THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms

# Relevant Representations of Natural England

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference: EN010109

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14 November 2022

**Contents**

**NATURAL ENGLAND'S RELEVANT REPRESENTATIONS IN RESPECT OF SHERINGHAM SHOAL EXTENSION AND DUDGEON EXTENSION OFFSHORE WIND FARMS**

Planning Inspectorate Reference: EN0100109

## 1. Legislative and Policy Framework

1.1. Natural England is a non-departmental public body established under the Natural Environment and Rural Communities Act 2006 ("NERC Act"). Natural England is the statutory advisor to Government on nature conservation in England and promotes the conservation of England's wildlife and natural features.[1] Natural England's remit extends to the territorial sea adjacent to England, up to the 12 nautical mile limit from the coastline.[2]

1.2. Natural England is a statutory consultee:

- in respect of environmental information submitted pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regs');[3]

- in respect of plans or projects that are subject to the requirements of the Conservation of Habitats and Species Regulations 2017 as amended (the "Habitats Regulations") which are likely to have a significant effect on European protected sites – that is, sites designated as Special Areas of Conservation ("SACs") and Special Protection Areas ("SPAs") for the purposes of the EU Habitats and Birds Directives;[4]

- in respect of proposals which may hinder the achievement of the conservation objectives of Marine Conservation Zones ("MCZs") which have been designated under the Marine and Coastal Access Act 2009[5];

- in respect of proposals likely to damage any of the flora, fauna or geological or physiological features for which a Site of Special Scientific Interest ("SSSI") has been notified pursuant to the Wildlife and Countryside Act 1981 (the "1981 Act");[6] and

- in respect of all applications for consent for Nationally Significant Infrastructure Projects which are likely to affect land in England.[7]

1.3. Pursuant to The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the "2017 Regulations"). Under Regulation 28(4) (a) of the 2017 Regulations, where the assessment relates to a European offshore marine site, the competent authority must consult the JNCC (Joint Nature Conservation Committee). Where the assessment relates to a European site (including a European marine site), then the competent authority must consult Natural England, in accordance with regulation 28(4) (b) of the 2017 Regulations.

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[1] NERC Act ss. 1(2), (2) and 4

[2] NERC Act, s.1(3)

[3] Regs. 3(1), 10(6), 9(1), 11(1), 20(3)(g), 22(3)(f), 24(5)(f) of the EIA Regs

[4] Regulation 61 of the Habitats Regulations

[5] Regulation 127 of the Marine and Coastal Access Act

[6] Section 281 of the 1981 Act

[7] Planning Act s.42; Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, reg. 3 and sch. 1.

1.4. It is also the Government's policy to consult Natural England in respect of sites listed for the purposes of the Convention on Wetlands of International Importance especially as Waterfowl Habitat signed at Ramsar on 2nd January 1971 ("Ramsar sites") as if they were European protected sites.[8]

1.5. The Examining Authority should note that pursuant to an authorisation made on the 9th December 2013 by the JNCC under paragraph 17(c) of Schedule 4 to the Natural Environment and Rural Communities Act 2006, Natural England is authorised to exercise the JNCC's functions as a statutory consultee in respect of applications for offshore renewable energy installations in offshore waters (0-200nm) adjacent to England. This application was included in that authorisation and, therefore, Natural England will be providing statutory advice in respect of that delegated authority. However, JNCC retains responsibility as the statutory advisors for European offshore marine sites that are located outside the territorial sea and UK internal waters (i.e. more than 12nm offshore) and continues to provide Natural England advice on the significance of any potential impacts on interest features of those sites.

1.6. In determining this application, the Secretary of State will be acting as the competent authority for the purposes of the Habitats Regulations and the 2017 Regulations. The Secretary of State is also a section 28G authority with specific duties under the 1981 Wildlife and Countryside Act in respect of SSSI.

1.7. Further detail on the legislative and policy framework through which Natural England provide advice on proposed plans or projects is included within Appendix J.

