.16 | Applicant | <p>Traffic figures in relation to Lockington crossroads</p> <p>In its Relevant Representation [RR-018] Lockington Parish Council advises that following a Zoom meeting in July 2021 you provided it with some new peak flow figures which the Parish Council has subsequently queried as these figures appear to "contrast so dramatically" with the previous average flow figures. The Parish Council is also unclear which figures have been used in the application or even if they have been submitted as part of the application. Can you:</p> <ol style="list-style-type: none"> Clarify which figures have been used in the traffic studies that were submitted as part of the Application and where these figures can be found? Explain which figures ERYC would have based its advice on? Explain any significant differences between the two sets of figures provided to the Parish Council | <p>The Applicant submits the following clarifications:</p> <ol style="list-style-type: none"> There have been minor revisions to the forecast traffic movements throughout the consultation phase, these revisions reflect the latest information in relation to project parameters at the time of engagement. Table 7.18 of A3.7: Traffic and Transport (APP-031) provides details of the finalised numbers of peak and average daily vehicle movements via Station Road to the west of the A164 (denoted as link 43). It can be identified from Table 7.18 of A3.7: Traffic and Transport (APP-031) that the peak period of construction could result in up to 175 additional two-way vehicle movements per day, of which up to 67 would be HGVs (i.e. 34 rounded HGV arrivals and 34 departures). Table 7.18 of A3.7: Traffic and Transport (APP-031) also provides details of average construction flows, equivalent to 66 two-way vehicle movements, of which 15 would be HGVs. F3.1: Statement of Common Ground between Hornsea Project Four and East Riding of Yorkshire Council (APP-255) item G3.1:9.3 "The location of the Primary Logistics compound, adjacent to the A164 and Station Road, to the east of Lockington, is acceptable." was based on the latest traffic data set out in response (i). The figures quoted by Lockington PC are average daily traffic demand from a letter from the Applicant dated 22 September 2021. These figures were |

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| | | and whether this would have any implications for the conclusions reached in the ES? | subject to minor revisions but have not changed materially (see average figures quoted in response (i)). The transport assessment presented in A3.7: Traffic and Transport (APP-031) has been based on the latest forecast traffic movements and therefore there are no implications for the conclusions reached and presented in of A3.7: Traffic and Transport (APP-031) . |
| TT.1.17 | Applicant ERYC | <p>Highway safety impacts for logistics compound options at Lockington</p> <p>Assuming that the majority of traffic would arrive from south of the junction of the A164 and Station Road, Lockington, comment on and rank the following two scenarios in terms of highway safety impacts:</p> <p>i. Inbound traffic: A left turn from the A164 on to Station Road (west). Outbound traffic: A right turn from the Logistics Compound on to Station Road (west), and then a right turn on to the A164 (ie the Applicant’s proposed Lockington Logistics Compound option).</p> <p>ii. Inbound traffic: A right turn from the A164 on to Station Road (east). Outbound traffic: A right turn from the Logistics Compound on to Station Road (east) and then a left turn on to the A164 from Station Road (ie Lockington Parish Council’s preferred location for the Logistics Compound).</p> | <p>The Applicant submits the following comments:</p> <ul style="list-style-type: none"> i. Inbound: Construction traffic left turns unopposed from the A164 onto Station Road), leading to less delays and low risk of collisions. Outbound: Right turning manoeuvres induce some delays on the minor road network and introduces a minor risk of collisions but these will be of a low probability. There is adequate forward visibility to safely make the right turn onto the A164. ii. Inbound: construction traffic gives way to oncoming A164 south bound traffic to right turn into Station Road(east) and would be momentarily stationary on a main road. This would induce delays on the A164 south and increase the risk and severity of collisions. Outbound: Right turning manoeuvres induce some delays on the minor road network and introduces a minor risk of collisions but these will be of a low probability. There is adequate forward visibility to safely make the left turn onto the A164. <p>It is concluded by the Applicant that on balance point (i) is a safer option and would induce less delays.</p> |
| TT.1.18 | Applicant Network Rail | <p>Network Rail – level crossings</p> <p>Applicant:</p> <p>Network Rail [RR-001] has raised a concern regarding potential damage to seven level crossings from construction traffic.</p> <p>i. How many HGVs would be using these crossings and for what duration?</p> | <ul style="list-style-type: none"> i) The following table details the traffic demand through railway level crossings. The duration of impact will depend on the sections served by the traffic traversing the level crossings and a worst case assumption of full construction duration has been adopted for the purpose of engagement with Network Rail. |

ii. Is there an alternative route that HGV traffic could take to avoid these crossings?
 iii. How do you propose to address Network Rails concerns?

Network Rail:

Do you have any particular concerns regarding the potential impacts on the level crossings you have specifically referred to in your Relevant Representation [RR-001] and can you provide any evidence that the proposed HGV use of these level crossings would be likely to cause them damage?

| Link | Description | Background 2024 AAWT * flows | | Average daily two-way Construction vehicle movements | | Average percentage increase | |
|-------|---|------------------------------|------|--|------|-----------------------------|-------|
| | | All vehicles | HGVs | All vehicles | HGVs | All vehicles | HGVs |
| 24 | B1249 Wansford Road / Scarborough Road | 5,909 | 93 | 38 | 33 | 0.6% | 35.5% |
| 28 | Anderson Street / River Head High | 11,534 | 208 | 0 | 0 | 0.0% | 0.0% |
| 30 | Station Road / Main Street through Hutton Cranswick | 2,531 | 35 | 67 | 16 | 2.6% | 45.7% |
| 31 | Corpslanding Road / Howl Lane / Church Street / Hutton Road | 562 | 8 | 51 | 0 | 9.1% | 0.0% |
| 34 | Carr Lane / Church Lane east of Watton | 313 | 18 | 62 | 11 | 19.8% | 61.1% |
| 38 | Wilfholme Road | 81 | 0 | 57 | 6 | 70.4% | ** |
| 40 | Beswick Road / Barfill Causeway | 38 | 0 | 59 | 8 | 155.3% | ** |
| Notes | | | | | | | |

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| * | AAWT – Annual Average Weekday Traffic |
| ** | No baseline HGV flows are available, therefore percentage change cannot be calculated |

ii) and iii)

A meeting was held with Network Rail (NR) on the 15 February 2022 to discuss their relevant representations in relation to: *“the level of impact the HGV vehicles will have on the Crossings and the safety of the railway and its users”*.

During the meeting, NR clarified that their concerns related to the following two issues:

- How would large or slow-moving vehicles be managed across the seven level crossings within the Hornsea Four traffic and transport study area; and
- The impact of an increase in Hornsea Four HGV traffic upon the NR asset (the seven level crossings and the immediate highway approaches).

In relation to the first point, an approach to addressing the issues was agreed with NR that would include minor amendments to the outline Construction Traffic Management Plan (oCTMP), (provided as Appendix F of [F2.2: Outline Code of Construction Practice \(APP-237\)](#)). These amendments were incorporated into the document and submitted by the Applicant at Deadline 1 ([REP1-027](#) and [REP1-028](#)). The Applicant’s full response to Network Rail’s RR (RR-001) can be found at [G1.9: Applicant’s comments on Relevant Representations Revision: 01, RR-001-C \(REP1-038\)](#).

Regarding the impact of an increase in Hornsea Four HGV traffic upon the NR asset, discussions are ongoing between the Applicant and NR relating to any additional mitigation measures that may need to be adopted for some of the level crossings, including requirements for pre-construction surveys and any works required to the level crossing decks. The Applicant is also reviewing its construction transport routing to confirm whether it is necessary for all of the level crossings identified to be utilised by construction traffic for Hornsea Four.

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| TT.1.19 | Applicant | <p>Effects on PRoWs resulting from trenched crossings</p> <p>Effects on PRoWs resulting from trenched crossings are all assessed as short-term, defined as "... a period no longer than three months at one any one time, or six months in total over the whole construction period." Please confirm how this period of effects would be controlled and secured in the DCO?</p> | <p>These timeframes are set out in Co165, which is secured by Requirement 17 (Code of Construction Practice). The commitment wording is included within F2.2: Outline Code of Construction Practice (REP1-027), notably in Table 15 of the main document and Table 1 of the PRoW Management Plan in Appendix C.</p> |
| TT.1.20 | Applicant | <p>Permanent diversion of Skidby Footpath No. 16</p> <p>Sheet 28 of the PRoW Plan [APP-215] notes the permanent diversion of part of the Skidby Footpath No. 16 between Point 25c and 25d and with a "Public Right of Way – Diversion Area 1" indicated. Page 42 of the Annex 4.6 Design Vision Statement [APP-048] states that that a diverted PRoW route would be "subject to landowner permission". In addition, the ExA notes the comments made in para 4.3.1.2 of the Outline Public Right of Way Management Plan [APP-237, Appendix C]. Would the Applicant please clarify:</p> <ul style="list-style-type: none"> i. Any usage statistics for this stretch of the PRoW network. ii. The process and likely timescale for obtaining landowner permission for PRoW diversion. iii. If the diverted PRoW would connect with the existing Rowley Footpath No. 12/ Woodmansey Footpath No. 7 (ie at point 25d on Sheet 28 of the PRoW Plan). iv. If the diversion cannot connect in at point 25d then is it the case that the only other way to | <p>The Applicant can confirm that the diversion of Skidby 16 will not be subject to landowner permission and will be accounted for within the Order Limits. The inclusion of this text in A4.4.6: Design Vision Statement (APP-048) was made prior to a voluntary agreement with the landowner being entered into.</p> <p>Regarding the specific questions asked:</p> <ul style="list-style-type: none"> i. The Applicant does not have any usage statistic for Skidby 16 and would divert to ERYC for available information. ii. As stated above, no timescales are required for obtaining landowner permission for the diversion. iii. Flexibility for the exact diversion route has been included to allow for coordination with ERYC during the detailed design stage as the OnSS and EBI design develops. This flexibility allows for either the PRoW to connect at point 25d, or to route along or adjacent to the OnSS and EBI access road to the west. This is outlined in Section 4.3 of the Outline PRoW Management Plan, which forms Appendix C of F2.2: Outline Code of Construction Practice (REP1-027). iv. As set out above, one of the diversion options allows for a diversion along or adjacent to the OnSS and EBI access road, which will be used by a low number of vehicles for preventative and corrective reasons (as set out in Section 4.11.3 of A1.4: Project Description (REP1-004)). v. As Skidby 16 (and the required diversion) routes through the OnSS and EBI site, the PRoW will need to be stopped up for the entirety of the |

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| | | <p>connect to the wider PRow network would be via the onshore substation access road?</p> <p>v. If the proposed PRow diversion would be completed and useable before closure of the existing PRow.</p> | <p>construction period. Due to the complicated network of PRow surrounding the OnSS, the impact of the stopping up of these PRow has been reviewed to ensure minimum long-term impact to the wider PRow network in the vicinity of the OnSS. Full details can be found within the PRow Outline Management Plan which forms Appendix C of F2.2: Outline Code of Construction Practice (REP1-027).</p> |
| TT.1.21 | Applicant | <p>Jillywoods Lane PRow during construction</p> <p>Please respond in detail to the concern raised by The Ramblers, East Yorkshire and Derwent Area [RR-038] about continued access during the construction phase for walkers seeking to take a circular route from the Beverley and Cottingham areas using the old drovers' road and Jillywoods Lane PRow (Rowley Footpath No. 12). (If not fully addressed in the Applicant's Deadline 1 response to Relevant Representations.)</p> | <p>The Applicant confirms a response to the representation from The Ramblers, East Yorkshire and Derwent Area (RR-038) was included in the Applicant's Deadline 1 submission (REP1-038). The Applicant's response noted that the impact of construction at the OnSS on the PRow network has been reviewed to ensure minimum long-term impact to the wider PRow network at the OnSS. Full details can be found within the PRow Outline Management Plan which forms Appendix C of F2.2: Outline Code of Construction Practice (REP1-027).</p> |
| TT.1.22 | Applicant ERYC | <p>Applicant:</p> <p>Proposals for realignment of PRow in the vicinity of the landfall</p> <p>Section 4.2 of ES Chapter 4.4.6 [APP-048] discusses diversion of existing PRow and creation of a new Coastal Path "developed separately to Hornsea Four..." and Figure 3 of that document shows existing PRow in the landfall location. Would the Applicant:</p> <p>i. Produce an amendment or supplement to this illustration that shows the proposed Order limits and indicative proposals for temporary or permanent realignment of PRow.</p> <p>ii. Clarify where improvements to the PRow network have been or could be considered, with</p> | <p>The Applicant notes that A4.4.6: Design Vision Statement (APP-048) does not secure the necessary PRow diversion works and does not propose to update figures within the document for the purposes outlined.</p> <p>The Applicant considers that Figure 4 of the Outline PRow Management Plan, which forms Appendix C of F2.2: Outline Code of Construction Practice (REP1-027), is the appropriate mechanism for outlining the proposed diversion. The figure shows the proposed Order Limits and indicative proposals for the temporary realignment of Barmston Footpath No.4. This plan also shows the indicative location of the proposed English Coast Path, within which the Applicant proposes to locate the temporary diversion during construction.</p> <p>In respect of safety of PRow users, the Applicant would work closely with Natural England and ERYC to ensure that safety is instrumental as part of the route selection process of the English Coast Path at this location.</p> |

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| | | <p>particular reference to connectivity of the PRoW network around the proposed landfall in liaison with the Local Council.</p> <p>How would the safety of users of the diverted PRoW/ Coastal Path be ensured, given the proximity of the path to the edge of the cliff and having regard to cliff erosion?</p> <p>ERYC:</p> <p>Notwithstanding Sheet 1 of [APP-215] please can you submit into the Examination a detailed plan depicting the route of the Coastal Path within the vicinity of the landfall area (taking into account cliff retreat).</p> | <p>Appendix C of F2.2: Outline Code of Construction Practice (REP1-027) sets out the Outline PRoW Management Plan which will inform the development of a detailed PRoW Management Plan (to be appended to the final Code of Construction Practice CoCP(s)), secured via requirement 17 of the draft DCO (Volume C1.1: Draft DCO including draft DML) which will be agreed with ERYC prior to the construction of the connection works. The detailed PRoW Management Plan will include details on the measures currently set out in F2.2: Outline Code of Construction Practice (REP1-027) that require confirmation in relation to impact avoidance to ensure minimal disturbance to PRoW users and maintenance of appropriate safety standards.</p> <p>The enhancement of PRoWs is secured via A2.14: Outline Enhancement Strategy (APP-249), with detail presented in Table 6. The exact measures will be agreed with ERYC as part of the detailed Enhancement Strategy, focussing on footpaths that would benefit most from such measures. It is considered that this will allow for ERYC to input to the selection of PRoWs. The Enhancement Strategy is secured by Requirement 22.</p> |
| TT.1.23 | Applicant | <p>Enhancement measures</p> <p>In Table 6 of the Outline Enhancement Strategy [APP-249] you state that the provision of signage, gates, clearance of vegetation and surfacing "may be implemented" and you refer to the exact measures being agreed with ERYC as part of the Enhancement Strategy. What community involvement would there be in deciding how any enhancement measures for PRoW are to be allocated?</p> | <p>The Applicant recognises the importance of community involvement in the design and enhancement of the PRoW network. Community consultation will be a fundamental component of the pre-construction and construction process and there will be opportunities for community engagement and input to Hornsea Four.</p> <p>ERYC's countryside access team have an established and thorough understanding of the PRoW network itself and the users. As such, it is the Applicant's opinion that ERYC are best placed to determine where enhancement measures are needed most and/or would be of most benefit. The opinions of the community will intrinsically be considered and incorporated via this process and the discharge of the pre-commencement condition.</p> |
| TT.1.24 | Applicant | <p>Longer term management of PRoWs</p> <p>The East Riding of Yorkshire and Kingston upon Hull Joint Local Access Forum [RR-032] has raised concerns about potential for settlement of</p> | <p>The Applicant confirms a response to the representation from The East Riding of Yorkshire and Kingston upon Hull Joint Local Access Forum (RR-032) was included in the Applicant's Deadline 1 submission (REP1-038). The Applicant's response noted that valued comments raised regarding settlement were considered by the Applicant</p> |

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| | | backfill and adequacy of surfacing of reinstatement of excavations affecting PRowS as defined in the application commitment Co79 [APP-050] and in the Outline Code of Construction Practice [APP-237]. Please respond in detail and explain by what mechanism and for what time period would the condition of any reinstated PRowS be assessed, and any remedial measures be undertaken? | pre-application. The consultation feedback referred to has been responded to in comment ID S42_0050_006 in B1.1.4: Applicant Regard to Section 42 Consultation Responses (APP-133) (page 162). |
| TT.1.25 | Applicant | <p>Opportunities for improvement to the PRow network</p> <p>Para 2.2.2 of the Design Vision Statement [APP-048] notes site opportunities "such as improvements to the PRow network...". Please comment on where such improvements are indicated, where proposed and how secured in the draft DCO (or provide signposting to where in the application documents this information can be found).</p> | The enhancement of PRowS is secured via A2.14: Outline Enhancement Strategy (APP-249) , with detail presented in Table 6. The exact measures will be agreed with ERYC as part of the detailed Enhancement Strategy, focussing on footpaths that would benefit most from such measures. It is considered that this will allow for ERYC to input to the selection of PRowS. The Enhancement Strategy is secured by Requirement 22. |
| TT.1.26 | ERYC | <p>Timing implications of legal procedures for PRow diversion</p> <p>Are you satisfied given the concerns you expressed in consultation regarding the timing implications of legal procedures for permanent diversion of the PRow around the proposed onshore substation?</p> | |
| TT.1.27 | ERYC | <p>Permanent diversions and associated signage applied to PRow</p> <p>In relation to commitment 79 (Co79) [APP-050] regarding permanent diversions and associated signage to be applied to a small number of PRow, please confirm agreement to the removal of the impact from the ES Chapter [APP-049, Impact</p> | |

| | | | |
|---------|------|--|--|
| | | Register LUA-C-4 and LUA-O-5] noted as agreed with ERYC during the PRoW meeting in Beverley on 29 October 2019 (ON-HUM-3.7) [APP-129]. | |
| TT.1.28 | ERYC | Status of footpath from Lockington to the junction with the A164 Lockington Parish Council [RR-018] refer to a footpath that links the village of Lockington to the bus stop located at the junction with the A164 as "just being recognised by ERYC" can you confirm what is meant by this statement and advise if the footpath is a recognised PRoW. | |

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Appendix A



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

East Anglia ONE North Offshore Wind Farm

Appendix A16b to the Natural England Deadline 9 Submission

**Natural England's Comments on Cumulative and In-combination Collision Risk
Update [REP8-035]**

For:

The construction and operation of East Anglia ONE North Offshore Wind Farm, a 800MW wind farm which could consist of up to 67 turbines, generators and associated infrastructure, located 36km from Lowestoft and 42km from Southwold.

Planning Inspectorate Reference: EN010077

15th April 2021



Natural England Comments on Offshore Ornithology Cumulative and In-combination Collision Risk Update [REP8-035]

This document is applicable to both the East Anglia ONE North (EA1N) and East Anglia TWO (EA2) applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23rd December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again for the other project.

Introduction

This document provides an update on Natural England's position and advice to the following documents submitted by the Applicant at Deadline 8 in relation to Offshore Ornithology Cumulative and In-Combination Collision:

- EA2&EA1N Deadline 8 Offshore Ornithology Cumulative and In-Combination Collision Update [REP8-035]

Summary

1) General Comments

1.1 Natural England welcomes the corrections and updates made by the Applicants to the figures presented in the Tables in Appendix 1 of REP8-035 and we agree with these figures.

1.2 We have the following queries regarding the information presented:

- The last bullet point of paragraph 1 states that: *'the East Anglia Two estimates for gannet and kittiwake apportioned to the Flamborough and Filey Coast SPA have been updated to use the migration free breeding season.'* This sentence contradicts Section 2 of REP8-035, which suggests that the figures for EA2 have been updated to use the full breeding season rather than the migration season (as was done at EA1N following Natural England advice). Clarification is therefore required that it is in fact the full breeding season that has now been used.



- The Applicants' state in paragraph 3 that: *'For the avoidance of doubt the collision risk modelling itself is not affected (i.e. the EIA and CIA figures), the only change is the months which are treated as part of the breeding or non-breeding seasons, and hence what proportion of the total collisions in those months are apportioned to the FFC SPA populations. The changes for East Anglia TWO are provided in Table 1 and incorporated in Appendix 1 (from use of migration free to full breeding season).'* However, we note that using the full breeding season instead of the migration free breeding season and adjusting the migration months accordingly does alter the collision predictions for the EA2 site alone, and therefore these predictions are the ones that should be taken through to the in-combination total.
- We note that the tables in Appendix 1 for both gannet and kittiwake include figures for EA2 based on use of the migration free breeding season and not the full breeding season. However, we recognise that adjusting these does not significantly alter the in-combination totals for these species.
- We note that there are some errors in the data presented for EIA and HRA for EA2 for gannet in Table A0.1 of Appendix 1 – currently the breeding season collision figure apportioned to the Flamborough and Filey Coast (FFC) SPA exceeds the EIA scale breeding season prediction. The spring migration EIA figure currently exceeds the annual EIA predicted figure, which then affects the FFC SPA apportioned figure for this season. These apparent errors then affect the annual EIA and HRA totals included in the in-combination assessment for EA2, and hence potentially also the cumulative and in-combination predicted totals. Therefore, we advise the Applicants check these figures and totals.
- Based on the seasonal EIA scale figures presented for both projects in Table A0.2 of Appendix 1 of REP8-035, we query what spring migration apportionment rates have been used by the Applicants to arrive at the spring FFC SPA kittiwake collisions of 0.25 for EA1N and 0.5 for EA2. Using the 7.2% spring apportionment rate (as advised by Natural England during the Norfolk Vanguard and Boreas examinations and which appears to have been used by the Applicants for spring apportionment for all the other projects included in the in-combination assessment), we calculate these figures to be 0.7 for EA1N and 1.3 for EA2. This means that the annual totals for the FFC SPA kittiwakes for these sites would be 1.2 for EA1N and 1.7 for EA2. This makes a slight adjustment to the Applicants' in-combination FFC SPA kittiwake totals presented in Table A0.2 of Appendix 1 of REP8-035.



- 1.3 Projects in-combination: We welcome that the Applicants have presented cumulative collision totals for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) and for including all projects for gannet, lesser black-backed gull and great black-backed gull. We note that for cumulative collisions (EIA scale) for kittiwake, the Applicants have presented totals for all projects and all projects excluding Hornsea 4 and Norfolk Vanguard. As the Hornsea 3 project has not provided updated collision figures following their additional mitigation and additional baseline data for EIA scale for kittiwake, the uncertainty regarding the figures to include for this project remains. Therefore, totals should also be presented for cumulative kittiwake collisions for all projects and all projects excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard (as Natural England have presented in our advice in Appendix A19 of our Deadline 8 response [REP8-035]).
- 1.4 Herring gull: We note that no updates have been provided for herring gull cumulative collisions, which is due to the low collisions (less than 1 bird for East Anglia Two and 0 for East Anglia One North) predicted for this species from both East Anglia One North and East Anglia Two. However, as noted in our advice in Appendix A19 of our Deadline 8 response [REP8-035] the cumulative herring gull collision total is now approaching 1% of baseline mortality of the largest BDMPS, indicating the need for all future offshore wind farm projects in the North Sea to undertake herring gull CRM.
- 1.5 Significance of impacts: The Applicants consider in paragraph 14 that the updates made in REP8-035 do not alter their conclusions of negligible to minor adverse significance for the EIA and no Adverse Effects on Integrity for the HRA within the assessments submitted in AP-060 and APP-043. Natural England does not agree with these conclusions for several species (gannet, kittiwake and gannet cumulative EIA scale) or site combinations (including Flamborough and Filey Coast SPA kittiwakes and Alde-Ore Estuary SPA lesser black-backed gull). A summary of our advice/conclusions is set out in Table 1 below and further details behind this advice is set out in the following species-specific sections.



Table 1 Summary of conclusions for operational collision assessments of the East Anglia One North and East Anglia Two projects for cumulative and in-combination with other plans and projects for relevant species for EIA and HRA based on the Applicants' updated assessments in REP8-035

| EIA species | East Anglia One North and East Anglia Two cumulatively with other plans & projects |
|--|--|
| Gannet: collision | Unable to rule out significant adverse impact excl. & incl. Hornsea 3, Hornsea 4 & Norfolk Vanguard |
| Kittiwake: collision | Unable to rule out significant adverse impact excl. & incl. Hornsea 3, Hornsea 4 & Norfolk Vanguard |
| Lesser black-backed gull: collision | No significant adverse impact excl. Hornsea 3, Hornsea 4 & Norfolk Vanguard Unable to rule out significant adverse impact incl. Hornsea 3, Hornsea 4 & Norfolk Vanguard |
| Great black-backed gull: collision | Unable to rule out significant adverse impact excl. & incl. Hornsea 3, Hornsea 4 & Norfolk Vanguard |
| HRA species/site | East Anglia One North and East Anglia Two in-combination with other plans & projects |
| Flamborough & Filey Coast SPA: gannet | No AEol excl. Hornsea 3, Hornsea 4 & Norfolk Vanguard Unable to rule out AEol incl. Hornsea 3, Hornsea 4 & Norfolk Vanguard |
| Flamborough & Filey Coast SPA: kittiwake | AEol irrespective of whether Hornsea 4 and Norfolk Vanguard included or not (Hornsea 3 considered compensated for) |
| Alde-Ore Estuary SPA: lesser black-backed gull | Unable to rule out AEol incl./excl. Norfolk Vanguard (no collisions apportioned from Hornsea 3 & Hornsea 4) |

2) Gannet cumulative and in-combination collisions

2.1 Cumulative collisions:

We suggest that the cumulative (EIA) annual gannet collisions presented in Table A0.1 of Appendix 1 of REP8-035 are checked by the Applicant, largely due to the fact that the sum of the seasonal EIA predictions included for EA2 does not appear correct: $10.7 + 24.2 + 47.7$ does not equal 39.6 as currently presented. However, based on the figures presented by the Applicant in Table 2 of REP1-047 of revised CRM figures for EA2, we have taken the annual gannet collision prediction for the East Anglia Two project for a draught height of 24m above Mean High Water Springs (MHWS) to be 39.6. Using this figure in the cumulative total, the annual cumulative gannet collision totals are 2,889 for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) and 3,031 for all projects including Hornsea 3, Hornsea 4 and Norfolk Vanguard. These match the totals presented by the Applicant in Table A0.1 of Appendix 1 of REP8-035 and also match those presented by Natural England in our advice in Appendix A19 of our Deadline 8 response



[REP8-159]. Therefore, our advice regarding gannet cumulative collisions remains as that set out in Appendix A19 of our Deadline 8 response [REP8-159], namely:

We are unable to rule out a significant adverse impact on gannet from cumulative collision mortality at an EIA scale irrespective of whether the Hornsea 3, Hornsea 4 and Norfolk Vanguard projects are included in the cumulative totals or not.

2.2 In-combination collisions: The in-combination FFC SPA gannet collision total presented by the Applicants in Table A0.1 of Appendix 1 of REP8-035 for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) of 277 is lower than the total for all projects excluding Hornsea 3 and Hornsea 4 presented by Norfolk Boreas, this is because the Norfolk Vanguard figures were included by Boreas, and this project has had its consent revoked since the end of the Boreas examination.

The in-combination FFC SPA gannet collision total for all projects including Hornsea 3, Hornsea 4 and Norfolk Vanguard of 358 presented by the Applicants in Table A0.1 of Appendix 1 of REP8-035 has decreased slightly (by 1 for the total including all projects) from that presented by Vattenfall at Deadline 8 of the examination of that project (Norfolk Boreas Ltd 2020). This decline is due to the EA1N/EA2 Applicants' updated assessment revising the figures included for their projects to account for the updated CRM following the increase in draught height (the Boreas assessment included figures from the submission documents for EA1N and EA2), and also removing the contribution of Thanet Extension from the total following the decision not to grant consent for this project (the Boreas assessment included a figure for Thanet Extension).

We have assumed that the Applicants have made use of the same PVAs as were used at Norfolk Boreas (the FFC SPA gannet PVA undertaken by Hornsea 3 presented in Hornsea Project Three 2019). Therefore, given that the in-combination totals now presented for all confirmed projects (excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) are lower than that presented by Boreas for excluding just Hornsea 3 and 4, and that the total for all projects (including Hornsea 3, Hornsea 4 and Norfolk Vanguard) is just 1 bird below the total presented by Norfolk Boreas, our advice remains as set out in our Deadline 4 (Natural England 2020a), Deadline 7 (Natural England 2020b) and Deadline 9 (Natural England 2020c) responses during the Norfolk Boreas examination:



An adverse effect on integrity (AEol) of the gannet feature of the FFC SPA can be ruled out for in-combination collision impacts if Hornsea 3, Hornsea 4 and Norfolk Vanguard are excluded from the in-combination totals.

However, due to Natural England's significant concerns regarding the associated level of uncertainty as regards the potential impacts of the Hornsea 3 project, together with the inevitable uncertainty associated with the figures for Hornsea 4 (which are from the PEIR and are subject to change), along with the current status of the Norfolk Vanguard project, Natural England therefore is not in a position to advise that an AEol can be ruled out for the gannet feature of the FFC SPA for in-combination collision impacts when the Hornsea 3, Hornsea 4 and Norfolk Vanguard projects are included in the in-combination totals.

3) Kittiwake cumulative and in-combination collisions

3.1 Cumulative collisions: As noted in our general comments section above, the cumulative kittiwake collision total for all confirmed projects presented by the Applicants in Table A0.2 of Appendix 1 of REP8-035 includes Hornsea 3 in this total. As Hornsea 3 have not provided updated EIA scale kittiwake collision figures following their additional mitigation, this total should also exclude Hornsea 3.

Based on the figures presented by the Applicants in Table A0.2 of Appendix 1 of REP8-035, the annual cumulative kittiwake collision totals are 3,835 for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) and 4,387 for all projects including Hornsea 3, Hornsea 4 and Norfolk Vanguard. This matches the all project total (including Hornsea 3, Hornsea 4 and Norfolk Vanguard) presented by the Applicant in Table A0.2 of Appendix 1 of REP8-035 and both match those presented by Natural England in our advice in Appendix A19 of our Deadline 8 response [REP8-159]. Therefore, our advice regarding kittiwake cumulative collisions remains as that set out in our advice in Appendix A19 of our Deadline 8 response [REP8-159], namely:

We are unable to rule out a significant adverse impact on kittiwake from cumulative collision mortality at an EIA scale irrespective of whether the Hornsea 3, Hornsea 4 and Norfolk Vanguard projects are included in the cumulative totals or not.



3.2 In-combination: We note that if we correct the apparent error in the spring apportioning and hence annual totals for FFC SPA kittiwake collisions for East Anglia One North and East Anglia Two (as set out above), the revised in-combination totals become 339 collisions per annum for all confirmed projects, i.e. excluding Hornsea 4 and Norfolk Vanguard (compared to 337 as presented in Table A0.2 of Appendix 1 of REP8-035) and 515 for all projects including Hornsea 4 and Norfolk Vanguard (compared to 514 as presented in Table A0.2 of Appendix 1 of REP8-159).

The in-combination FFC SPA kittiwake collision total for all projects including Hornsea 3, Hornsea 4 and Norfolk Vanguard of 515 has decreased from that presented by Vattenfall at Deadline 8 of the examination of that project (Norfolk Boreas Ltd 2020). This decline is due to the EA1N/EA2 Applicants' updated assessment updating the figures included for their projects to account for the updated CRM following the increase in draught height (the Boreas assessment included figures from the submission documents for EA1N/EA2), removal of the contribution of Thanet Extension from the total following the decision not to grant consent for this project (the Boreas assessment included a figure for Thanet Extension) and removal of the contribution of Hornsea 3 (as the impact from this project is considered to be fully compensated for).

We have assumed that the Applicants have made use of the same PVAs as were used at Norfolk Boreas (the FFC SPA kittiwake PVA undertaken by Hornsea 3 presented in Hornsea Project Three 2019). The total of 339 for all confirmed projects (i.e. excluding Hornsea 4 and Norfolk Vanguard) would result in use of the same PVA counterfactuals as were used in our Deadline 4 advice at Norfolk Boreas for the in-combination total excluding Hornsea 3 and Hornsea 4 (but including Vanguard) (i.e. PVA outputs for 350 additional mortalities, as the closest PVA output to the in-combination all confirmed project total of 339). We again highlight that the in-combination total of collision mortality across consented plans/projects has already exceeded levels which are considered to be of an Adverse Effect on Integrity to kittiwake at FFC SPA, and that any additional mortality arising from these proposals would therefore be considered adverse. In addition, the issues regarding inevitable uncertainty associated with the figures for Hornsea 4 from the PEIR and are subject to change, along with the current status of the Norfolk Vanguard project remain for FFC SPA kittiwake. Therefore, our advice remains the same as that set out in in our Deadline 4 (Natural England 2020a), Deadline 7 (Natural England 2020b) and Deadline 9 (Natural England 2020c) responses during the Norfolk Boreas examination:



As the kittiwake feature of the FFC SPA has a restore conservation objective, and because there are indications that the predicted level of mortality would mean the population could decline from current levels should it currently be stable, it is not possible to rule out AEol of the kittiwake feature of the FFC SPA for collision impacts from in-combination with other plans and projects, both including and excluding Hornsea 4 and Norfolk Vanguard (contribution from Hornsea 3 is considered to be compensated for).

4) Lesser black-backed gull (LBBG) cumulative and in-combination collisions

4.1 Cumulative collisions: Based on the figures presented by the Applicants in Table A0.3 of Appendix 1 of REP8-035, the annual cumulative LBBG collision totals are 509 for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) and 540 for all projects including Hornsea 3, Hornsea 4 and Norfolk Vanguard. These match those presented by Natural England in our advice in Appendix A19 of our Deadline 8 response [REP8-159]. Therefore, our advice regarding LBBG cumulative collisions remains as that set out in our Appendix A19 of our Deadline 8 response [REP8-159], namely:

We advise a conclusion of no significant adverse impact from cumulative collision to LBBG at an EIA scale if the Hornsea 3, Hornsea 4 and Norfolk Vanguard projects are excluded from the cumulative total.

However, due to the associated level of uncertainty as regards the impact figures to include for Hornsea 3, together with the inevitable uncertainty associated with the figures for Hornsea 4 from the PEIR and are subject to change, and the current status of Norfolk Vanguard, Natural England therefore is not in a position to advise that significant impact can be ruled out for LBBG for cumulative collision impacts when the Hornsea 3, Hornsea 4 and Norfolk Vanguard projects are included in the cumulative totals.

4.2 In-combination collisions: The in-combination Alde-Ore Estuary SPA LBBG collision total for all projects including Hornsea 3, Hornsea 4 and Norfolk Vanguard presented by the Applicant in Table A0.3 of Appendix 1 of REP8-035 of 53 has decreased slightly



(by 1 bird) from that presented by Vattenfall at Deadline 8 of the examination of that project (Norfolk Boreas Ltd 2020). This decline is due to the EA1N /EA2 Applicants' updated assessment updating the figures included for their projects to account for the updated CRM following the increase in draught height (the Boreas assessment included figures from the submission documents for EA1N and EA2), and removal of the contribution of Thanet Extension from the total following the decision not to grant consent for this project (the Boreas assessment included a figure for Thanet Extension). The in-combination total of 50 for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard, but no birds are apportioned to the Alde-Ore from Hornsea 3 and Hornsea 4) is slightly lower again due to the removal of the contribution from Norfolk Vanguard.

We have assumed that the Applicants have made use of the same PVAs as were used at Norfolk Boreas (the Alde-Ore SPA LBBG updated PVA undertaken by Norfolk Vanguard presented in MacArthur Green 2019). Based on the revised in-combination totals of 50 (essentially excluding Norfolk Vanguard only as no birds are apportioned from Hornsea 3 and 4) and 53 including Norfolk Vanguard, using the density independent PVA model outputs in MacArthur Green (2019), if the additional mortality from the windfarm is 50-55 adults per annum (closest PVA outputs available in MacArthur Green (2019) to predicted 50 mortalities for the in-combination total excluding Norfolk Vanguard and to the 53 in-combination total including Norfolk Vanguard) then the population of the Alde-Ore Estuary SPA after 30 years will be 30.6-33.1% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 1.3-1.4% (based on the counterfactuals of population size and growth rate presented in Tables 2 and 3 of MacArthur Green 2019). If it is assumed that the population is stable then this would mean that the population would be 30.6-33.1% lower than the current population size. This would be counter to the restore conservation objective for this feature of the site.

Based on the above, and the assessment of the status of the Alde-Ore Estuary SPA LBBG population, plausible future growth rates of the colony etc. detailed in our Deadline 4 (Natural England 2020a) and Deadline 7 (Natural England 2020b) responses during the Norfolk Boreas examination, our advice remains as set out in our Deadline 4 (Natural England 2020a) and Deadline 7 (Natural England 2020b) responses during the Norfolk Boreas examination:



As this feature has a restore conservation objective, and because there are indications that the population might even decline from current levels, Natural England advises that it is not possible to rule out an adverse effect on integrity (AEol) of the LBBG feature of the Alde-Ore Estuary SPA for from in-combination collision impacts with other plans and projects, both including and excluding Norfolk Vanguard (no collisions apportioned from Hornsea 3 or Hornsea 4).

5) Great black-backed gull (GBBG) cumulative and in-combination collisions

5.1 Cumulative collisions: The cumulative total for all confirmed projects (i.e. excluding Hornsea 3, Hornsea 4 and Norfolk Vanguard) of 917 in Table A0.4 of Appendix 1 of REP8-035 is slightly higher (3 birds more) than the figure presented by Natural England in our advice in Appendix A19 of our Deadline 8 response [REP8-159].

We note that there is a minor error in the annual collision total presented for Hornsea 4 in Table A0.4 of Appendix 1 of REP8-035: 3 collisions in the breeding season + 13.6 in the non-breeding season = 16.6 (not 13.6 as presented). This makes a very minor increase of 3 birds to the all projects (including Hornsea 3, Hornsea 4 and Norfolk Vanguard) cumulative collision totals to 1,026 collisions (rather than 1,023 as presented by the Applicants).

These minor differences in the totals highlighted above, do not alter our advice regarding GBBG cumulative collisions set out in our advice in Appendix A19 of our Deadline 8 response [REP8-159], namely:

We are unable to rule out a significant adverse impact on GBBG from cumulative collision mortality at an EIA scale irrespective of whether the Hornsea 3, Hornsea 4 and Norfolk Vanguard projects are included in the cumulative totals or not.



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MacArthur Green (2019) Norfolk Vanguard Offshore Wind Farm Responses to Natural England initial comments on the Alde-Ore Estuary SPA lesser black-backed gull PVA Offshore Ornithology Cumulative and In-combination Collision Risk Assessment: Appendix 1. Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010079/EN010079-002883-ExA%3B%20AS%3B%2010.D7.21A_Alde%20Ore%20Estuary%20SPA%20PVA%20Responses.pdf

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Appendix B



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

East Anglia TWO Offshore Wind Farm

Appendix A16c to the Natural England Deadline 12 Submission

Natural England's Comments on Offshore Ornithology Cumulative and In-Combination Risk and Displacement Update [REP11-027]

For:

The construction and operation of East Anglia TWO Offshore Wind Farm, a 900MW wind farm which could consist of up to 75 turbines, generators and associated infrastructure, located 37km from Lowestoft and 32km from Southwold.

Planning Inspectorate Reference: EN010078

28th June 2021



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Natural England's Comments on Offshore Ornithology Cumulative and In-Combination Risk and Displacement Update [REP11-027]

This document is applicable to both the East Anglia ONE North (EA1N) and East Anglia TWO (EA2) applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23rd December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again for the other project.

1. Summary

1. Natural England welcome the updated offshore ornithological cumulative and in-combination assessments submitted by the Applicant at Deadline 11 [REP11-027] and in general we broadly agree with the figures presented.
2. We note that the cumulative/in-combination displacement assessments of red throated diver (RTD) are not covered in REP11-027. Natural England has provided advice on RTD displacement (cumulative and in-combination) during the EA1N and EA2 examinations in REP4-087, REP6-113, REP7-070, REP8-159 and REP9-067. Our advice regarding RTD remains as set out in these documents.
3. Natural England welcomes that the gannet and kittiwake figures included in Tables A0.1 and A0.2 of REP11-027 for East Anglia Two have been updated to be based on the full breeding season.
4. We note that the Norfolk Vanguard project is to be redetermined. Therefore, we now advise that the project be treated in the same way as Norfolk Boreas, EA1N and EA2, i.e. that it is included in the cumulative totals with these projects and Hornsea 3 (now that updated figures are available for all species for this project). Hence totals are provided for all projects up to EA1N and EA2 (so including Vanguard, Boreas and Hornsea 3) but excluding Hornsea 4, Dudgeon Extension and Sheringham Extension (for reasons set out below), and then totals where all projects are included.