## 2. Relevant Representation and Written Representations

2.1 Natural England's advice in these representations is based on information submitted by Equinor (the Applicant), in support of its application for a Development Consent Order (DCO) in relation to the Sheringham Shoal Extension Project (SEP) and Dudgeon Extension Project (DEP) Offshore Wind Farms. SEP and DEP refer to the construction and operation of two offshore wind farms comprising up to 53 offshore turbines in total. The export cable makes landfall at Weybourne on the north Norfolk Coast and the grid connection is at Norwich main substation.

2.2 In the interests of issue resolution Natural England has combined Relevant Representation and Written Representations within this response. This is to provide the detail on all issues as early as possible to allow more time for discussion and resolution.

2.3 These representations contain a summary of what Natural England considers to be the main nature conservation, landscape and related issues with regards the Development Consent Order (DCO) application, as well as the Deemed Marine Licences (DML) contained therein and indicate the principal submissions that it wishes to make at this point. If required and appropriate Natural England will develop these points through further Written Representations or in response to Examiner's questions.

2.4 Owing to the relatively short consultation period to review the Applicant's submission documents, coupled with the complexity of the project development scenarios, Natural England may wish to

[8] National Planning Policy Framework (July 2018), para 176; PINS Advice Note 10: Habitats Regulation Assessment for nationally significant infrastructure projects, p.3.

revise our advice or add additional points. This may also arise if further information about the project becomes available. Therefore, we reserve the right to bring such matters to the Examining Authority's attention.

2.5 Natural England has been working closely with the Applicant to provide advice and guidance on SEP and DEP OWF since 2019. Natural England has also been working with the Marine Management Organisation, and the Centre for the Environment, Fisheries and Aquaculture Science to provide coordinated advice in relation to each of our remits. Following the Planning Inspectorate's acceptance of the application on 03 October 2022, Natural England has agreed to attend meetings with the developer with a view to progressing Statements of Common Ground as part of the Examination process and to try and resolve outstanding issues with respect to offshore ornithology and derogation proposals ahead of the examination.

2.6 Natural England advises that the matters set out in Sections 3 to 6, and the Appendices, will require consideration by the Examining Authority as part of the Examination process unless progress can be made before the Examination commences. The Examining Authority may therefore wish to ensure that the matters set out in these representations are addressed as part of their first set of questions to ensure the provision of additional information early in the Examination process.

2.7 Please note that at Deadline 1 Natural England will submit a Risk and Issues log which will incorporate the comments we have made in this representation and track their resolution throughout the examination process. It is anticipated that this will continue to be submitted alongside our submissions during examination and will reflect any progress in issue resolution following the Relevant Representations.

**Structure of Representations**

2.8 These representations provide an overview of Natural England's advice. They are set out as below:

- **Section 3** identifies the designated sites and natural features for which there may be impact pathways for this application.
- **Section 4** summarises Natural England's overall view of the application.
- **Section 5** sets out the key environmental concerns which Natural England would like the Examining Authority (and ultimately the Secretary of State) to consider
- **Section 6** highlights overarching comments on the application which we like the Examining Authority to note.

2.9 Natural England's detailed responses, constituting Natural England's Written Representations, where more detailed explanation of issues has been considered relevant, may be found in the following Appendices:

- Appendix A Development Consent Order, Deemed Marine Licence
- Appendix B - Offshore Ornithology
- Appendix B1 – Natural England's Updated CRM Final Summary External
- Appendix B2 – Natural England's Advice on Seabird HPAI Impact Assessment
- Appendix C - Derogations Case
- Appendix D - Marine Mammals
- Appendix D1 - NE Updated SACO for The Wash and North Norfolk SAC Harbour Seals Final Draft - Nov 22
- Appendix E - Marine Geology, Oceanography and Physical Processes
- Appendix F - All Other Marine Matters
- Appendix G - Cromer Shoal MCZ
- Appendix H - Seascape, Landscape and Visual Effects
- Appendix I - Onshore Ecology
- Appendix J - Legislative and Policy Framework

2.10 Please note there will be an additional submission to Appendix A at Deadline 1 in relation to Natural England's advice to the purpose of In-Principle Monitoring Plans (IPMP). This will include our advice as to how the purpose of monitoring is conditioned within the DCO to ensure that the monitoring is relevant to the issues raised and that adaptive management is secured should post-construction monitoring identify impacts that are significantly beyond those predicted in the Application.