2. Detailed Comments on Updated Assessments

2.1 Figures included for Hornsea 3

5. We welcome that the Applicants have included updated figures for Hornsea 3 in the assessments in Tables A0.1-A0.8 of REP11-027, based on the document provided to the Applicants' by Ørsted. Natural England has now completed our review of the updated data provided by Ørsted for Hornsea 3. We can confirm agreement with the central/mean EIA and HRA scale collision predictions using our advised input parameters for collision risk and of abundances for displacement, and advise they are suitable to include for the Hornsea 3 project in cumulative and in-combination assessments.
6. The figures we consider appropriate to use for the Hornsea 3 project based on the information provided to use by Ørsted are presented in Table 1 below:

Collision risk

Table 1 Natural England calculated EIA and HRA scale collision predictions for Hornsea 3 based on data recently provided by Ørsted

| | Annual EIA scale collision prediction for Hornsea 3 | Flamborough and Filey Coast SPA (gannet and kittiwake) / Alde-Ore Estuary SPA (LBBG) annual collision prediction for Hornsea 3 |
|---------------------------------|--|---|
| Gannet | 19 | 7 |
| Kittiwake | 123 | (74)* |
| Lesser black-backed gull (LBBG) | 9 | 0 |
| Herring gull | 5 | - |
| Great black-backed gull (GBBG) | 36 | - |

* Noting the contribution from this project is set to 0 in the in-combination assessment as compensated for

7. Natural England has checked the Hornsea 3 figures we consider appropriate to use (as shown above) against those the Applicants have included in the updated cumulative and in-combination collision assessments in Tables A0.1-A0.5 of REP11-027. The annual collision predictions the Applicants have included for Hornsea 3 for gannet, kittiwake, LBBG, herring gull and GBBG for EIA scale, for gannet and kittiwake at Flamborough and Filey Coast SPA, and LBBG at the Alde-Ore Estuary SPA are considered appropriate based on the information provided to us by Ørsted.



Displacement

Table 2 Natural England calculated EIA and HRA scale abundance figures for Hornsea 3 based on data recently provided by Ørsted

| | EIA scale abundance for Hornsea 3 | | | | | FFC SPA abundance for Hornsea 3 | | | | |
|-----------|-----------------------------------|----------|------------------------|--------------|-------|---------------------------------|----------|------------------------|--------------|-------|
| | Pre breeding / spring | Breeding | Post breeding / autumn | Non-breeding | Total | Pre breeding / spring | Breeding | Post breeding / autumn | Non-breeding | Total |
| Gannet | 524 | 1333 | 984 | - | 2841 | 32 | 844 | 47 | - | 924 |
| Guillemot | - | 13374 | - | 17772 | 31146 | - | 0 | - | 782 | 782 |
| Razorbill | 2105 | 630 | 2021 | 3649 | 8405 | 72 | 0 | 69 | 99 | 240 |

8. Natural England has checked the Hornsea 3 figures we consider appropriate to use (as shown above in Table 2) against those the Applicants have included in the updated cumulative and in-combination displacement assessments in Tables A0.6-A0.8 of REP11-027. The seasonal and annual abundances the Applicants have included for Hornsea 3 for guillemot and razorbill for EIA scale in REP11-027 are the same as those Natural England consider appropriate based on the information provided to us by Ørsted. We note there is a slight discrepancy for gannet for the spring migration season – Natural England calculates the Hornsea 3 abundance to be 524, whereas the Applicants have calculated this as 527 in Table A0.8 of REP11-027. This means there is a slight difference in the annual EIA abundance total where Natural England makes it 2,841, whilst the Applicants have presented 2,844 in Table A0.8. This also slightly affects the Applicants' spring migration figure for the FFC SPA for gannet.
9. However, whilst the updated Hornsea 3 abundance figures included for FFC SPA for the non-breeding season for guillemot and for the autumn, non-breeding and spring for razorbill are the same as those considered appropriate by Natural England, we note there are discrepancies between the breeding season figures included by the Applicants and those considered appropriate by Natural England (Natural England considers it appropriate for 0 birds to be apportioned in the breeding season to the FFC SPA for both guillemot and razorbill). This has an associated impact on the annual abundance figures.

2.2 Hornsea 4 and Dudgeon and Sheringham Extension projects (DEP and SEP)

10. As per our advice during the Norfolk Boreas examination, we note that the figures for Hornsea 4 come from the PEIR for that project. These figures and the methodologies to produce them are hence subject to ongoing discussions through the evidence plan process and therefore have an element of uncertainty associated with them and are subject to change. For example, the CRM figures presented in the Hornsea 4 PEIR



were undertaken using the stochastic CRM, and therefore are potentially affected by the issues currently being investigated with this model.

11. Whilst we welcome the inclusion by the Applicants of the PEIR figures for Dudgeon and Sheringham OWF extensions (DEP and SEP), we note that these figures are subject to ongoing discussions through the evidence plan process and hence also have an element of uncertainty associated with them and are subject to change.
12. **The inevitable uncertainty around the Hornsea 4, DEP and SEP figures means that Natural England is not in a position to advise that a significant adverse impact for cumulative impacts at EIA scale, or that an AEoI for in-combination impacts at HRA, can be ruled out for any relevant species or feature of an SPA when the Hornsea 4, DEP and SEP projects are included in the totals.**

2.3 East Anglia Three Non-Material Change (NMC)

13. Natural England understands that the figures included in the cumulative/in-combination collision risk tables (Tables A0.1-A0.5) of REP11-027 for East Anglia Three have been updated with numbers from collision risk modelling undertaken as part of a non-material change (NMC) application that has been granted (BEIS 2021¹). We understand that this NMC is sought to:
 - a) increase the maximum tip height of 247m to 262m (relative to Lowest Astronomic Tide (LAT));
 - b) increase in the minimum air draft of all WTGs from 22m to 24m (relative to (Mean High Water Springs (MHWS));
 - c) increase the maximum rotor diameter from 220m to 230m; and
 - d) reduce the maximum, total number of WTGs from 172 to 121.
14. The proposed amendments were considered by the Secretary of State (SoS) as a NMC, as the changes would not result in any further environmental impacts and will remain within the parameters consented by the 2017 Order (BEIS 2021).
15. Natural England has recently provided advice to BEIS regarding East Anglia One Limited (EAOL) who are seeking to amend the Development Consent Order (DCO) to reduce the maximum number of turbines to reflect the 102 turbines installed for the

¹ BEIS (2021) <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010056/EN010056-002489-210415%20Decision%20Letter%20-%20EA3%20NMC.pdf>



project. In this advice, which has been submitted into the Examination for the ExA to consider [REP11-121], Natural England questions whether such a NMC (if granted) provides the legal certainty required to rely on the as-built parameters for the purposes of HRA, including the use of 'as built' values from e.g. collision modelling in an in-combination assessment.

16. In the absence of the required legal certainty, we advise that the collision predictions included in the cumulative and in-combination assessments for the East Anglia 3 project are those for the consented project rather than for the NMC.
17. Natural England recognises the desirability of establishing environmental 'headroom' in order to facilitate further offshore wind development and is keen to ensure this is achieved in a legally robust manner. In addition, please be advised that if this is eventually an accepted route for as built project values to come forward, the full assessment using Natural England's advised values and parameters must be made available and a best practice approach agreed across the industry.

3. Summary of Natural England Advice on Cumulative and In-Combination Assessments Covered in REP11-027

18. Natural England has reviewed the evidence presented in the updated assessments in REP11-027 and as set out in **Section 2.1** and **Section 2.3** above. We have also amended the totals to the abundance figures for Hornsea 3 in the displacement assessments to those we consider appropriate for use, and the collision predictions included for East Anglia 3 to the consented values. We have used these updated cumulative and in-combination figures to update our advice on these matters for considering all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, EA1N and EA2, for both excluding and including the Hornsea 4, Dudgeon extension (DEP) and Sheringham extension (SEP) projects where the figures are from the PEIRs and hence subject to change.
19. A summary of our advice is presented in Table 3 and detailed advice around how these conclusions were reached are set out in Annex 1 (for EIA) and Annex 2 (for HRA).
20. The East Anglia One North and East Anglia Two projects make contributions to cumulative and in-combination effects on several seabirds at both the EIA scale and with respect to qualifying features of seabird colony SPAs through collision mortality,



particularly with respect to North Sea populations of great black-backed gull, gannet and kittiwake, Flamborough and Filey Coast SPA kittiwake and gannet, and Alde-Ore Estuary SPA lesser black-backed gull (see Table 3).

Table 3 Summary of conclusions for assessments of EA1N and EA2 cumulative / in-combination impacts with other plans and projects for species and designated site features covered by the Applicants' updated assessments in REP11-027

| EIA species | EA1N and EA2 Cumulatively with Other Plans & Projects |
|---|--|
| Gannet: collision | Unable to rule out significant adverse impact excl. & incl. H4, DEP & SEP |
| Gannet: displacement | No significant adverse impact excl. H4, DEP & SEP Unable to rule of significant adverse impact incl. H4, DEP & SEP |
| Gannet: collision + displacement | Unable to rule out significant adverse impact excl. & incl. H4, DEP & SEP |
| Kittiwake: collision | Unable to rule out significant adverse impact excl. & incl. H4, DEP & SEP |
| Lesser black-backed gull: collision | No significant adverse impact excl. H4, DEP & SEP Unable to rule of significant adverse impact incl. H4, DEP & SEP |
| Herring gull: collision | <u>East Anglia One North:</u> No significant adverse impact excl. & incl. H4, DEP & SEP <u>East Anglia Two:</u> No significant adverse impact excl. H4, DEP & SEP Unable to rule of significant adverse impact incl. H4, DEP & SEP |
| Great black-backed gull: collision | Unable to rule out significant adverse impact excl. & incl. H4, DEP & SEP |
| Guillemot: displacement | Unable to rule out significant adverse impact excl. & incl. H4, DEP & SEP |
| Razorbill: displacement | Unable to rule out significant adverse impact excl. & incl. H4, DEP & SEP |
| | |
| HRA species & site | EA1N and EA2 in-combination with other plans & projects |
| Gannet, Flamborough & Filey Coast SPA: collision | No AEol excl. H4, DEP & SEP Unable to rule out AEol incl. H4, DEP & SEP |
| Gannet, Flamborough & Filey Coast SPA: displacement | No AEol excl. H4, DEP & SEP Unable to rule out AEol incl. H4, DEP & SEP |
| Gannet, Flamborough & Filey Coast SPA: collision + displacement | No AEol excl. H4, DEP & SEP Unable to rule out AEol incl. H4, DEP & SEP |
| Kittiwake, Flamborough & Filey Coast SPA: collision | Unable to rule out AEol excl. and incl. H4, DEP & SEP |
| Guillemot, Flamborough & Filey Coast SPA: displacement | No AEol excl. H4, DEP & SEP Unable to rule out AEol incl. H4, DEP & SEP |
| Razorbill, Flamborough & Filey Coast SPA: displacement | No AEol excl. H4, DEP & SEP Unable to rule out AEol incl. H4, DEP & SEP |
| Assemblage, Flamborough & Filey Coast SPA | No AEol excl. H4, DEP & SEP Unable to rule out AEol incl. H4, DEP & SEP |
| Lesser black-backed gull, Alde-Ore Estuary SPA: collision | Unable to rule out AEol excl. H4, DEP & SEP (no collisions apportioned from H4, DEP & SEP) |



21. Natural England has previously provided regulators with our advice regarding our concerns about predicted level of cumulative/in-combination impacts on North Sea seabirds, e.g. EIA great black-backed gull at East Anglia 3, Norfolk Vanguard and Norfolk Boreas, Flamborough and Filey Coast (FFC) SPA kittiwakes at Hornsea 2, Hornsea 3 and Norfolk Vanguard. These concerns have intensified given the three further offshore wind farm NSIPs now submitted to PINS (Norfolk Boreas, East Anglia One North, East Anglia Two), with three further projects planned to submit in the next 12 months (Hornsea 4, Dudgeon extension and Sheringham extension), and additional Extensions projects and Round 4 to follow. Therefore, Natural England considers that without major project-level mitigation being applied to all relevant projects coming forward, there is a significant risk of large-scale impacts on seabird populations.



Annex 1: Environmental Impacts Assessment (EIA) Cumulative Impacts Detailed Comments/Conclusions

1. Summary

22. This document is a technical document submitted into the East Anglia One North and East Anglia Two examinations to provide scientific justification for Natural England's advice provided on the significance of the potential cumulative impacts at the Environmental Impact Assessment (EIA) scale, as summarised within each section.
23. We have amended the collision predictions included for each species for the East Anglia 3 project to the consented values (rather than the NMC figures as included by the Applicants, for the reasons set out in **Section 2.3** above. We have also amended the abundance figures for Hornsea 3 in the displacement assessments to those we consider appropriate for use, as set out in **Section 2.1** above. Therefore, our cumulative and in-combination totals are different to those presented by the Applicants in REP11-027. This advice therefore updates that previously provided during the Norfolk Boreas examination and at Deadline 8 [REP8-159] and Deadline 9 [REP9-066] of the East Anglia One North and East Anglia Two examinations regarding cumulative collision and displacement impacts for the species covered in the Applicants' update submitted at REP11-027. Our advice considers all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two, and both excluding and including the Hornsea 4, Dudgeon extension (DEP) and Sheringham extension (SEP) projects where the figures are from the PEIRs and hence subject to change. This does not update advice on red-throated diver (RTD).
24. Our advice is based on best available evidence at the time of writing and is subject to change in the future should further evidence be presented.



2. EIA Impacts from EA1N and EA2 Cumulatively with Other Plans and Projects

2.1 EIA Impacts from Operational Collision Risk from East Anglia One North and East Anglia Two Cumulatively with Other Plans and Projects

25. Table A1.01 shows the Natural England calculated cumulative collision risk total predictions for all relevant projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two, but excluding Hornsea 4, Dudgeon Extension (DEP) and Sheringham Extension (SEP), and for all projects including Hornsea 4, DEP and SEP, for each of the key species considered to be at risk of collisions. The shaded cells of the table indicate where the predicted cumulative totals exceed 1% of baseline mortality of the largest BDMPS or biogeographic population.

Table A1.01 Percentage of baseline mortality for cumulative CRM for EIA for both all projects excluding Hornsea 4, DEP and SEP and also for all projects including Hornsea 4, DEP and SEP. (Using average across all age class mortality rates, as used by the Applicants)

| | Cumulative collision prediction* | | Largest BDMPS (North Sea) individuals, Furness (2015) | % baseline mortality largest BDMPS | | Biogeographic population individuals (Furness 2015) | % baseline mortality biogeographic | |
|---------------------|----------------------------------|--------------|---|------------------------------------|--------------|---|------------------------------------|--------------|
| | Excl. H4, DEP & SEP** | ALL projects | | Excl. H4, DEP & SEP | ALL projects | | Excl. H4, DEP & SEP | ALL projects |
| Gannet | 2,940 | 3,012 | 456,298 | 3.37 | 3.46 | 1,180,000 | 1.30 | 1.34 |
| Kittiwake | 4,015 | 4,243 | 829,937 | 3.10 | 3.28 | 5,100,000 | 0.50 | 0.53 |
| LBBG | 530 | 533 | 209,007 | 2.01 | 2.02 | 864,000 | 0.49 | 0.49 |
| Herring Gull | 763 | 766 | 466,511 | 0.95 | 0.95 | 1,098,000 | 0.40 | 0.41 |
| GBBG | 979 | 1,003 | 91,399 | 5.79 | 5.93 | 235,000 | 2.25 | 2.31 |

* Updated by Natural England from figures presented by the Applicants in REP11-027 to include consented figures for East Anglia 3. Note Natural England agree with the collision figures included by the Applicant in REP11-027.

** Note: includes all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two

2.1.1 Gannet Cumulative Impacts

a) Operational collision risk:

26. Natural England's revised calculated cumulative collision totals for gannet (i.e. including the consented predictions for East Anglia 3) of 2,940 birds for all projects excluding Hornsea 4, DEP and SEP and of 3,012 including all projects exceed 1% of baseline mortality of the North Sea BDMPS scale and the biogeographic population (Furness 2015). The figure excluding Hornsea 4, DEP and SEP equates to 3.37% of baseline mortality of the BDMPS and 1.30% of baseline



mortality of the biogeographic population, and the figure including all projects equates to 3.46% of the BDMPS and 1.34% of the biogeographic population baseline mortality (Table A1.01 above). This is significant and requires further consideration.

27. There have been no updates from the Applicants regarding EIA scale PVAs. Therefore, as was used in our Deadline 8 advice on EIA scale impacts [REP8-159], we have again utilised the PVA metrics from the EIA scale (BDMPS and biogeographic scale) gannet PVAs undertaken by Norfolk Boreas (MacArthur Green 2019²), which used the 'Seabird PVA Tool'. We note that we raised some issues with these PVAs during the Boreas examination and that no changes were made to the models. However, these models nevertheless currently represent the best available evidence on which to base an assessment, though this should not be taken as a Natural England endorsement or 'acceptance' of the model outputs. With regard to the PVA metrics, we note that whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of final population size and growth rate are only available in MacArthur Green (2019) for after 30 years.
28. Using the PVA models undertaken by Norfolk Boreas, if the additional mortality from the offshore wind farms is 3,000-3,100 per annum (closest PVA outputs to the Natural England calculated cumulative collision mortality figures of 2,940 excluding Hornsea 4, DEP and SEP; and 3,012 including all projects) then:
- The BDMPS population after 30 years will be 21.33-21.95% lower than it would have been in the absence of the additional mortality using the density independent model and 21.15-21.76% lower using the density dependent model. The population growth rate would be reduced by 0.77-0.8% using the density independent model and by 0.76-0.79% using the density dependent model (Table A1.02).
 - The biogeographic population after 30 years will be 8.84-9.13% lower than it would have been in the absence of the additional mortality using the

² MacArthur Green (2019) Norfolk Boreas Offshore Wind Farm: Offshore Ornithology Assessment Update. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010087/EN010087-001420-Offshore%20Ornithology%20Assessment%20Update.pdf>



density independent model and 8.75-9.03% lower using the density dependent model. The population growth rate would be reduced by 0.3-0.31% using the density independent model and by 0.29-0.3% using the density dependent model (Table A1.02).

Table A1.02 Predicted Population impacts on the gannet BDMPs and biogeographic population for the range of mortality impacts predicted for cumulative collision. PVA Impact Metrics are as provided in Table 3.2 of MacArthur Green (2019)*. The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the combined cumulative collision predictions

| GANNET, EIA CUMULATIVE COLLISIONS – DENSITY INDEPENDENT PVA MODELS | | | | | | |
|---|--|---|---|---|---|---|
| Additional mortality | % baseline mortality largest BDMPs as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPs | Counterfactual of Growth Rate (CGR), BDMPs | % baseline mortality biogeographic, as used by Applicant | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 3,000 | 3.44 | 0.7867 | 0.9923 | 1.33 | 0.9116 | 0.9970 |
| 3,100 | 3.56 | 0.7805 | 0.9920 | 1.38 | 0.9087 | 0.9969 |
| 3,200 | 3.67 | 0.7744 | 0.9918 | 1.42 | 0.9059 | 0.9968 |
| GANNET, EIA CUMULATIVE COLLISIONS – DENSITY DEPENDENT PVA MODELS | | | | | | |
| Additional mortality | % baseline mortality largest BDMPs as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPs | Counterfactual of Growth Rate (CGR), BDMPs | % baseline mortality biogeographic, as used by Applicant | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 3,000 | 3.44 | 0.7885 | 0.9924 | 1.33 | 0.9125 | 0.9971 |
| 3,100 | 3.56 | 0.7824 | 0.9921 | 1.38 | 0.9097 | 0.9970 |
| 3,200 | 3.67 | 0.7761 | 0.9919 | 1.42 | 0.9070 | 0.9969 |

* Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

29. The northern gannet is classified as 'Least Concern' with respect to the potential for global extinction (BirdLife International 2018). However, at the UK scale the species is Amber listed in Birds of Conservation Concern (BoCC) 4 (Eaton et al. 2015). The BoCC Amber listing is due to:

- Localisation of breeding population within Important Bird Areas (IBAs)/Special Protection Areas (SPAs) (Eaton et al. 2015).
- International importance of UK population – threshold of 20% of global population (Eaton et al. 2015). It has been estimated that the UK holds 55.6% of the global population (JNCC 2016).



30. Based on current UK gannet population growth rates of ~2-3% per annum and using the PVA model outputs, then the level of additional cumulative mortality from collisions from the offshore wind farms would still allow the population to grow. However, it is not known what the growth rate of the UK gannet population will be over the next 25-30 years and this should therefore be considered when judging the significance of predicted impacts and whether a ~0.8% reduction in annual growth rate would be significant. It is considered likely that the level of predicted cumulative impact would not be significant for a population growing at 2-3% per annum. However, if the population does not grow at that level for the next 25-30 years (say if the growth rate was around 1% per annum), we consider that it is uncertain that a ~0.8% reduction in growth rate would not be significant.
31. Based on consideration of the PVA metrics as currently presented, the above conservation assessment, and given the UK's particular responsibility for gannet because of supporting over half of the global population, the predicted impacts at the North Sea population scale have the potential to give rise to significant effects. **Therefore, we are unable to rule out a significant adverse impact on gannet from cumulative collision mortality at an EIA scale for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, EA1N and EA2. This conclusion is irrespective of whether the Hornsea 4, DEP and SEP projects are included in the cumulative totals or not.**

b) Operational Displacement

32. Based on Natural England's revised (i.e. including the Hornsea 3 figures Natural England consider appropriate based on the updated data from Ørsted) cumulative totals, the annual total cumulative number of gannets to be at risk of displacement for all projects (including from Hornsea 4, SEP and DEP) is estimated to be 50,751.
33. For the rates considered by the Applicants of 60-80% displacement and 1% mortality, the number of predicted additional cumulative mortalities including Hornsea 4, SEP and DEP is between 305 (60% displacement and 1% mortality) and 406 (80% displacement and 1% mortality) gannets. This equates to 0.35-0.47% of baseline mortality for the largest BDMPS.
34. Given the uncertainty involved with the figures for Hornsea 4, SEP and DEP (as figures from the PEIRs for these projects), the annual cumulative total excluding these three projects is estimated to be 45,922 gannets at risk of displacement.



35. For the rates considered by the Applicants of 60-80% displacement and 1% mortality, the number of predicted additional cumulative mortalities **excluding** Hornsea 4, SEP and DEP is between 276 (60% displacement and 1% mortality) and 367 (80% displacement and 1% mortality) gannets. This equates to 0.32-0.42% of baseline mortality for the largest BDMPS.
36. Based on the above, **we advise no significant adverse impact to gannet from cumulative operational displacement at the EIA scale when the Hornsea 4, DEP and SEP projects are excluded from the cumulative total.**
37. **However, due to the inevitable uncertainty associated with the figures for Hornsea 4, DEP and SEP being from the PEIRs and are hence subject to change, Natural England therefore is not in a position to advise that significant impact can be ruled out for gannet for cumulative displacement impacts when the Hornsea 4, DEP and SEP projects are included in the cumulative totals.**

c) Operational Collision Risk Plus Displacement

38. As noted in our previous advice in our Deadline 8 advice [REP8-159], the SNCBs regard the two impacts (collision and displacement) as additive and advise that they should be summed. However, we acknowledge that this simplistic approach will incorporate a degree of precaution (SNCBs 2017).
39. The combined cumulative impact **excluding** Hornsea 4, DEP and SEP of collision plus displacement to gannet equals:
2,940 mortalities per annum from collisions plus up to 367 mortalities per annum from displacement = up to 3,307 mortalities. This combined cumulative impact equates to 3.79% of baseline mortality of the largest BDMPS and to 1.47% of the biogeographic population.
40. The combined cumulative impact **including** all projects of collision plus displacement to gannet equals:
3,012 mortalities per annum from collisions plus up to 406 mortalities per annum from displacement = up to 3,418 mortalities. This combined cumulative impact equates to 3.92% of baseline mortality of the largest BDMPS and to 1.52% of the biogeographic population.



41. As with gannet cumulative collision impacts, Natural England has utilised the PVA metrics from the EIA scale (BDMPS and biogeographic scale) gannet PVAs undertaken by Norfolk Boreas (MacArthur Green 2019), which used the 'Seabird PVA Tool'. We note that we raised some issues with these PVAs during the Boreas examination and that no changes were made to the models. However, these models nevertheless currently represent the best available evidence on which to base an assessment, though this should not be taken as a Natural England endorsement or 'acceptance' of the model outputs. With regard to the PVA metrics, we note that whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of final population size and growth rate are only available in MacArthur Green (2019) for after 30 years.
42. Using the PVA models undertaken by Norfolk Boreas, if the additional mortality from the offshore wind farms is 3,400-3,500 per annum (closest PVA outputs to the cumulative collision + displacement mortality figures of 3,307 excluding Hornsea 4, DEP and SEP and 3,418 including all projects) then:
- The BDMPS population after 30 years will be 23.82-24.43% lower than it would have been in the absence of the additional mortality using the density independent model and 23.59-24.22% lower using the density dependent model. The population growth rate would be reduced by 0.87-0.9% using the density independent model and by 0.86-0.89% using the density dependent model (Table A1.03).
 - The biogeographic population after 30 years will be 9.96-10.25% lower than it would have been in the absence of the additional mortality using the density independent model and 9.86-10.14% lower using the density dependent model. The population growth rate would be reduced by 0.34-0.35% using the density independent model and by 0.33-0.34% using the density dependent model (Table A1.03).



Table A1.03 Predicted Population impacts on the gannet BDMPs and biogeographic population for the range of mortality impacts predicted for cumulative collision + displacement. PVA Impact Metrics are as provided in Table 4.22 of MacArthur Green (2019)*. The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the combined cumulative collision predictions

| GANNET, EIA CUMULATIVE COLLISIONS – DENSITY INDEPENDENT PVA MODELS | | | | | | |
|---|--|---|---|---|---|---|
| Additional mortality | % baseline mortality largest BDMPs as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPs | Counterfactual of Growth Rate (CGR), BDMPs | % baseline mortality biogeographic, as used by Applicant | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 3,400 | 3.90 | 0.7618 | 0.9913 | 1.51 | 0.9004 | 0.9966 |
| 3,500 | 4.02 | 0.7557 | 0.9910 | 1.55 | 0.8975 | 0.9965 |
| 3,600 | 4.13 | 0.7495 | 0.9907 | 1.60 | 0.8949 | 0.9964 |
| GANNET, EIA CUMULATIVE COLLISIONS – DENSITY DEPENDENT PVA MODELS | | | | | | |
| Additional mortality | % baseline mortality largest BDMPs as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPs | Counterfactual of Growth Rate (CGR), BDMPs | % baseline mortality biogeographic, as used by Applicant | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 3,400 | 3.90 | 0.7641 | 0.9914 | 1.51 | 0.9014 | 0.9967 |
| 3,500 | 4.02 | 0.7578 | 0.9911 | 1.55 | 0.8986 | 0.9966 |
| 3,600 | 4.13 | 0.7517 | 0.9908 | 1.60 | 0.8958 | 0.9965 |

* Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

43. The northern gannet is classified as 'Least Concern' with respect to the potential for global extinction (BirdLife International 2018). However, at the UK scale the species is Amber listed in Birds of Conservation Concern (BoCC) 4 (Eaton *et al.* 2015). The BoCC Amber listing is due to:

- Localisation of breeding population within Important Bird Areas (IBAs)/Special Protection Areas (SPAs) (Eaton *et al.* 2015).
- International importance of UK population – threshold of 20% of global population (Eaton *et al.* 2015). It has been estimated that the UK holds 55.6% of the global population (JNCC 2016).

44. As noted for gannet cumulative collisions above, based on current UK gannet population growth rates of ~2-3% per annum and using the PVA model outputs, then the level of additional cumulative mortality from collisions from the offshore wind farms would still allow the population to grow. However, it is not known what the growth rate of the UK gannet population will be over the next 25-30 years and



this should therefore be considered when judging the significance of predicted impacts and whether a ~0.9% reduction in annual growth rate would be significant. It is considered likely that the level of predicted cumulative impact would not be significant for a population growing at 2-3% per annum. However, if the population does not grow at that level for the next 25-30 years (say if the growth rate was around 1% per annum), we consider that it is uncertain that a ~0.9% reduction in growth rate would not be significant.

45. Based on consideration of the PVA metrics as currently presented, the above conservation assessment, and given the UK's particular responsibility for gannet because of supporting over half of the global population, the predicted impacts at the North Sea population scale have the potential to give rise to significant effects. **Therefore, we are unable to rule out a significant adverse impact on gannet from cumulative collision plus displacement mortality at an EIA scale for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two. This conclusion is irrespective of whether the Hornsea 4, DEP and SEP projects are included in the cumulative totals or not.**

2.1.2 Kittiwake Cumulative Operational Collision Risk

46. Natural England's revised calculated cumulative collision totals for kittiwake (i.e. including the consented predictions for East Anglia 3) of 4,015 birds for all projects excluding Hornsea 4, DEP and SEP and of 4,243 including all projects exceed 1% of baseline mortality of the North Sea BDMPS scale – the figure excluding Hornsea 4, DEP and SEP equates to 3.10% of baseline mortality, and the figure including all projects equates to 3.28% (Table A1.01 above). This is significant and requires further consideration.
47. There have been no updates from the Applicants regarding EIA scale PVAs. Therefore, as was used in our Deadline 8 advice on EIA scale impacts [REP8-159], we have again utilised the PVA metrics from the EIA scale (BDMPS and biogeographic scale) kittiwake PVAs undertaken by Norfolk Boreas (MacArthur Green 2019³), which used the 'Seabird PVA Tool'. We note that we raised some

³ MacArthur Green (2019) Norfolk Boreas Offshore Wind Farm: Offshore Ornithology Assessment Update. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010087/EN010087-001420-Offshore%20Ornithology%20Assessment%20Update.pdf>



issues with these PVAs during the Boreas examination and that no changes were made to the models. However, these models nevertheless currently represent the best available evidence on which to base an assessment, though this should not be taken as a Natural England endorsement or ‘acceptance’ of the model outputs. With regard to the PVA metrics, we note that whilst East Anglia One North and East Anglia Two’s lifespans are 25 years, data on counterfactuals of final population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

48. Using the density independent PVA models undertaken by Norfolk Boreas, if the additional mortality from the offshore wind farms is 4,100-4,300 per annum (closest PVA outputs to the cumulative collision mortality figures of 4,015 excluding Hornsea 4, DEP and SEP; and 4,243 including all projects) then:

- The BDMPS population after 30 years will be 16.65-17.32% lower than it would have been in the absence of the additional mortality and the population growth rate would be reduced by 0.59-0.61% (Table A1.04).
- The biogeographic population after 30 years will be 2.89-3.03% lower than it would have been in the absence of the additional mortality and the population growth rate would be reduced by 0.1% (Table A1.04).

Table A1.04 Predicted Population impacts on the kittiwake BDMPS and biogeographic population for the range of mortality impacts predicted for cumulative collision. PVA Impact Metrics are as provided in Table 3.6 of MacArthur Green (2019)*. The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the combined cumulative collision predictions

| KITTIWAKE, EIA CUMULATIVE COLLISIONS – DENSITY INDEPENDENT PVA MODELS | | | | | | |
|--|---|---|---|--|---|---|
| Additional mortality | % baseline mortality largest BDMPS as used by Applicants | Counterfactual of Final Population Size (CPS), BDMPS | Counterfactual of Growth Rate (CGR), BDMPS | % baseline mortality biogeographic, as used by Applicants | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 3,900 | 3.01 | 0.8410 | 0.9944 | 0.49 | 0.9723 | 0.9991 |
| 4,000 | 3.09 | 0.8376 | 0.9943 | 0.50 | 0.9717 | 0.9991 |
| 4,100 | 3.17 | 0.8335 | 0.9941 | 0.52 | 0.9711 | 0.9990 |
| 4,200 | 3.24 | 0.8302 | 0.9940 | 0.53 | 0.9703 | 0.9990 |
| 4,300 | 3.32 | 0.8268 | 0.9939 | 0.54 | 0.9697 | 0.9990 |
| 4,400 | 3.40 | 0.8229 | 0.9937 | 0.55 | 0.9688 | 0.9989 |

* Whilst East Anglia One North and East Anglia Two’s lifespans are 25 years, data on counterfactuals of population size and growth rate are only available in MacArthur Green (2019) for after 30 years.



49. Kittiwake are listed as 'Vulnerable' to global extinction on the IUCN Red List (raised from Least Concern to Vulnerable in 2017) as a result of breeding population declines in Europe of >40% over 39 years (Birdlife International 2018). Kittiwake is also listed as Red on BoCC4 (Eaton et al. 2015) as a result of severe population declines in the UK.
50. Based on consideration of the PVA metrics as currently presented, the above conservation assessment and particularly given the population declines at a UK and wider scale for the species, the predicted impacts at the North Sea population scale have the potential to give rise to significant effects. **Therefore, we are unable to rule out a significant adverse impact on kittiwake from cumulative collision mortality at an EIA scale for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two. This conclusion is irrespective of whether the Hornsea 4, DEP and SEP projects are included in the cumulative totals or not.**

2.1.3 Lesser black-backed gull (LBBG) Cumulative Operational Collision Risk

51. Natural England's revised calculated cumulative collision totals for LBBG (i.e. including the consented predictions for East Anglia 3) of 530 birds for all projects excluding Hornsea 4, DEP and SEP and of 533 including all projects exceeds 1% of baseline mortality of the North Sea BDMPS scale (Furness 2015) – the figure excluding Hornsea 4, DEP and SEP equates to 2.01% of baseline mortality, and the figure including all projects equates to 2.02% (Table A1.01 above). This is not insignificant and requires further consideration.
52. There have been no updates from the Applicants regarding EIA scale PVAs. Therefore, as was used in our Deadline 8 advice on EIA scale impacts [REP8-159], we have again utilised the PVA metrics from the EIA scale (BDMPS and biogeographic scale) LBBG PVAs undertaken by Norfolk Boreas (MacArthur Green 2019⁴), which used the 'Seabird PVA Tool'. We note that we raised some issues with these PVAs during the Boreas examination and that no changes were made to the models. However, these models nevertheless currently represent the best

⁴ MacArthur Green (2019) Norfolk Boreas Offshore Wind Farm: Offshore Ornithology Assessment Update. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010087/EN010087-001420-Offshore%20Ornithology%20Assessment%20Update.pdf>



available evidence on which to base an assessment, though this should not be taken as a Natural England endorsement or ‘acceptance’ of the model outputs. With regard to the PVA metrics, we note that whilst East Anglia One North and East Anglia Two’s lifespans are 25 years, data on counterfactuals of final population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

53. Using the density independent PVA model undertaken by Norfolk Boreas in MacArthur Green (2019), if the additional mortality from the offshore wind farms is 600 per annum (closest PVA output to the cumulative collision mortality figures of 530 excluding Hornsea 4, DEP and SEP and of 533 including all projects) then:

- The BDMPS population after 30 years will be 9.65% lower than it would have been in the absence of the additional mortality and the population growth rate would be reduced by 0.33% (Table A1.05).

Table A1.05 Predicted Population impacts on the LBBG BDMPS and biogeographic population for the range of mortality impacts predicted for cumulative collision. PVA Impact Metrics are as provided in Table 3.11 of MacArthur Green (2019)*. The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the combined cumulative collision predictions

| LBBG, EIA CUMULATIVE COLLISIONS – DENSITY INDEPENDENT PVA MODEL | | | |
|--|--|---|---|
| Additional mortality | % baseline mortality largest BDMPS as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPS | Counterfactual of Growth Rate (CGR), BDMPS |
| 500 | 1.90 | 0.9191 | 0.9973 |
| 600 | 2.28 | 0.9035 | 0.9967 |

* Whilst East Anglia One North and East Anglia Two’s lifespans are 25 years, data on counterfactuals of population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

54. The LBBG is classified as ‘Least Concern’ (BirdLife International 2018). The overall population trend across its range is increasing, although it has experienced recent declines at a UK level (Balmer et al. 2013). The species is Amber listed in BoCC 4 (Eaton et al. 2015) due to:

- Localisation of breeding population within Important Bird Areas (IBAs (Eaton et al. 2015)).
- International importance of UK population.



55. Quite a high proportion of birds in the largest BDMPS of 209,007 will be UK breeding birds (Furness 2015).
56. Between the 1969-70 and 1998-2002 censuses the UK LBBG population increased by 81% (only UK wide estimates considered reliable; JNCC 2019), which represents an annual average growth rate of approximately 1.8% per annum. Based on this and using the PVA model outputs, then the level of additional cumulative mortality from collisions from the offshore wind farms would still allow the population to grow. However, it is not known what the growth rate of the UK LBBG population will be over the next 25-30 years and this should therefore be considered when judging the significance of predicted impacts and whether a 0.3% reduction in annual growth rate would be significant. It is considered likely that the level of predicted cumulative impact would not be significant for a population growing at 1-2% per annum. It should also be noted there is uncertainty in the predicted collision figures due the uncertainty/variability in the input parameters and some degree of precaution in the cumulative total regarding the nocturnal activity rate and build out scenarios. It is also worth noting that there is limited evidence and therefore some uncertainty around baseline mortality rates.
57. Based on consideration of the above, the PVA metrics presented and the above conservation assessment, **we therefore advise a conclusion of no significant adverse impact from cumulative collision to LBBG at an EIA scale when all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two are included in the cumulative total (i.e. if the Hornsea 4, DEP and SEP projects are excluded from the cumulative total).**
58. **However, due to the inevitable uncertainty associated with the figures for Hornsea 4, DEP and SEP being from the PEIRs and are hence subject to change, Natural England therefore is not in a position to advise that significant impact can be ruled out for LBBG for cumulative collision impacts when the Hornsea 4, DEP and SEP projects are included in the cumulative totals.**



2.1.4 Herring Gull Cumulative Operational Collision Risk

59. Natural England's revised calculated cumulative collision totals for herring gull (i.e. including the consented predictions for East Anglia 3) of 763 birds for all projects excluding Hornsea 4, DEP and SEP and of 766 birds including all projects equates to 0.95% of baseline mortality of the largest BDMPS and to 0.40% (excluding Hornsea 4, DEP and SEP) and 0.41% (including all projects) of baseline mortality of the biogeographic population (Table A1.01 above). Note Natural England's calculated figures include amending the East Anglia One annual figure from 19 as included by the Applicant to the figure of 28 for the 150 turbines layout, as well as the other amendment of changing the East Anglia 3 figures from the NMC to the consented values.
60. On the basis that the East Anglia One North contribution to the cumulative collision total is 0 (see Table A0.4 of REP11-027), Natural England considers that East Anglia One North is unlikely to make any contribution to the cumulative collision totals irrespective of whether the Hornsea 4, DEP and SEP projects are included in the total. **Therefore, we advise no significant cumulative collision risk impact at the EIA scale for herring gull for East Anglia One North irrespective of whether these projects are included or excluded from the cumulative total.**
61. East Anglia Two contributes a mean collision prediction of 0.5 collisions to the cumulative total (see Table A0.4 of REP11-027).
62. Herring gull is classified as Near Threatened on the IUCN Red List as a result of population declines. The species is also Red listed on BoCC 4 (Eaton et al. 2015) as a result of population declines in the UK. There has been a 31% decline in the UK since 1999-2011. However, Natural England's recalculated cumulative collision totals for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two, both including and excluding the Hornsea 4, DEP and SEP and projects equate to just under 1% of baseline mortality of the largest BDMPS and to less than 1% of baseline mortality of the biogeographic population. **Therefore, for East Anglia Two cumulatively with other plans and projects we advise no significant cumulative collision risk impact at the EIA scale for herring gull when the Hornsea 4, DEP and SEP projects are excluded from the cumulative total.** We note that the cumulative total is now approaching 1% of baseline mortality of the largest BDMPS, reinforcing



the need for herring gull CRM to have been carried out, and the need for all future offshore wind farm projects in the North Sea to do similar.

- 63. However, due to the inevitable uncertainty associated with the figures for Hornsea 4, DEP and SEP being from the PEIRs and are hence subject to change, Natural England therefore is not in a position to advise that significant impact can be ruled out for East Anglia Two for herring gull for cumulative collision impacts when the Hornsea 4, DEP and SEP projects are included in the cumulative totals.**

2.1.5 Great Black-Backed Gull (GBBG) Cumulative Operational Collision Risk

64. We note there is an error in the annual total collision presented by the Applicants in Table A0.5 of REP11-027 for Hornsea 4 – the annual total should be 16.6 rather than 13.6 as presented (3 collisions in the breeding season + 13.6 collisions in the non-breeding season = annual total of 16.6). Therefore, we have included this correction in our calculations, as well as setting the figures for East Anglia 3 to the consented figures rather than those from the NMC as used by the Applicants.
65. Natural England's revised calculated cumulative collision totals for GBBG (i.e. including the consented predictions for East Anglia 3 and amending the figure used for Hornsea 4) of 979 birds for all projects excluding Hornsea 4, SEP and DEP and of 1,003 including all projects exceed 1% of baseline mortality of the North Sea BDMPS scale and the biogeographic population (Furness 2015) – the figure excluding Hornsea 4, SEP and DEP equates to 5.79% of baseline mortality of the BDMPS and 2.25% of baseline mortality of the biogeographic population, and the figure including all projects equates to 5.93% of the BDMPS and 2.31% of the biogeographic population baseline mortality (Table A1.01 above). This is not insignificant and requires further consideration.
66. There have been no updates from the Applicants regarding EIA scale PVAs. Therefore, as was used in our Deadline 8 advice on EIA scale impacts [REP8-159], we have again utilised the PVA metrics from the EIA scale (BDMPS and biogeographic scale) GBBG PVAs undertaken by Norfolk Boreas (MacArthur Green 2019⁵), which used the 'Seabird PVA Tool'. We note that we raised some

⁵ MacArthur Green (2019) Norfolk Boreas Offshore Wind Farm: Offshore Ornithology Assessment Update. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp->



issues with these PVAs during the Boreas examination and that no changes were made to the models. However, these models nevertheless currently represent the best available evidence on which to base an assessment, though this should not be taken as a Natural England endorsement or 'acceptance' of the model outputs. With regard to the PVA metrics, we note that whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of final population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

67. Using the PVA models undertaken by Norfolk Boreas in MacArthur Green (2019), if the additional mortality from the offshore wind farms is 1,000-1,100 per annum (closest PVA outputs to the cumulative collision mortality figures of 979 excluding Hornsea 4, DEP and SEP and of 1,003 including all projects) then:

- The BDMPS population after 30 years will be 30.70-33.23% lower than it would have been in the absence of the additional mortality using the density independent model and 25.54-27.75% lower using the density dependent model. The population growth rate would be reduced by 1.18-1.30% using the density independent model and by 0.95-1.04% using the density dependent model (Table A1.06).
- The biogeographic population after 30 years will be 12.36-14.48% lower than it would have been in the absence of the additional mortality using the density independent model and 10.56-11.55% lower using the density dependent model. The population growth rate would be reduced by 0.46-0.50% using the density independent model and by 0.36-0.40% using the density dependent model (Table A1.06).



Table A1.06 Predicted Population impacts on the GBBG BDMPS and biogeographic population for the range of mortality impacts predicted for cumulative collision. PVA Impact Metrics are as provided in Table 3.18 of MacArthur Green (2019)*. The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the combined cumulative collision predictions

| GBBG, EIA CUMULATIVE COLLISIONS – DENSITY INDEPENDENT PVA MODELS | | | | | | |
|---|--|---|---|---|---|---|
| Addition al mortality | % baseline mortality largest BDMPS as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPS | Counterfactual of Growth Rate (CGR), BDMPS | % baseline mortality biogeographic, as used by Applicant | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 1,000 | 5.91 | 0.6930 | 0.9882 | 2.30 | 0.8764 | 0.9954 |
| 1,100 | 6.51 | 0.6677 | 0.9870 | 2.53 | 0.8552 | 0.9950 |
| 1,200 | 7.10 | 0.6437 | 0.9859 | 2.76 | 0.8432 | 0.9945 |
| GBBG, EIA CUMULATIVE COLLISIONS – DENSITY DEPENDENT PVA MODELS | | | | | | |
| Addition al mortality | % baseline mortality largest BDMPS as used by Applicant | Counterfactual of Final Population Size (CPS), BDMPS | Counterfactual of Growth Rate (CGR), BDMPS | % baseline mortality biogeographic, as used by Applicant | Counterfactual of Final Population Size (CPS), biogeographic | Counterfactual of Growth Rate (CGR), biogeographic |
| 1,000 | 5.91 | 0.7446 | 0.9905 | 2.30 | 0.8944 | 0.9964 |
| 1,100 | 6.51 | 0.7225 | 0.9896 | 2.53 | 0.8845 | 0.9960 |
| 1,200 | 7.10 | 0.7014 | 0.9886 | 2.76 | 0.8746 | 0.9957 |

* Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of population size and growth rate are only available in MacArthur Green (2019) for after 30 years.

68. GBBG is classed as 'Least Concern' of global extinction by IUCN. The overall population trend across its range is stable, although at a UK level the species is Amber listed in BoCC 4 (Eaton et al. 2015) due to moderate declines in both the breeding and non-breeding populations.

69. Based on consideration of the PVA metrics presented, the above conservation assessment and particularly that the GBBG population is stable to possibly declining and that we are not aware of any evidence to suggest that the population is going to start increasing, the predicted impacts at the North Sea population scale have the potential to give rise to significant effects. **Therefore, we are unable to rule out a significant adverse impact on GBBG from cumulative collision mortality at an EIA scale for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two. This conclusion is irrespective of whether the Hornsea 4, DEP and SEP projects are included in the cumulative totals or not.**

2.1.6 Guillemot Cumulative Operational Displacement

70. Based on Natural England's revised (i.e. including the Hornsea 3 figures Natural England consider appropriate based on the updated data from Ørsted)



cumulative totals, the annual total cumulative number of guillemots to be at risk of displacement for all projects (including from Hornsea 4, SEP and DEP) is estimated to be 438,542.

71. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional cumulative mortalities **including** Hornsea 4, SEP and DEP is between 1,316 (30% displacement and 1% mortality) and 30,698 (70% displacement and 10% mortality) guillemots. This equates to 0.46-10.72% of baseline mortality for the largest BDMPS. The predicted levels of cumulative displacement impacts exceed 1% of baseline mortality of the largest BDMPS for a significant proportion of the Natural England recommended range of displacement and mortality rates (Table A1.07).
72. Given the uncertainty involved with the figures for Hornsea 4, SEP and DEP (as figures from the PEIRs for these projects), the annual cumulative total excluding these three projects is estimated to be 341,495 guillemots at risk of displacement.
73. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional cumulative mortalities **excluding** Hornsea 4, SEP and DEP is between 1,024 (30% displacement and 1% mortality) and 23,905 (70% displacement and 10% mortality) guillemots. This equates to 0.36-8.35% of baseline mortality for the largest BDMPS. Again, the predicted levels of cumulative displacement impacts exceed 1% of baseline mortality of the largest BDMPS for a significant proportion of the Natural England recommended range of displacement and mortality rates (Table A1.07).
74. Table A1.07 below indicates that when considering the cumulative totals, including or excluding Hornsea 4, DEP and SEP for the Natural England recommended range of 30-70% displacement and 1-10% mortality and the predicted impacts against baseline mortality for the largest BDMPS:
- 1% of baseline mortality of the largest BDMPS is only exceeded for displacement at 70% or above and 1% mortality when Hornsea 4, DEP and SEP are included in the cumulative total, but not for any displacement scenario (30-70%) at 1% mortality when these projects are excluded from the cumulative total. At 2% mortality, 1% of baseline mortality is exceeded when displacement



exceeds 30% for including Hornsea 4, DEP and SEP or when it exceeds 40% when these projects are excluded.

- At 4% mortality and above, 1% of baseline mortality is exceeded at all displacement rates from 30-70% including or excluding Hornsea 4, DEP and SEP.

Table A1.07 Percent of baseline mortality (using 14% average across all age class mortality rates, as used by the Applicants) that predicted guillemot cumulative operational displacement impacts equate to of largest BDMPS for Natural England preferred range of 30-70% displacement and 1-10% mortality for Natural England calculated cumulative totals excluding and including Hornsea 4, SEP and DEP. Shaded cells are those where 1% of baseline mortality is exceeded

| ALL PROJECTS INCLUDING HORNSEA 4, SEP & DEP | | | | | | | |
|--|--|------|------|------|------|------|-------|
| Displacement (%) | % Baseline mortality of largest BDMPS* | | | | | | |
| | Mortality rate (%) | | | | | | |
| | 1 | 2 | 4 | 5 | 6 | 8 | 10 |
| 30 | 0.46 | 0.92 | 1.84 | 2.30 | 2.76 | 3.68 | 4.60 |
| 40 | 0.61 | 1.23 | 2.45 | 3.06 | 3.68 | 4.90 | 6.13 |
| 50 | 0.77 | 1.53 | 3.06 | 3.83 | 4.60 | 6.13 | 7.66 |
| 60 | 0.92 | 1.84 | 3.68 | 4.60 | 5.51 | 7.35 | 9.19 |
| 70 | 1.07 | 2.14 | 4.29 | 5.36 | 6.43 | 8.58 | 10.72 |
| ALL PROJECTS UP TO & INCLUDING HORNSEA 3, NORFOLK VANGURD, NORFOLK BOREAS, EAST ANGLIA ONE NORTH & EAST ANGLIA TWO, BUT EXCLUDING HORNSEA 4, SEP & DEP | | | | | | | |
| Displacement (%) | % Baseline mortality of largest BDMPS* | | | | | | |
| | Mortality rate (%) | | | | | | |
| | 1 | 2 | 4 | 5 | 6 | 8 | 10 |
| 30 | 0.36 | 0.72 | 1.43 | 1.79 | 2.15 | 2.86 | 3.58 |
| 40 | 0.48 | 0.95 | 1.91 | 2.39 | 2.86 | 3.82 | 4.77 |
| 50 | 0.60 | 1.19 | 2.39 | 2.98 | 3.58 | 4.77 | 5.96 |
| 60 | 0.72 | 1.43 | 2.86 | 3.58 | 4.29 | 5.73 | 7.16 |
| 70 | 0.83 | 1.67 | 3.34 | 4.17 | 5.01 | 6.68 | 8.35 |

* 2,045,078 individuals for largest North Sea Population scale (from Furness 2015)

75. Guillemot are listed as 'least concern' on the IUCN Red List (Birdlife International 2018) and is also listed as amber on BoCC4 (Eaton et al. 2015).

76. While there is some empirical evidence to support the displacement levels for auks, we do not know what the likely mortality impacts of displacement are. We therefore consider it appropriate to consider a range of mortalities from 1-10%. However, on the basis that the majority of projects that have been scoped into the assessment



lie in areas of the North Sea that represent low to medium levels of guillemot density during both the breeding (where relevant) and non-breeding seasons (Seabird Sensitivity Mapping Tool), it is assumed that areas of low/medium density will be less important/desirable feeding areas and therefore mortality impacts of displacement from less good areas would be lower than displacement from optimal/important areas. Therefore, we do not expect mortality rates to be at the top of the range considered for the majority of projects, though where higher densities are present, there may be exceptions.

77. Predicted cumulative mortality predictions exceed 1% of baseline mortality of the largest BDMPS at a 2% mortality rate and when displacement rates exceed between 40 and 50% displacement depending on whether Hornsea 4, DEP and SEP are included in the cumulative total or not. **Therefore, we advise a significant adverse impact to guillemot from cumulative operational displacement cannot be ruled out at an EIA scale for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two. This conclusion is irrespective of whether the Hornsea 4, DEP and SEP projects are included in the cumulative totals or not.**

2.1.7 Razorbill Cumulative Operational Displacement

78. Based on Natural England's revised (i.e. including the Hornsea 3 figures Natural England consider appropriate based on the updated data from Ørsted) cumulative totals, the annual total cumulative number of razorbills to be at risk of displacement for all projects (including from Hornsea 4, SEP and DEP) is estimated to be 139,527.
79. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional cumulative mortalities including Hornsea 4, SEP and DEP is between 419 (30% displacement and 1% mortality) and 9,767 (70% displacement and 10% mortality) razorbills. This equates to 0.41-9.48% of baseline mortality for the largest BDMPS. The predicted levels of cumulative displacement impacts exceed 1% of baseline mortality of the largest BDMPS for a significant proportion of the Natural England recommended range of displacement and mortality rates (Table A1.08).



80. Given the uncertainty involved with the figures for Hornsea 4, SEP and DEP (as figures from the PEIRs for these projects), the annual cumulative total excluding these three projects is estimated to be 123,852 razorbills at risk of displacement.

81. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional cumulative mortalities **excluding** Hornsea 4, SEP and DEP is between 372 (30% displacement and 1% mortality) and 8,670 (70% displacement and 10% mortality) guillemots. This equates to 0.36-8.42% of baseline mortality for the largest BDMPS. Again, the predicted levels of cumulative displacement impacts exceed 1% of baseline mortality of the largest BDMPS for a significant proportion of the Natural England recommended range of displacement and mortality rates (Table A1.08).

82. Table A1.08 below indicates that when considering the cumulative totals, either excluding or including Hornsea 4, DEP and SEP, for the Natural England recommended range of 30-70% displacement and 1-10% mortality and the predicted impacts against baseline mortality for the largest BDMPS:

- 1% of baseline mortality of the largest BDMPS is not exceeded for any displacement scenario (30-70%) at 1% mortality. At 2% mortality, 1% of baseline mortality is exceeded when displacement exceeds 30% for including Hornsea 4, DEP and SEP or when it exceeds 40% when these projects are excluded;
- At 4%-10% mortality, 1% of baseline mortality is exceeded at all displacement rates from 30-70%.



Table A1.08 Percent of baseline mortality (using 17.4% average across all age class mortality rates, as used by the Applicants) that predicted razorbill cumulative operational displacement impacts equate to of largest BDMPS for Natural England preferred range of 30-70% displacement and 1-10% mortality for calculated cumulative totals excluding and including Hornsea 4, SEP and DEP. Shaded cells are those where 1% of baseline mortality is exceeded

| ALL PROJECTS INCLUDING HORNSEA 4, SEP & DEP | | | | | | | |
|---|--|------|------|------|------|------|------|
| Displacement (%) | % Baseline mortality of largest BDMPS* | | | | | | |
| | Mortality rate (%) | | | | | | |
| | 1 | 2 | 4 | 5 | 6 | 8 | 10 |
| 30 | 0.41 | 0.81 | 1.63 | 2.03 | 2.44 | 3.25 | 4.06 |
| 40 | 0.54 | 1.08 | 2.17 | 2.71 | 3.25 | 4.34 | 5.42 |
| 50 | 0.68 | 1.35 | 2.71 | 3.39 | 4.06 | 5.42 | 6.77 |
| 60 | 0.81 | 1.63 | 3.25 | 4.06 | 4.88 | 6.50 | 8.13 |
| 70 | 0.95 | 1.90 | 3.79 | 4.74 | 5.69 | 7.59 | 9.48 |
| ALL PROJECTS UP TO & INCLUDING HORNSEA 3, NORFOLK VANGURD, NORFOLK BOREAS, EAST ANGLIA ONE NORTH & EAST ANGLIA TWO, BUT EXCLUDING HORNSEA 4, SEP & DEP | | | | | | | |
| Displacement (%) | % Baseline mortality of largest BDMPS* | | | | | | |
| | Mortality rate (%) | | | | | | |
| | 1 | 2 | 4 | 5 | 6 | 8 | 10 |
| 30 | 0.36 | 0.72 | 1.44 | 1.80 | 2.19 | 2.89 | 3.61 |
| 40 | 0.48 | 0.96 | 1.92 | 2.41 | 2.89 | 3.85 | 4.81 |
| 50 | 0.60 | 1.20 | 2.41 | 3.01 | 3.61 | 4.81 | 6.01 |
| 60 | 0.72 | 1.44 | 2.89 | 3.61 | 4.33 | 5.77 | 7.22 |
| 70 | 0.84 | 1.68 | 3.37 | 3.21 | 5.05 | 6.73 | 8.42 |

* 591,874 individuals for largest North Sea Population scale (from Furness 2015)

83. Razorbill are listed as ‘near threatened’ on the IUCN Red List (Birdlife International 2018) and is also listed as amber on BoCC4 (Eaton et al. 2015).

84. While there is some empirical evidence to support the displacement levels for auks, we do not know what the likely mortality impacts of displacement are. We therefore consider it appropriate to consider a range of mortalities from 1-10%. However, on the basis that the majority of the projects that have been scoped into the assessment lie in areas of the North Sea that represent low to medium levels of razorbill density during both the breeding (where relevant) and non-breeding seasons (Seabird Sensitivity Mapping Tool), it is assumed that areas of low/medium density will be less important/desirable feeding areas and therefore mortality impacts of displacement from lower quality areas would be lower than displacement from optimal/important areas. Therefore, we do not expect mortality rates to be at the top of the range considered for the majority of projects, though where higher densities are present, there may be exceptions.



85. Predicted cumulative mortality predictions exceed 1% of baseline mortality of the largest BDMPS at a 2% mortality rate and between 40 and 50% displacement depending on whether Hornsea 4, DEP and SEP are included in the cumulative total or not. **Therefore, we advise that a significant adverse impact to razorbill from cumulative operational displacement cannot be ruled out at an EIA scale for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two. This conclusion is irrespective of whether the Hornsea 4, DEP and SEP projects are included in the cumulative totals or not.**



Annex 2: Habitats Regulations Assessment (HRA) In-Combination Impacts Detailed Comments/Conclusions

1. Summary

86. This document is a technical document submitted into the East Anglia One North and East Anglia Two Examinations to provide scientific justification for Natural England's advice provided on the significance of the potential impacts on designated site features, as summarised within each section.

87. We have amended the collision predictions included for each relevant species and designated site for the East Anglia 3 project to the consented values (rather than the NMC figures as included by the Applicants, for the reasons set out in **Section 2.3** above. We have also amended the abundance figures for Hornsea 3 in the displacement assessments to those we consider appropriate for use, as set out in **Section 2.1** above. Therefore, our cumulative and in-combination totals are different to those presented by the Applicants in REP11-027. This advice therefore updates that previously provided during the Norfolk Boreas examination and at Deadline 9 [REP9-066] of the East Anglia One North and East Anglia Two examinations regarding in-combination collision and displacement impacts for the features of the Flamborough and Filey Coast (FFC) SPA and the Alde-Ore Estuary SPA covered in the Applicants' update submitted at REP11-027. Our advice considers all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two, and both excluding and including the Hornsea 4, Dudgeon extension (DEP) and Sheringham extension (SEP) projects where the figures are from the PEIRs and hence subject to change. This does not update our advice on red-throated diver (RTD) at the Outer Thames Estuary SPA.

88. Our advice is based on best available evidence at the time of writing and is subject to change in the future should further evidence be presented.



2. Impacts from EA1N AND EA2 In-Combination with Other Plans and Projects

2.1. Flamborough & Filey Coast (FFC) SPA: Gannet – Impacts from EA1N AND EA2 In-Combination with Other Plans and Projects: Operational Collision Risk, Displacement and Collision + Displacement

89. We welcome that the in-combination assessments undertaken by the Applicants in APP-043 refer to the PVA undertaken for Hornsea 3. However, as highlighted during the Norfolk Boreas examination we had outstanding concerns with the Hornsea 3 PVAs which were not resolved by the close of the Examination, relating to the number of simulations and the demographic data not being updated (see our Deadline 6 response to the Hornsea 3 Examination – written summary of representations of ISH5⁶). However, this nevertheless represents the best available evidence on which to base an assessment, though this should not be taken as an endorsement or ‘acceptance’ of the model outputs.

90. There is no clear evidence to support the application of any particular form or magnitude of density dependence in the modelling, therefore Natural England has based its advice on the outputs of the density independent PVA model (as these make no assumptions about the form or strength of any density dependent effects). Therefore, Natural England has focused our conclusions on the PVA outputs from the density independent model for demographic rate set 2 (the rates Natural England considers to be the most appropriate) using a matched runs approach (as per Natural England advice).

⁶ Natural England (2019) Hornsea Project Three Offshore Wind Farm: Natural England Written Submission for Deadline 6 – Written Submission of Natural England’s Representations at Issue Specific Hearing 5, Offshore Ecology. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010080/EN010080-001688-Natural%20England%20-%20Written%20Submission%20of%20Natural%20England's%20Representations%20at%20Issue%20Specific%20Hearing%205%20-%20Offshore%20Ecology.pdf>



Table A2.01 Percentage of baseline mortality for in-combination impact levels for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North, East Anglia Two, both excluding and including Hornsea 4 (H4), Dudgeon extension (DEP) and Sheringham extension (SEP) for gannet for the FFC SPA. Baseline mortality calculated using adult only colony size and adult mortality rate (8.1% from Horswill & Robinson 2015).

| GANNET PREDICTED IN-COMBINATION MORTALITY, HRA: FFC SPA | | | | |
|--|--------------------------|--|--|---|
| | Mortality prediction | % of baseline mortality of FFC SPA designated population* (used by Applicants) | % of baseline mortality of FFC SPA 2017 count** (used by Applicants) | % of baseline mortality of FFC SPA mean of 2012, 15 & 17 census data*** |
| In-combination CRM | 293 excl. H4, SEP, DEP | 16.36 excl. H4, SEP, DEP | 13.51 excl. H4, SEP, DEP | 14.72 excl. H4, SEP, DEP |
| | 342 incl. H4, SEP, DEP | 19.07 incl. H4, SEP, DEP | 15.75 incl. H4, SEP, DEP | 17.15 incl. H4, SEP, DEP |
| In-combination displacement (60-80% displacement and 1% mortality) | 47-62 excl. H4, SEP, DEP | 2.62-3.46 excl. H4, SEP, DEP | 2.17-2.86 excl. H4, SEP, DEP | 2.36-3.11 excl. H4, SEP, DEP |
| | 61-82 incl. H4, SEP, DEP | 3.40-4.58 incl. H4, SEP, DEP | 2.81-3.78 incl. H4, SEP, DEP | 3.06-4.12 incl. H4, SEP, DEP |
| In-combination CRM + displacement**** | 355 excl. H4, SEP, DEP | 19.81 excl. H4, SEP, DEP | 16.36 excl. H4, SEP, DEP | 17.82 excl. H4, SEP, DEP |
| | 424 incl. H4, SEP, DEP | 23.66 incl. H4, SEP, DEP | 19.55 incl. H4, SEP, DEP | 21.28 incl. H4, SEP, DEP |

* 11,061 pairs (22,122 adults), 1% baseline mortality = 18 birds

** 13,391 pairs (26,782 adults), 1% baseline mortality = 22 birds

*** 24,594 adults, 1% baseline mortality = 20 birds

**** In-combination displacement figure used in total is that for WCS of 80% displacement and 1% mortality combined with the collision predictions

In-combination collision

91. Natural England's revised calculated in-combination collision totals for FFC SPA gannet (i.e. including the consented predictions for East Anglia 3) is 293 gannets from the FFC SPA per annum for all projects excluding Hornsea 4, SEP and DEP and 342 for all projects including Hornsea 4, SEP and DEP. These predicted in-combination collision impacts equate to more than 1% of baseline mortality of the colony (see Table A2.01).

92. For the collision impacts in-combination with other plans and projects, if the additional mortality from the offshore wind farms is 300 per annum (closest PVA outputs to the in-combination collision mortality figure of 293 for all projects excluding Hornsea 4, SEP and DEP) then the population of FFC SPA after 25 years will be 27.9% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 1.4% (Table A2.02 below – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years).



93. For the collision impacts in-combination with other plans and projects, if the additional mortality from the offshore wind farms is 350 per annum (closest PVA outputs to the in-combination collision mortality figure of 342 for all projects including Hornsea 4, SEP and DEP) then the population of FFC SPA after 25 years will be 31.8% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 1.6% (Table A2.02 below – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years).

Table A2.02 Predicted population impacts on the gannet population of FFC SPA for the range of mortality impacts predicted for in-combination collision. PVA Impact Metrics are as provided in Hornsea Project Three Offshore Wind Farm (2019). The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the in-combination collision predictions

| GANNET | FFC SPA | | | | |
|----------------------|---|---|--|--|---------------------------------------|
| Additional mortality | % Baseline Mortality using designation population size (22,122 adults), as used by Applicants | % Baseline Mortality using 2017 count size (26,782 adults), as used by Applicants | % Baseline Mortality using mean of 2012, 15 & 17 census data (24,594 adults) | Counterfactual of Final Population Size (CPS)* | Counterfactual of Growth rate (CGR)** |
| 300 | 16.74 | 13.83 | 15.06 | 0.721 (0.718-0.723) | 0.986 |
| 325 | 18.14 | 14.98 | 16.31 | 0.701 (0.698-0.704) | 0.985 |
| 350 | 19.53 | 16.13 | 17.57 | 0.682 (0.679-0.685) | 0.984 |
| 375 | 20.93 | 17.29 | 18.82 | 0.663 (0.660-0.667) | 0.983 |
| 400 | 22.32 | 18.44 | 20.08 | 0.645 (0.642-0.649) | 0.982 |
| 425 | 23.72 | 19.59 | 21.33 | 0.628 (0.624-0.631) | 0.981 |

* Gannet, demographic rate set 2, counterfactuals of population size after 25 years, estimated using a matched runs method, from 1,000 density independent simulations. See Table A2_3.1 in Hornsea Project Three (2019)

** Gannet, demographic rate set 2, counterfactuals of population growth rate after 35 years, estimated using a matched runs method, from 1,000 density independent simulations. See Table A2_3.3 in Hornsea Project Three (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in Hornsea Project Three Offshore Wind Farm (2019) for after 35 years. No CLs given as they are the same as the median values.

In-combination displacement

94. Natural England's revised calculated in-combination displacement totals for FFC SPA gannet (i.e. including the Hornsea 3 figures Natural England consider appropriate based on the updated data from Ørsted) is 47-62 gannets from the FFC SPA per annum for all projects excluding Hornsea 4, SEP and DEP and 61-82 for all projects including Hornsea 4, SEP and DEP. These predicted in-combination collision impacts equate to more than 1% of baseline mortality of the colony (see Table A2.01).

95. For the displacement impacts in-combination with other plans and projects, if the additional mortality from the offshore wind farms is 50-75 per annum (closest PVA outputs to the in-combination displacement mortality figure of 47-62 for all projects excluding Hornsea 4, SEP and DEP) then the population of FFC SPA after 25



years will be 5.3-7.8% lower than it would have been in the absence of the additional mortality (Table A2.03 below – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years).

96. For the displacement impacts in-combination with other plans and projects, if the additional mortality from the offshore wind farms is 75-100 per annum (closest PVA outputs to the in-combination displacement mortality figure of 61-82 for all projects including Hornsea 4, SEP and DEP) then the population of FFC SPA after 25 years will be 7.8-10.3% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 0.3-0.5% (Table A2.03 below – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years).

Table A2.03 Predicted population impacts on the gannet population of FFC SPA for the range of mortality impacts predicted for in-combination displacement. PVA Impact Metrics are as provided in Hornsea Project Three Offshore Wind Farm (2019). The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the in-combination displacement predictions

| GANNET | FFC SPA | | | | |
|----------------------|--|--|--|--|---------------------------------------|
| Additional mortality | % Baseline Mortality using designation population size (22,122 adults), as used by Applicant | % Baseline Mortality using 2017 count size (26,782 adults), as used by Applicant | % Baseline Mortality using mean of 2012, 15 & 17 census data (24,594 adults) | Counterfactual of Final Population Size (CPS)* | Counterfactual of Growth rate (CGR)** |
| 50 | 2.79 | 2.30 | 2.51 | 0.947 (0.946-0.948) | 0.998 |
| 75 | 4.19 | 3.46 | 3.76 | 0.922 (0.921-0.923) | 0.997 |
| 100 | 5.58 | 4.61 | 5.02 | 0.897 (0.896-0.898) | 0.995 |

* Gannet, demographic rate set 2, counterfactuals of population size after 25 years, estimated using a matched runs method, from 1,000 density independent simulations. See Table A2_3.1 in Hornsea Project Three (2019)

** Gannet, demographic rate set 2, counterfactuals of population growth rate after 35 years, estimated using a matched runs method, from 1,000 density independent simulations. See Table A2_3.3 in Hornsea Project Three (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in Hornsea Project Three Offshore Wind Farm (2019) for after 35 years. No CLs given as they are the same as the median values.

In-combination collision plus displacement

97. The combined in-combination impact for all projects excluding Hornsea 4, SEP and DEP of collision plus displacement to gannet from the FFC SPA equals:

- 293 mortalities per annum from collisions plus up to 62 mortalities per annum from displacement = up to 355 mortalities from the FFC SPA.

98. The combined in-combination impact for all projects including Hornsea 4, SEP and DEP of collision plus displacement to gannet from the FFC SPA equals:

- 342 mortalities per annum from collisions plus up to 82 mortalities per annum from displacement = up to 424 mortalities from the FFC SPA.



99. These combined in-combination impacts equate to over 1% of baseline mortality of the colony (see A2.01 above). Therefore, the potential combined impacts from in-combination collision plus displacement on the SPA requires further consideration.

100. For the collision plus displacement impacts in-combination with other plans and projects, if the additional mortality from the offshore wind farms is 375 per annum (closest PVA outputs to the in-combination collision plus displacement mortality figure of 355 for all projects excluding Hornsea 4, SEP and DEP) then the population of FFC SPA after 25 years will be 33.7% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 1.7% (Table A2.04 below – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years).

101. For the collision plus displacement impacts in-combination with other plans and projects, if the additional mortality from the offshore wind farms is 450 per annum (closest PVA outputs to the in-combination collision plus displacement mortality figure of 424 for all projects including Hornsea 4, SEP and DEP) then the population of FFC SPA after 30 years will be 38.9% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 2% (Table A2.04 below – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years).

Table A2.04 Predicted population impacts on the gannet population of FFC SPA for the range of mortality impacts predicted for in-combination collision plus displacement. PVA Impact Metrics are as provided in Hornsea Project Three Offshore Wind Farm (2019). The range of predicted figures are indicated in purple. The darker shaded cells represent the level of impact closest to the combined in-combination collision plus displacement predictions

| GANNET | FFC SPA | | | | |
|----------------------|--|--|--|--|---------------------------------------|
| Additional mortality | % Baseline Mortality using designation population size (22,122 adults), as used by Applicant | % Baseline Mortality using 2017 count size (26,782 adults), as used by Applicant | % Baseline Mortality using mean of 2012, 15 & 17 census data (24,594 adults) | Counterfactual of Final Population Size (CPS)* | Counterfactual of Growth rate (CGR)** |
| 375 | 20.93 | 17.29 | 18.82 | 0.663 (0.660-0.667) | 0.983 |
| 400 | 22.32 | 18.44 | 20.08 | 0.645 (0.642-0.649) | 0.982 |
| 425 | 23.72 | 19.59 | 21.33 | 0.628 (0.624-0.631) | 0.981 |
| 450 | 25.11 | 20.74 | 22.59 | 0.611 (0.607-0.614) | 0.980 |

* Gannet, demographic rate set 2, counterfactuals of population size after 25 years, estimated using a matched runs method, from 1,000 density independent simulations. See Table A2_3.1 in Hornsea Project Three (2019)

** Gannet, demographic rate set 2, counterfactuals of population growth rate after 35 years, estimated using a matched runs method, from 1,000 density independent simulations. See Table A2_3.3 in Hornsea Project Three (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in Hornsea Project Three Offshore Wind Farm (2019) for after 35 years. No CLs given as they are the same as the median values.



102. The gannet population of FFC SPA increased at 11.1% per annum (between 2003/4 and 2015, JNCC Seabird Monitoring Programme SMP data). Using FFC SPA census data 2002-2017 the growth rate was 9.4% per annum. However, it is not known what the growth rate of the colony will be over the next 25 years and this should therefore be considered when judging the significance of predicted impacts against the conservation objectives for the feature.
103. As was undertaken during the Norfolk Vanguard examination and used in the Norfolk Boreas examinations, Natural England has reviewed growth rates for the 22 gannet colonies across Britain, Channel Islands and Ireland with repeated census data (Cramp et al. 1974, Lloyd et al. 1991, Mitchell et al. 2004, plus more recent count data from the SMP). The Flamborough/Bempton gannet colony was founded in the late 1930s (Cramp et al. 1974) and so has been in existence now for about 80 years. Thus, by the end of the lifespan of East Anglia One North and East Anglia Two projects it will be about 110 years in age. Given the analysis of trends in gannet colony growth rates amongst a suite of long-established colonies, it is highly likely that its annual growth rate averaged over the whole period since founding will drop from its current average of c 11% over the first 80 years. The highest annual colony growth rate calculated over a period of >100 years is 4.5% at Grassholm. The Flamborough colony is unlikely to achieve a higher annual growth rate than this. The average annual growth rate calculated over a period of >90 years across the 8 gannet colonies with records exceeding 90 years is 1.8%. Amongst these colonies the mean annual growth rate over the most recent years of their records (80+ years) has been just 1.2% per annum (or 1.3% excluding Sula Sgeir (as the growth rate here may be influenced adversely by an annual licenced harvest of young birds)) compared to an average rate of 2.0% per annum during the first 80 or so years of their existence. Therefore, Natural England has considered the counterfactuals of final population size for the predicted levels of in-combination additional mortality for a range of plausible future growth rate scenarios for FFC of 1, 2, 3, 4 and 5% per annum.
104. The Conservation Objective for the gannet population of the FFC SPA is to maintain the size of the breeding population at a level which is above 8,469 pairs (16,938 adults), whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. The latest mean count is 24,594 adults based on the mean of the 2012, 2015 and 2017 counts.



105. For the predicted in-combination with other plans and projects collision mortality to FFC SPA gannets of 293 mortalities per year for all projects excluding Hornsea 4, SEP and DEP, from the closest PVA output in Hornsea Project Three (2019) of 300 additional mortalities, the colony would be predicted to reduce from its current size of 24,594 adults for a growth rate of 1%, but would still be above the size of the 8,469 pairs or 16,938 adults. The colony would be predicted to continue to grow above the current mean population of 24,594 adults under any growth rate scenario from 2% to up to 5% per annum.
106. For the predicted in-combination with other plans and projects displacement mortality to FFC SPA gannets of 47-62 mortalities per year for all projects excluding Hornsea 4, SEP and DEP, from the closest PVA outputs in Hornsea Project Three (2019) of 50-75 additional mortalities, the colony would still be predicted to grow above the current mean population of 24,594 adults under any growth rate scenario from 1% to up to 5%. This would allow the conservation objective to be met.
107. For the predicted in-combination with other plans and projects collision plus displacement mortality to FFC SPA gannets of 355 mortalities per year for all projects excluding Hornsea 4, SEP and DEP, from the closest PVA output in Hornsea Project Three (2019) of 375 additional mortalities, the colony would be predicted to reduce from its current size of 24,594 adults for a growth rate of 1%, but would still be above the size of the 8,469 pairs or 16,938 adults. The colony would be predicted to continue to grow above the current mean population of 24,594 adults under any growth rate scenario from 2% to up to 5% per annum.
108. If the colony were to experience an annual growth rate of 2% or more per annum over the next 30 or so years, then the integrity of the site for this feature is high, with high rates for self-repair, and self-renewal under dynamic conditions with minimal external management. Therefore, the FFC gannet population is believed to be robust enough to allow the conservation objective to maintain the population at (or above) designation levels and sustain additional alone and in-combination mortalities from the offshore wind farms. Our justification for this position is we consider it to be highly unlikely that the FFC annual growth rate would be as low as 1%, and from the analysis of gannet colony growth rates we have conducted the current annual growth rate of c 11% appears to be relatively high for a colony



of this age and so the colony is likely to do better than a 1.3 % annual growth rate in the foreseeable future.

109. **Natural England advises that based on the above information, an adverse effect on integrity (AEol) of the gannet feature of the FFC SPA can be ruled out for in-combination collision impacts, in-combination displacement impacts and in-combination collision plus displacement impacts when all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two are included in the in-combination totals (i.e. if the Hornsea 4, DEP and SEP projects are excluded from the in-combination totals).**

110. **However, due to the inevitable uncertainty associated with the figures for Hornsea 4, DEP and SEP being from the PEIRs and are hence subject to change, Natural England therefore is not in a position to advise that an AEol can be ruled out for the gannet feature of the FFC SPA for in-combination collision impacts, in-combination displacement impacts and in-combination collision plus displacement impacts when the Hornsea 4, DEP and SEP projects are included in the in-combination totals.**

2.2 Flamborough & Filey Coast (FFC) SPA: Kittiwake – Impacts from EA1N AND EA2 In-Combination with Other Plans and Projects: Operational Collision Risk

111. We welcome that the in-combination assessments undertaken by the Applicants in APP-043 make reference to the PVA undertaken for Hornsea 3. However, as highlighted during the Norfolk Boreas examination we had outstanding concerns with the Hornsea 3 PVAs which were not resolved by the close of the Examination, relating to the number of simulations and the demographic data not being updated (see our Deadline 6 response to the Hornsea 3 Examination – written summary of representations of ISH5⁷). However, this nevertheless represents the best available evidence on which to base an

⁷ Natural England (2019) Hornsea Project Three Offshore Wind Farm: Natural England Written Submission for Deadline 6 – Written Submission of Natural England's Representations at Issue Specific Hearing 5, Offshore Ecology. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010080/EN010080-001688-Natural%20England%20-%20Written%20Submission%20of%20Natural%20England's%20Representations%20at%20Issue%20Specific%20Hearing%205%20-%20Offshore%20Ecology.pdf>



assessment, though this should not be taken as an endorsement or ‘acceptance’ of the model outputs.

112. There is no clear evidence to support application of any particular form or magnitude of density dependence in the modelling, therefore Natural England has based our advice on the outputs of the density independent models (as these make no assumptions about the form of strength of any density dependent effects). Therefore, Natural England has focused our conclusions on the PVA outputs from the density independent model for demographic rate set 2 using a matched runs approach.

113. Natural England’s revised calculated in-combination collision totals for FFC SPA kittiwake (i.e. including the consented predictions for East Anglia 3) is 358 kittiwakes from the FFC SPA per annum for all projects excluding Hornsea 4, SEP and DEP and 533 for all projects including Hornsea 4, SEP and DEP. These predicted in-combination collision impacts equate to more than 1% of baseline mortality of the colony (see Table A2.05).

Table A2.05 Percentage of baseline mortality for in-combination collision impacts for excluding and including Hornsea 4 (H4), Dudgeon extension (DEP) and Sheringham extension (SEP) for kittiwake for FFC SPA. Baseline mortality calculated using adult only colony size and adult mortality rate (14.6% from Horswill & Robinson 2015).

| KITTIWAKE PREDICTED IN-COMBINATION CRM MORTALITY, HRA: FFC SPA | | | |
|---|----------------------|---|---|
| | Mortality prediction | % of baseline mortality of FFC SPA designated population* (used by Applicant) | % of baseline mortality of FFC SPA mean 2016-17 census data** |
| In-combination CRM excl. H4, DEP and SEP | 358 | 2.76 | 2.39 |
| In-combination CRM incl. H4, DEP and SEP | 533 | 4.10 | 3.56 |

* 89,040 adults, 1% baseline mortality = 130 birds

** 102,536 adults, 1% baseline mortality = 150 birds

114. If the additional mortality from the windfarm is 400 adults per annum (closest PVA outputs available in Hornsea Project Three Offshore Wind Farm 2019 to predicted 358 mortalities for in-combination total excluding Hornsea 4, DEP and SEP) then the population of FFC SPA after 25 years will be 10.2% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 0.4% (Table A2.06 – note GCRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years). If it is assumed that the population is stable, then this would mean that the population would be 10.2% lower than the current population size. This would be counter to the restore



conservation objective for this feature at the site and would result in an adverse effect on the integrity of the site.

115. If the additional mortality from the windfarm is 550 adults per annum (closest PVA outputs available in Hornsea Project Three Offshore Wind Farm 2019 to predicted 533 mortalities for in-combination total including Hornsea 4, DEP and SEP) then the population of FFC SPA after 25 years will be 13.8% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 0.6% (Table A2.06 – note GCRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years). If it is assumed that the population is stable, then this would mean that the population would be 13.8% lower than the current population size. This would be counter to the restore conservation objective for this feature at the site and would result in an adverse effect on the integrity of the site.

Table A2.06 Predicted population impacts on the kittiwake population of FFC SPA for the range of mortality impacts predicted for in-combination collision. PVA impact metrics are as provided in Hornsea Project Three Offshore Wind Farm (2019). The range of predicted in-combination figures are indicated in purple. The darker shaded cells represent the level of impact closest to the in-combination predictions.

| KITTIWAKE | FFC SPA | | | |
|----------------------|--|--|--|---------------------------------------|
| Additional mortality | % Baseline Mortality using designation population size (89,040 adults) | % Baseline Mortality using mean 2016-17 census data (102,536 adults) | Counterfactual of Final Population Size (CPS)* | Counterfactual of Growth rate (CGR)** |
| 350 | 2.69 | 2.34 | 0.910 (0.909-0.911) | 0.996 |
| 400 | 3.08 | 2.67 | 0.898 (0.897-0.899) | 0.996 |
| 450 | 3.46 | 3.01 | 0.885 (0.884-0.887) | 0.995 |
| 500 | 3.85 | 3.34 | 0.874 (0.872-0.875) | 0.994 |
| 550 | 4.23 | 3.67 | 0.862 (0.860-0.863) | 0.994 |
| 600 | 4.62 | 4.01 | 0.850 (0.849-0.851) | 0.993 |

* Kittiwake, demographic rate set 2, counterfactuals of population size after 25 years, estimated using a matched runs method, from 1000 density independent simulations. See Table A2_7.1 in Hornsea Project Three Offshore Wind Farm (2019)

** Kittiwake, demographic rate set 2, counterfactuals of population growth rate after 35 years, estimated using a matched runs method, from 1000 density independent simulations. See Table A2_7.3 in Hornsea Project Three Offshore Wind Farm (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in Hornsea Project Three Offshore Wind Farm (2019) for after 35 years. No CLs given as they are the same as the median values.

116. It is not known what the growth rate of the colony will be over the next 25 years and this should be considered when judging the significance of predicted impacts against the conservation objectives for the feature. There has been a 2.2% per annum decline in numbers for Flamborough Head and Bempton Cliffs colony⁸

⁸ It should be noted that the new Flamborough and Filey Coast SPA includes additional cliff areas at Filey which support kittiwake but were not previously monitored as part of the SPA, hence the reference to Flamborough Head and Bempton Cliffs.



between 1987 and 2017 (a growth rate of 0.979 per annum). Over the period 2000 to 2017 the population has shown a 0.37% per annum increase in numbers (a growth rate of 1.0037 per annum) based on census counts in SMP (JNCC 2016).

117. Across colonies in the UK the kittiwake population declined by 44% between 1998/2000 and 2015. Between the SCR Census (1985–88) and Seabird 2000 (1998–2002) for major colonies in Britain, no sites showed a per annum increase that exceeded 4.5% (see Section B of Natural England’s Deadline 4 submission for Hornsea Project 2⁹). The growth rate of the colony at Bempton/Flamborough between 2000 and 2017 was 0.37% per annum, following declines from 1987. So, it seems reasonable to assume that the FFC SPA colony growth rate is <1% per annum. Therefore, Natural England has considered the counterfactuals of final population size for the predicted levels of in-combination additional mortality for a range of plausible future growth rate scenarios for FFC of stable, 0.37, 1, and 3% per annum, as per our advice during the Norfolk Vanguard and Norfolk Boreas examinations.

118. The Conservation Objective for the kittiwake population of the FFC SPA is to restore the size of the breeding population at a level which is above 83,700 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. We note that in APP-043 the Applicants’ state that: *‘there is some uncertainty as to whether there were ever as many as 83,370 pairs of kittiwakes at this site’*. Natural England has reviewed the evidence and information available on the 1979, 1986 and 1987 counts in Natural England (2020)¹⁰. Based on the evidence and information available on the 1979, 1986 and 1987 counts presented in Natural England (2020), Natural England’s position is that:

‘The 1987 count of 85,395 AON kittiwake at Bempton Cliffs and Flamborough Head is accurate and valid, and Natural England will use this figure as the basis of advice on the population status of kittiwake at the colony and at a regional and national level.’

⁹ Natural England (2015) Hornsea Project Two Offshore Wind Farm – Written Submission for Deadline 4. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010053/EN010053-001163-Natural%20England.pdf>

¹⁰ Natural England (2020) Natural England Evidence Information Note EIN050: Natural England Evidence Statement Regarding Kittiwake Count Data Used to Classify the Flamborough Head & Bempton Cliffs SPA. Available from: <http://publications.naturalengland.org.uk/publication/4658653459382272>



Natural England consider that the 1986 figure is an estimated value and therefore should not be used quantitatively in any assessments.

In the absence of the original count data or forms and /or details of the methods used, Natural England are unable to verify the accuracy of the 1979 count. This is an issue for all the counts at the colony prior to the SCR counts in 1986 and 1987, but this is not a reason to doubt these counts, and they are an important element in the history of kittiwake at the site, in England, the UK and Europe.

Therefore, Natural England's position remains that the conservation objective is to restore the size of the breeding population at a level which is above 83,700 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.

119. If we assume a 1% per annum growth rate then 400 additional mortalities per annum would result in the population being approximately 12,000-13,000 birds lower than without the additional mortality after 25 years and it would take over an additional 30 years to reach the target population compared to the no windfarm mortality scenario. If we assume a 1% per annum growth rate then 550 additional mortalities per annum would result in the population being around 18,000 birds lower than without the additional mortality after 25 years and it would take over an additional 70 years to reach the target population compared to the no windfarm mortality scenario. It is not possible to rule out adverse effect on integrity (AEoI) for these scenarios.

120. If the kittiwake population were to grow at the a rate of 3% per annum over the next 25 years, then 400 additional mortalities per annum would result in the population being approximately 20,000-birds lower than without the additional mortality after 25 years and it would take over an additional 2 years to reach the target population compared to the no windfarm mortality scenario. If we assume a 3% per annum growth rate then 550 additional mortalities per annum would result in the population being around 30,000 birds lower than without the additional mortality after 25 years and it would take over an additional 4 years to reach the target population compared to the no windfarm mortality scenario.

121. In the context of a population trajectory that is currently stable or increasing at <1% per annum an additional mortality of 400 adults per annum causing a reduction in growth rate of 0.4%, or of 550 adults per annum over 25 years causing



a reduction in growth rate of 0.6% would further harm the population and make it more difficult to restore the population to a favourable condition. Natural England is therefore currently unable to advise beyond reasonable scientific doubt that this level of impact would not be an AEol.

122. There is no evidence to suggest that the future population trend will be significantly different from the current trend of 0.37% per annum (2000-2017), for example productivity at the colony has not been increasing in recent years (see Figure A2.01) (Aitken et al. 2017). So, based on the review of growth rates above, it seems reasonable to assume that the FFC SPA colony growth rate will be <1% per annum.

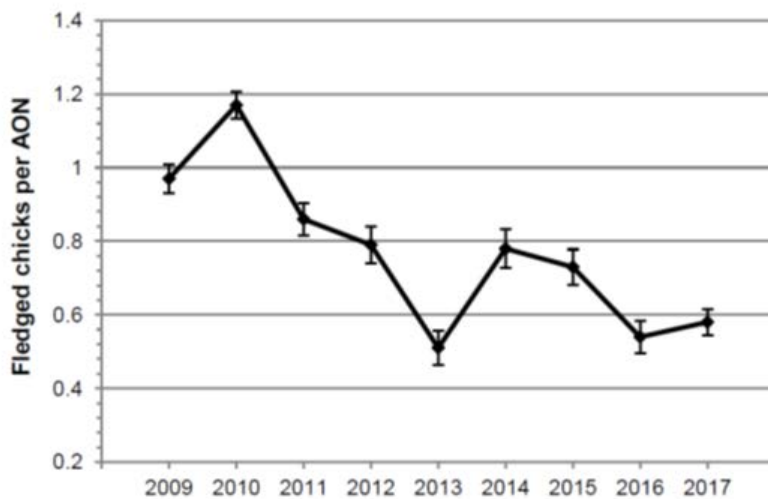


Figure A2.01 Flamborough/Bempton Black-legged kittiwake productivity 2009-2017, mean of plot results +/- SE. From Aitken et al. (2017). Note this does not include productivity data for Filey, where productivity is lower (e.g. in 2017 mean productivity for kittiwake at Filey was 0.39 (SE ± 0.0742) chicks per AON).

123. Therefore, as this feature has a restore conservation objective, and because there are indications that the predicted level of mortality would mean the population could decline from current levels should it currently be stable, **it is not possible to rule out AEol of the kittiwake feature of the FFC SPA for collision impacts from in-combination with other plans and projects, for all projects up to and including Hornsea 3 (noting the contribution from this project is set to 0 as compensated for), Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two, irrespective of whether Hornsea 4, DEP and SEP are included in the totals or not.**



2.3 Flamborough & Filey Coast (FFC) SPA: Guillemot – Impacts from EA1N and EA2 In-Combination With Other Plans and Projects: Operational Displacement

124. Based on Natural England's revised (i.e. including the Hornsea 3 figures Natural England consider appropriate based on the updated data from Ørsted) in-combination totals, the annual in-combination total number of guillemots to be at risk of displacement for all projects (including from Hornsea 4, SEP and DEP) is estimated to be 43,662.
125. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional in-combination mortalities including Hornsea 4, SEP and DEP is between 131 (30% displacement and 1% mortality) and 3,056 (70% displacement and 10% mortality) guillemots from the FFC SPA. This equates to 2.58-60.21% of baseline mortality for the colony (Table A2.07). This is significant and therefore requires further consideration.
126. Given the uncertainty involved with the figures for Hornsea 4, SEP and DEP (as figures from the PEIRs for these projects), the annual in-combination total excluding these three projects is estimated to be 24,975 guillemots at risk of displacement.
127. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional in-combination mortalities excluding Hornsea 4, SEP and DEP is between 75 (30% displacement and 1% mortality) and 1,748 (70% displacement and 10% mortality) guillemots from the FFC SPA. This equates to 1.48-34.44% of baseline mortality for the colony (Table A2.07). Again, this is significant and therefore requires further consideration.



Table A2.07 Predicted annual displacement mortalities for in-combination impact levels for excluding and including Hornsea 4 (H4), Sheringham extension (SEP) and Dudgeon extension (DEP) for guillemot for FFC SPA. Pink shaded cells indicate predicted mortalities that exceed 1% of baseline mortality – baseline mortality calculated using adult only colony size (designated size of 83,214 adults) and adult mortality rate (6.1% from Horswill & Robinson 2015) – 1% baseline mortality = 51 birds.

| Guillemot in-combination mortality figures, EXCLUDING H4, SEP & DEP | | % mortality | | | |
|--|----|-------------|-----|-------|-------|
| FFC adults mean of population | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 75 | 150 | 375 | 749 |
| | 40 | 100 | 200 | 499 | 999 |
| | 50 | 125 | 250 | 624 | 1,249 |
| | 60 | 150 | 300 | 749 | 1,498 |
| | 70 | 175 | 350 | 874 | 1,748 |
| Guillemot in-combination mortality figures, INCLUDING H4, SEP & DEP | | % mortality | | | |
| FFC adults mean of population | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 131 | 262 | 655 | 1,310 |
| | 40 | 175 | 349 | 873 | 1,746 |
| | 50 | 218 | 437 | 1,092 | 2,183 |
| | 60 | 262 | 524 | 1,310 | 2,620 |
| | 70 | 306 | 611 | 1,528 | 3,056 |

128. Whilst we welcome that the in-combination assessments undertaken by the Applicants in APP-043 make reference to the PVA undertaken for Hornsea 3, we note that the maximum additional mortality modelled in the FFC SPA guillemot PVA undertaken during the Hornsea 3 examination (Hornsea Project Three Offshore Wind Farm 2019) is 1,600 per year. This is insufficient for the current predicted worst case maximum (i.e. for 70% displacement and 10% mortality) of 1,748 for excluding Hornsea 4, SEP and DEP and of 3,056 for including Hornsea 4, SEP and DEP.

129. We have therefore utilised the outputs from the updated PVA model undertaken by Norfolk Boreas in MacArthur Green (2019¹¹) using the Natural England commissioned ‘Seabird PVA tool’. However, it was noted during the Norfolk Boreas examination that the guillemot models had been run for only 500 simulations. The Seabird PVA Tool report (Searle et al. 2019) states that *‘it is not recommended to use small values of sim.n (number of simulations) because PVAs based on small numbers of simulations are likely to be unreliable (using a value of less than 1,000*

¹¹ MacArthur Green (2019) Norfolk Boreas Offshore Wind Farm: Offshore Ornithology Assessment Update. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-001420-Offshore%20Ornithology%20Assessment%20Update.pdf>



will generate a warning message in the tool, but in practice the minimum number of simulations may need to be substantially higher than this in order to achieve reliable results)'. Natural England considers that a larger number of simulations than 500 would be needed to generate reliable results.

130. Therefore, during the Norfolk Boreas examination, Natural England re-ran the density independent PVA through the tool in order to consider the predicted counterfactual metrics across the full range of predicted impacts across 30-70% displacement and 1-10% mortality. This was done using the same input parameters for guillemot at the FFC SPA as presented by Norfolk Boreas in Appendix 3 of MacArthur Green (2019). However, we note that we were able to run the model for 5,000 simulations rather than the 500 simulations as done by Norfolk Boreas. We note that whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of final population size and growth rate were calculated for Norfolk Boreas after 30 years.

131. There is no clear evidence to support the application of any particular form or magnitude of density dependence in the modelling, therefore Natural England has based its advice on the outputs of the density independent PVA model we re-ran (as these make no assumptions about the form or strength of any density dependent effects).

132. The FFC SPA guillemot colony increased by 2.8% per annum between 1987-2008 and the designated population size is 83,214 breeding adults. The 2017 colony count indicated approximately 121,754 breeding adults across the site (Aitken et al. 2017). It is not clear whether the colony will continue to grow at the current rate for the next 25 years and this should be considered when judging the significance of predicted impacts against the conservation objectives for the feature. The Conservation Objective for the guillemot population of the FFC SPA is to maintain the size of the breeding population at a level which is above 41,607 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.

133. If the additional mortality from the windfarm is 1,750-3,050 birds per annum (closest PVA outputs available to predicted 1,748 mortalities for the in-combination total excluding Hornsea 4, SEP and DEP at 70% displacement and 10% mortality and to the 3,056 in-combination total including Hornsea 4, SEP and DEP at 70%



displacement and 10% mortality) then the population of FFC SPA after 30 years will be 51.0-72.2% lower (based on Natural England's re-run PVA) than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 2.3-4.1% (see Table A2.08 – note CPS and CGRs were calculated by Natural England during the Norfolk Boreas examination for 30 years). This level of impact would be considered significant in the context of the current colony population trend.

Table A2.08 Predicted population impacts on the guillemot population of FFC SPA for the range of mortality impacts predicted for in-combination displacement. PVA impact metrics are those calculated from the Natural England re-run of the PVA using the PVA tool, based on the same input parameters for guillemot at the FFC SPA as presented by Norfolk Boreas in Appendix 3 of MacArthur Green (2019). The range of predicted in-combination figures are indicated in purple. The darker shaded cells represent the level of impact closest to the in-combination predictions.

| GUILLEMOT | | | |
|----------------------|--|--|---------------------------------------|
| Additional mortality | % Baseline Mortality using designation population size (83,214 adults) | Counterfactual of Final Population Size (CPS)* | Counterfactual of Growth rate (CGR)** |
| 1700 | 33.49 | 0.490 | 0.977 |
| 1750 | 34.48 | 0.480 | 0.977 |
| 2200 | 43.34 | 0.396 | 0.971 |
| 2650 | 52.21 | 0.327 | 0.965 |
| 3050 | 60.09 | 0.275 | 0.959 |

* Guillemot counterfactuals of population size and growth rate after 30 years, produced by Natural England during the Norfolk Boreas examination using the NE Seabird PVA Tool for 5,000 density independent simulations, using same input data as Norfolk Boreas provided in Appendix 3 of MacArthur Green (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of population size and growth rate were calculated for Norfolk Boreas after 30 years.

134. While there is some empirical evidence to support the displacement levels for auks, we do not know what the likely mortality impacts of displacement are. We therefore consider it appropriate to consider a range of mortalities from 1-10%. However, on the basis that the majority of the projects that have been scoped into the assessment lie in areas of the North Sea that represent low to medium levels of guillemot density during both the breeding (where relevant) and non-breeding seasons (Seabird Sensitivity Mapping Tool), it is assumed that areas of low/medium density will be less important/desirable feeding areas and therefore mortality impacts of displacement from lower quality areas would be lower than displacement from optimal/important areas. Therefore, we do not anticipate that mortality rates to be at the top of the range considered for projects with low/medium densities. When Hornsea 4 and DEP and SEP are excluded, Table A2.09 indicates that the mortality is unlikely to exceed a level where the population growth rate would decline by more than approximately 0.5% per annum.



135. However, the Hornsea 4 PEIR data indicates that there are high densities of guillemot present at the Hornsea 4 site compared to other projects and therefore it may be an important area for guillemot. Furthermore, Hornsea 4 is significantly closer to FFC SPA compared to other Round 3 projects, and as a result is likely to have a higher importance for foraging guillemot from the colony during the breeding season, and for dispersing guillemot in the immediate post-breeding period. For both these reasons, Natural England considers that the consequences of displacement for guillemot are likely to be significantly higher for this project, and therefore it cannot be assumed that mortality will be at the lower end of the range when the impacts of Hornsea 4 are considered. Furthermore, displacement from important breeding season foraging areas may have consequences for productivity as well as adult survival, (which displacement assessments do not consider) We also note that when Hornsea 4, DEP and SEP are included in the in-combination totals there is a higher risk of a more substantial reduction in the CGR, as shown in Table A2.09.

Table A2.09 Predicted % reductions in population growth rates from Norfolk Boreas in-combination with other plans and projects for excluding and including Hornsea 4 (H4), Sheringham extension (SEP) and Dudgeon extension (DEP). Shaded cells are those where the reduction in growth rate exceeds 0.5%, 1% or 2%.

| Guillemot growth rate figures*, EXCLUDING H4, SEP & DEP | | % mortality | | | |
|---|----|-------------|-----|-----|-----|
| FFC adults in-combination | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 0.1 | 0.2 | 0.5 | 1.0 |
| | 40 | 0.1 | 0.3 | 0.7 | 1.3 |
| | 50 | 0.2 | 0.3 | 0.9 | 1.7 |
| | 60 | 0.2 | 0.4 | 1.0 | 2.0 |
| | 70 | 0.3 | 0.5 | 1.2 | 2.3 |
| Guillemot growth rate figures*, INCLUDING H4, SEP & DEP | | % mortality | | | |
| FFC adults in-combination | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 0.2 | 0.4 | 0.9 | 1.8 |
| | 40 | 0.3 | 0.5 | 1.2 | 2.3 |
| | 50 | 0.3 | 0.6 | 1.5 | 2.9 |
| | 60 | 0.4 | 0.7 | 1.8 | 3.5 |
| | 70 | 0.5 | 0.9 | 2.3 | 4.1 |

* Guillemot counterfactuals of population growth rate after 30 years, produced by Natural England using the NE Seabird PVA Tool for 5,000 density independent simulations, using same input data as Applicant has provided in Appendix 3 of MacArthur Green (2019)

136. Based on the current population trend for the colony and the restore conservation objective, and on the basis of predicted displacement mortality for the project in-combination with other plans and projects resulting in a decline in growth rate of no more than 0.4%, **Natural England advises that an adverse effect on**



integrity (AEoI) on the guillemot feature of the FFC SPA can be ruled out from displacement in-combination with other plans and projects when all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two are included in the in-combination totals (i.e. if the Hornsea 4, DEP and SEP projects are excluded from the in-combination totals).

137. However, due to the issues identified above regarding the numbers of guillemot in Hornsea 4 array area and its proximity to FFC SPA, the increased risk of reductions in growth rate and population size when Hornsea 4, DEP and SEP are included, and the inevitable uncertainty associated with the figures for these projects due to them being from the PEIRs and hence subject to change, Natural England is not in a position to advise that an AEoI can be ruled out for the guillemot feature of the FFC SPA for in-combination displacement impacts when the Hornsea 4, DEP and SEP projects are included in the in-combination totals.

2.4 Flamborough & Filey Coast (FFC) SPA: Razorbill – Impacts from EA1N and EA2 In-COMBINATION with Other Plans and Projects: Operational Displacement

138. Based on Natural England's revised (i.e. including the Hornsea 3 figures Natural England consider appropriate based on the updated data from Ørsted) in-combination totals, the annual in-combination total number of razorbills to be at risk of displacement for all projects (including from Hornsea 4, SEP and DEP) is estimated to be 7,261.

139. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional in-combination mortalities including Hornsea 4, SEP and DEP is between 22 (30% displacement and 1% mortality) and 508 (70% displacement and 10% mortality) guillemots from the FFC SPA. This equates to 0.98-22.90% of baseline mortality for the colony (Table A2.10). This is significant at the upper level of the displacement/mortality range that the SNCBs advise for auks (70% displacement and 10% mortality) and therefore requires further consideration.

140. Given the uncertainty involved with the figures for Hornsea 4, SEP and DEP (as figures from the PEIRs for these projects), the annual in-combination total



excluding these three projects is estimated to be 6,218 razorbills at risk of displacement.

141. For the Natural England recommended rates of 30-70% displacement and 1-10% mortality, the number of predicted additional in-combination mortalities excluding Hornsea 4, SEP and DEP is between 19 (30% displacement and 1% mortality) and 435 (70% displacement and 10% mortality) guillemots from the FFC SPA. This equates to 0.84-19.61% of baseline mortality for the colony (Table A2.10). Again, this is significant at the upper level of the displacement/mortality range that the SNCBs advise for auks (70% displacement and 10% mortality) and therefore requires further consideration.

Table A2.10 Predicted annual displacement mortalities for in-combination impact levels for excluding and including Hornsea 4 (H4), Dudgeon extension (DEP) and Sheringham extension (SEP) for razorbill for FFC SPA. Pink shaded cells indicate predicted mortalities that exceed 1% of baseline mortality – baseline mortality calculated using adult only colony size (designated size of 21,140 adults) and adult mortality rate (10.5% from Horswill & Robinson 2015) – 1% baseline mortality = 22 birds.

| Razorbill in-combination mortality figures, EXCLUDING H4, DEP & SEP | | % mortality | | | |
|--|----|-------------|-----|-----|-----|
| FFC adults mean of population | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 19 | 37 | 93 | 187 |
| | 40 | 25 | 50 | 124 | 249 |
| | 50 | 31 | 62 | 155 | 311 |
| | 60 | 37 | 75 | 187 | 373 |
| | 70 | 44 | 87 | 218 | 435 |
| Razorbill in-combination mortality figures, INCLUDING H4, DEP & SEP | | % mortality | | | |
| FFC adults mean of population | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 22 | 44 | 109 | 218 |
| | 40 | 29 | 58 | 145 | 290 |
| | 50 | 36 | 73 | 182 | 363 |
| | 60 | 44 | 87 | 218 | 436 |
| | 70 | 51 | 102 | 254 | 508 |

142. We welcome that the in-combination assessments undertaken by the Applicants in APP-043 make reference to the PVA undertaken for Hornsea 3. However, as highlighted during the Norfolk Boreas examination we had outstanding concerns with the Hornsea 3 PVAs which were not resolved by the close of the Examination, relating to the number of simulations and the demographic data not being updated (see our Deadline 6 response to the Hornsea



3 Examination – written summary of representations of ISH5¹²). However, this nevertheless represents the best available evidence on which to base an assessment, though this should not be taken as an endorsement or ‘acceptance’ of the model outputs.

143. There is no clear evidence to support the application of any particular form or magnitude of density dependence in the modelling, therefore Natural England has based its advice on the outputs of the density independent PVA model (as these make no assumptions about the form or strength of any density dependent effects). Therefore, Natural England has focused our conclusions on the PVA outputs from the density independent model for demographic rate set 2 (the rates Natural England considers to be the most appropriate) using a matched runs approach (as per Natural England advice).
144. The FFC SPA razorbill colony increased by 3% per annum 1987-2008 and the designated population size is 21,140 breeding adults. The 2017 colony count indicated approximately 40,506 breeding adults across the site, indicating continued increases (Aitken et al. 2017). It is not clear whether the colony will continue to grow at the current rate for the next 25 years and this should be considered when judging the significance of predicted impacts against the conservation objectives for the feature. However, colony productivity is higher than the national average. The Conservation Objective for the razorbill population of the FFC SPA is to maintain the size of the breeding population at a level which is above 10,570 breeding pairs whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
145. If the additional mortality from the windfarm is 450-550 birds per annum (closest PVA outputs available in Hornsea Project Three Offshore Wind Farm 2019 to predicted 435 mortalities for the in-combination total excluding Hornsea 4, SEP and DEP at 70% displacement and 10% mortality and to the 508 in-combination total for including Hornsea 4, SEP and DEP at 70% displacement and 10%

¹² Natural England (2019) Hornsea Project Three Offshore Wind Farm: Natural England Written Submission for Deadline 6 – Written Submission of Natural England’s Representations at Issue Specific Hearing 5, Offshore Ecology. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010080/EN010080-001688-Natural%20England%20-%20Written%20Submission%20of%20Natural%20England’s%20Representations%20at%20Issue%20Specific%20Hearing%205%20-%20Offshore%20Ecology.pdf>



mortality) then the population of FFC SPA after 25 years will be 40.4-47.0% lower (see Table A2.11) than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 2.1-2.6% (see Table A2.11 – note CGRs are only available in Hornsea Project Three Offshore Wind Farm (2019) for 35 years). This level of impact would be considered significant in the context of the current colony population trend.

Table A2.11 Predicted population impacts on the razorbill population of FFC SPA for the range of mortality impacts predicted for in-combination displacement. PVA impact metrics are as provided in Hornsea Project Three Offshore Wind Farm (2019). The range of predicted in-combination figures are indicated in purple. The darker shaded cells represent the level of impact closest to the in-combination predictions.

| RAZORBILL | | | |
|----------------------|--|--|---------------------------------------|
| Additional mortality | % Baseline Mortality using designation population size (83,214 adults) | Counterfactual of Final Population Size (CPS)* | Counterfactual of Growth rate (CGR)** |
| 400 | 18.02 | 0.631 (0.624-0.640) | 0.981 |
| 450 | 20.27 | 0.596 (0.587-0.604) | 0.979 |
| 500 | 22.53 | 0.562 (0.553-0.571) | 0.976 |
| 550 | 24.78 | 0.530 (0.521-0.540) | 0.974 |

* Razorbill, demographic rate set 2, counterfactuals of population size after 25 years, estimated using a matched runs method, from 1000 density independent simulations. See Table A2_15.1 in Hornsea Project Three Offshore Wind Farm (2019)

** Razorbill, demographic rate set 2, counterfactuals of population growth rate after 35 years, estimated using a matched runs method, from 1000 density independent simulations. See Table A2_15.3 in Hornsea Project Three Offshore Wind Farm (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in Hornsea Project Three Offshore Wind Farm (2019) for after 35 years.

146. Whilst there is some empirical evidence to support the displacement levels for auks, we do not know what the likely mortality impacts of displacement are. We therefore consider it appropriate to consider a range of mortalities from 1-10%. However, on the basis that the majority of the projects that have been scoped into the assessment lie in areas of the North Sea that represent low to medium levels of razorbill density during both the breeding (where relevant) and non-breeding seasons¹³, it is assumed that areas of low/medium density will be less important/desirable feeding areas and therefore mortality impacts of displacement from lower quality areas would be lower than displacement from optimal/important areas. Therefore, we do not anticipate razorbill mortality rates to be at the top of the range considered for projects with low/medium densities. When Hornsea 4 and DEP and SEP are excluded, Table A2.12 indicates that the mortality is unlikely to exceed a level where the population growth rate would decline by more than approximately 0.5% per annum.



147. However, Hornsea 4 is located significantly closer to the FFC SPA compared to other Round 3 projects, and as a result is potentially of a higher importance for foraging razorbill during the breeding season and the immediate post-breeding period. As a result Natural England considers that the consequences of displacement for razorbill is likely to be higher for this project, and therefore higher mortality rates are more likely to be appropriate. In other words, it cannot be assumed that mortality will be at the lower end of the range for Hornsea 4. Furthermore, displacement from important razorbill foraging areas may have consequences for productivity as well as adult survival (which displacement assessments do not consider).

Table A2.12 Predicted % reductions in population growth rates¹⁴ from in-combination with other plans and projects for excluding and including Hornsea 4 (H4), Dudgeon extension (DEP) and Sheringham extension (SEP). Shaded cells are those where the reduction in growth rate exceeds 0.5%, 1% or 2%).

| Razorbill growth rate figures*, EXCLUDING H4, DEP & SEP | | % mortality | | | |
|--|----|-------------|-----|-----|-----|
| FFC adults in-combination | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 0.2 | 0.2 | 0.5 | 0.9 |
| | 40 | 0.2 | 0.2 | 0.7 | 1.2 |
| | 50 | 0.2 | 0.5 | 0.9 | 1.7 |
| | 60 | 0.2 | 0.5 | 0.9 | 1.9 |
| | 70 | 0.2 | 0.5 | 1.2 | 2.1 |
| Razorbill growth rate figures*, INCLUDING H4, DEP & SEP | | % mortality | | | |
| FFC adults in-combination | | 1 | 2 | 5 | 10 |
| % displacement | 30 | 0.2 | 0.2 | 0.7 | 1.2 |
| | 40 | 0.2 | 0.5 | 0.7 | 1.4 |
| | 50 | 0.2 | 0.5 | 0.9 | 1.9 |
| | 60 | 0.2 | 0.5 | 1.2 | 2.1 |
| | 70 | 0.5 | 0.7 | 1.4 | 2.6 |

* Razorbill, demographic rate set 2, counterfactuals of population growth rate after 35 years, estimated using a matched runs method, from 1000 density independent simulations. See Table A2_15.3 in Hornsea Project Three Offshore Wind Farm (2019). Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in Hornsea Project Three Offshore Wind Farm (2019) for after 35 years.

148. Based on the current population trend and productivity levels for the colony, and on the basis of predicted displacement mortality for the project in-combination with other plans and projects resulting in a decline in growth rate of less than 0.5% per annum, **Natural England advises that an adverse effect on integrity (AEoI) on the razorbill feature of the FFC SPA can be ruled out from displacement in-combination with other plans and projects when all projects up to and**

¹⁴ Reductions in population growth rate relate to the nearest mortality level output from the PVA model that lies above the predicted in-combination displacement mortality in A2.10 above. So for example if the predicted displacement is 110 birds and PVA outputs are given in 50 bird increments, the reduction in growth rate in the matrix is that for the 150 birds mortality level.



including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two are included in the in-combination totals (i.e. if the Hornsea 4, DEP and SEP projects are excluded from the in-combination totals).

149. However, due to the issues identified above regarding the proximity of Hornsea 4 to FFC SPA and the implications for displacement effects, and the inevitable uncertainty associated with the figures for Hornsea 4, DEP and SEP being from the PEIRs and hence being subject to change, Natural England therefore is not in a position to advise that an AEol can be ruled out for the razorbill feature of the FFC SPA for in-combination displacement impacts when the Hornsea 4, DEP and SEP projects are included in the in-combination totals.

2.5 Flamborough & Filey Coast (FFC) SPA: Seabird Assemblage – Impacts from EA1N and EA2 In-Combination with Other Plans and Projects: Operational Displacement and Collision

150. Whilst the seabird assemblage feature has not been considered in the update by the Applicants in REP11-027, we have updated our in-combination advice for this feature based on the inclusion of the updated Hornsea 3 impact predictions and the inclusion of the Dudgeon extension (DEP) and Sheringham extension (SEP) projects.

151. The impacts to the assemblage qualifying feature of the FFC SPA should be assessed against the conservation objectives for abundance and diversity of the feature, namely:

- Abundance: to maintain the overall abundance of the assemblage at a level which is above 216,730 individuals whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- Diversity: to maintain the diversity of the assemblage – the total number of species (nine: kittiwake, gannet, guillemot, razorbill, fulmar, puffin, herring gull, shag and cormorant) comprising the seabird assemblage should not reduce over time.



152. Natural England notes that there are a number of ongoing issues with interpreting assemblage features that still need to be resolved. However, using expert judgement Natural England considers that the abundance target of the assemblage will be met, and that the assemblage diversity is not at risk from the in-combination collision and displacement impacts from offshore wind farms. Therefore, Natural England advises **that an adverse effect on integrity (AEol) of the seabird assemblage feature of the FFC SPA can be ruled out for collision and displacement impacts in-combination with other plans and projects when all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two are included in the in-combination totals (i.e. if the Hornsea 4, DEP and SEP projects are excluded from the in-combination totals)**. However, it should be noted that Natural England are looking into assemblages as features in more detail so this advice may be subject to change in the future.

153. **However, due to the inevitable uncertainty associated with the figures for Hornsea 4, DEP and SEP being from the PEIRs and are hence subject to change, Natural England therefore is not in a position to advise that an AEol can be ruled out for the assemblage feature of the FFC SPA for in-combination collision and displacement impacts when the Hornsea 4, DEP and SEP projects are included in the in-combination totals.**

2.6 Alde-Ore Estuary SPA: Lesser Black-Backed Gull – Impacts from EA1N and EA2 In-Combination with other Plans and Projects: Operational Collision Risk

154. We welcome that the in-combination assessments undertaken by the Applicants in APP-043 make reference to the PVA undertaken during the Norfolk Vanguard examination (MacArthur Green 2019¹⁵). However, as highlighted during the Norfolk Boreas examination we had outstanding concerns/queries regarding this PVA during the Vanguard Examination (namely regarding the adjustment of the productivity to take account of the proportion of birds that miss breeding each year; and that we were unable to check the baseline growth rate predicted by the model from the outputs of counterfactuals presented, see our Deadline 8 response

¹⁵ MacArthur Green (2019) Norfolk Vanguard Offshore Wind Farm: Responses to Natural England initial comments on the Alde-Ore Estuary SPA lesser black-backed gull PVA – Offshore Ornithology Cumulative and In-combination Collision Risk Assessment: Appendix 1. Available from: [EN010079-002883-ExA; AS; 10.D7.21A Alde Ore Estuary SPA PVA Responses.pdf \(planninginspectorate.gov.uk\)](#)



to the Vanguard examination¹⁶). However, this nevertheless represents the best available evidence on which to base an assessment, though this should not be taken as an endorsement or ‘acceptance’ of the model outputs.

155. There is no clear evidence to support application of any particular form or magnitude of density dependence in the modelling, therefore Natural England has based our advice on the outputs of the density independent models (as these make no assumptions about the form of strength of any density dependent effects). Therefore, Natural England has focused our conclusions on the PVA outputs from the density independent model for demographic rate set 1 using a matched runs approach.

156. Natural England’s revised calculated in-combination collision totals for Alde-Ore Estuary SPA LBBG (i.e. including the consented predictions for East Anglia 3) is 53 LBBG from the Alde-Ore Estuary SPA per annum for all projects excluding or including Hornsea 4, SEP and DEP (as no LBBGs are apportioned to the Alde-Ore Estuary SPA from the Hornsea 4, and a very small number predicted by the SEP and DEP projects, though these are drawn from the PEIRs and so are subject to change). Both sets of in-combination figures equate to more than 1% of baseline mortality of the colony (see Table A2.13).

Table A2.13 Percentage of baseline mortality for in-combination collision impacts for LBBG for the Alde-Ore Estuary SPA. Baseline mortality calculated using adult only colony size and adult mortality rate (11.5% from Horwill & Robinson 2015). Note no collisions are apportioned to Hornsea 4, DEP and SEP in the in-combination assessment

| LBBG PREDICTED IN-COMBINATION CRM MORTALITY, HRA: ALDE-ORE ESTUARY SPA | | |
|--|----------------------|---|
| | Mortality prediction | % of baseline mortality of Alde-Ore SPA* (2,000 pairs 2007-14, as used by Applicants) |
| In-combination CRM excl. H4, DEP and SEP | 53 | 11.50 |
| In-combination CRM incl. H4, DEP and SEP | 53 | 11.50 |

* 4,000 adults, 1% baseline mortality = 5 birds

¹⁶ Natural England (2019) Norfolk Vanguard Offshore Wind Farm Deadline 8: Natural England's Comments on Norfolk Vanguard Ltd. Deadline 7 and Deadline 7.5 submissions in relation to Offshore Ornithology Related Matters. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010079/EN010079-003121-DL8%20-%20Natural%20England%20-%20Deadline%20Submission.pdf>



157. The Conservation Objective for the LBBG population of the Alde-Ore Estuary SPA is to restore the size of the breeding population to a level which is above 14,074 whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.

158. If the additional mortality from the windfarm is 55 adults per annum (closest PVA outputs available in MacArthur Green (2019) to predicted 53 mortalities for the in-combination total including or excluding Hornsea 4, DEP and SEP) then the population of the Alde-Ore Estuary SPA after 25 years will be 28.3% lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 1.4% (Table A2.14 – note CGRs are only available in MacArthur Green (2019) for 30 years). If it is assumed that the population is stable, then this would mean that the population would be 28.3% lower than the current population size. This would be counter to the restore conservation objective for this feature of the site.

Table A2.14 Predicted population impacts on the LBBG population of the Alde-Ore Estuary SPA for the range of mortality impacts predicted for in-combination with other plans and projects. PVA impact metrics are as provided in MacArthur Green (2019). The shaded cells represent the level of impact closest to the in-combination predictions.

| LBBG – ALDE-ORE ESTUARY SPA | | | |
|-----------------------------|---|---|--|
| Additional mortality | % Baseline Mortality using population size of 4,000 adults (2007-2014), as used by the Applicants | Density Independent Model | |
| | | Counterfactual of Final Population Size (CPS) after 30yrs – see Table 2 of MacArthur Green (2019) | Counterfactual of Growth rate (CGR) after 30yrs – see Table 3 of MacArthur Green (2019)* |
| 55 | 11.96 | 0.717 (0.666-0.774) | 0.986 (0.983-0.990) |

* The Norfolk Vanguard Applicant confirmed that the headings for the median and lower CIs are the wrong way around in MacArthur Green (2019). So, we have presented the figures the correct way around above. Whilst East Anglia One North and East Anglia Two's lifespans are 25 years, data on counterfactuals of growth rate are only available in MacArthur Green (2019) for after 30 years.

159. It is not known what the growth rate of the colony will be over the next 25 years and this should be considered when judging the significance of predicted impacts against the conservation objectives for the feature.

160. As the Alde-Ore LBBG population is at best currently stable and the PVA undertaken for Norfolk Vanguard (MacArthur Green 2019) suggests a baseline growth rate of -2% for the density independent model we have considered these levels of growth rates per annum. We have also considered a range of 1-5% growth rates per annum for if the colony may potentially grow in the future, although at present there seems considerable uncertainty regarding whether this can be achieved.



161. If we assume a -2% per annum growth rate, a stable population or a 1% per annum growth rate then 55 additional mortalities per annum would result in the population declining below its current level and let alone be able to reach the target population of the conservation objective.
162. If we assume a 2% per annum growth rate then 55 additional mortalities per annum would result in the population being approximately 2,000 birds lower than without the additional mortality after 25 years and it would take over an additional 180 years to reach the target population compared to the no windfarm mortality scenario.
163. If the LBBG population were to grow at a rate of 3% per annum over the next 25 years, then additional mortality of 55 per annum would result in the population being approximately 2,000-2,500 birds lower than without the additional mortality after 25 years and it would take over an additional 40 years to reach the target population compared to the no windfarm mortality scenario.
164. There is no evidence to suggest that the future population trend will be significantly different from the current trend, which is most likely to be stable, in which case there is a risk that the population could decline due to predicted mortality levels. Furthermore, given that the population is likely to be hindered from restoration to target levels even when more optimistic assumptions about the population trend of the colony are made, Natural England also considers that it is not possible to rule out AEol even if the population starts to show modest growth.
165. **Therefore, as this feature has a restore conservation objective, and because there are indications that the population might even decline from current levels, Natural England advises that it is not possible to rule out an adverse effect on integrity (AEol) of the LBBG feature of the Alde-Ore Estuary SPA for from in-combination collision impacts with other plans and projects, for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two, irrespective of whether Hornsea 4, DEP and SEP are included in the totals or not.**

Appendix C

Comparison of HVAC & HVDC onshore infrastructure

The following table is submitted in partial response to Examination Question PDS.1.1.

Comparison of HVAC & HVDC onshore infrastructure.

| Parameter | From Project description | Split between HVAC and HVDC | |
|--|---|---|---|
| | Maximum design parameters | HVAC | HVDC |
| HVAC - number of cable circuits | 6 | 6 | |
| HVAC - number of cables | 18 | 18 (6 trenches) | |
| HVDC – number of circuits | 4 | | 4 |
| HVDC – number of cables | 8 | | 8 (4 trenches) |
| HVDC cable - Voltage (kV) | 600 | | 600 |
| HVDC cable – Current using 300kV cable (kA) | 2.59 | | 2.59 |
| HVAC cable – Voltage (kV) | 400 | 400 | |
| HVAC cable – current using 220kV cable (kA) | 1.62 | 1.62 | |
| Corridor width: temporary and permanent (m) * | 80 | 80 | 60 |
| Corridor area – permanent (m ²) | 2,340,000 | 2,340,000 | 1,560,000 |
| Corridor area – temporary and permanent (m ²) | 3,120,000 | 3,120,000 | 2,340,000 |
| Permanent area of site for all infrastructure, including landscaping and attenuation (m ²) | 164,000 (including 34,000 and 4,000) | 164,000 (including 34,000 and 4,000) | 164,000 (including 34,000 and 4,000) |
| Temporary works area (m ²) | 130,000 | 130,000 | 130,000 |
| Maximum main building height (m) | 25 | 25 | 25 |
| Height of fire walls (m) | 25 | 25 | 25 |
| Main building - lightning protection and gantry, height (m) | 30 | 30 | 30 |
| Viewing platform height [for construction] (m) | 30 | 30 | 30 |
| Duration of construction (months) | 43 | 43 | 43 |

| Parameter | From Project description | Split between HVAC and HVDC | |
|--|--|--|--|
| | Maximum design parameters | HVAC | HVDC |
| Maximum number of main buildings | 2 | 2 | 2 |
| Maximum length of main building (m) (if single building / if multiple buildings) * | 240 / if multiple buildings then proportionately smaller | 240 / if multiple buildings then proportionately smaller | 240 / if multiple buildings then proportionately smaller |
| Maximum width of main building (m) (if single building / if multiple buildings) * | 80 / if multiple buildings then proportionately smaller | 80 / if multiple buildings then proportionately smaller | 80 / if multiple buildings then proportionately smaller |
| Maximum number of secondary buildings | 15 | 15 | 9 |
| Maximum height of secondary buildings (m) | 15 | 15 | 15 |
| Maximum area of secondary buildings (m ²) | 7,000 | 7,000 | 7,000 |
| Maximum number of HV equipment clusters and components | 45 | 45 | 9 |
| Maximum height of HV equipment clusters and components (m) (can be either open or closed design) | 15 | 15 | 15 |

* The length of multiple buildings would not be longer than 120m