2.11 Of further note, as there are limited comments to the landscape visualisation impact assessment chapter, these are included within Appendix H Seascape, Landscape and Visual Effects

2.12 Throughout our advice, Natural England will be using colour coding to denote the level of potential risk or significance of impact associated with our comments. Full details of this are provided in Table 2.1 below.

2.13 Within this Section 5 of these Relevant and Written Representations we have assigned a broad risk rating to each topic heading to indicate the level of our concerns overall and have provided a summary of our key areas of concern. Within each of the Appendices to this letter we have provided a summary of those concerns, and a table of detailed comments where we have used the colour coding to give an indication of the level of risk associated with each of the points we raise.

2.14 Natural England are keen to continuously improve our input into Examinations and would therefore welcome any feedback on our approach.

**Table 2.1 Natural England's risk rating with colour coding**

| | |
|---|---|
| **Purple**<br>Note for Examiners and/or competent authority. May relate to DCO/DML | |
| **Red**<br>Natural England considers that unless these issues are resolved it will have to advise that (in relation to any one of them, and as appropriate) it is not possible to ascertain beyond reasonable scientific doubt that the project will not affect the integrity of an SAC/SPA and/or significantly hinder the conservation objectives of an MCZ and/or damage or destroy the interest features of a SSSI and/or comply fully with the Environmental Impact Assessment requirements.<br>Addressing these concerns may require the following:<br>• new baseline or survey data; and/or<br>• significant revisions to baseline characterisation and/or impact modelling and/or<br>• significant design changes; and/or<br>• significant mitigation<br>Natural England feels that issues given Red status are so complex, or require the provision of so much outstanding information, that they are unlikely to be resolved during the Examination, and respectfully suggests that they be addressed beforehand. | |
| **Amber**<br>Natural England does not agree with the applicant's position or approach and consider that this could make a material difference to the outcome of the decision-making process for this project.<br>Natural England considers that these matters may be resolved through:<br>• provision of additional evidence or justification to support conclusions; and/or<br>• revisions to impact assessment methodology and/or assessment conclusions; and/or<br>• minor to moderate revisions to impact modelling; and/or<br>• well-designed mitigation measures that are adequately secured through the draft DCO/dML and/or<br>• amendments to draft plans<br><br>If these issues are not addressed or resolved by the end of the Examination, then they may become a Red risk as set out above. | |
| **Yellow**<br>Natural England doesn't agree with the Applicant's position or approach. We would ideally like this to be addressed but are satisfied that for this particular project it is unlikely to make a material difference to our advice or the outcome of the decision-making process. However, we reserve the right to revise our opinion should further evidence be presented.<br><br>It should be noted by interested parties that just because these issues/comments are not raised as significant concerns in this instance, it should not be understood or inferred that Natural England would be of the same view in other cases or circumstances. | |
| **Green**<br>Natural England is in broad agreement with the Applicant's approach and has no significant outstanding concerns.<br><br>As above, we reserve the right to revise our opinion should new evidence be presented. | |

## 3. Designated Sites and Species Potentially Affected by this Application

3.1. The designated sites and interest features included within Tables 3.1 and 3.2 are those which may be affected by the proposed SEP and DEP project based on the information provided to date. It should be noted that this list may change if new evidence emerges during the examination. Links have been provided to the citation or conservation objectives of designated sites. We have provided links, as these are large and live documents which are updated on a regular basis to incorporate the most up to date evidence. To avoid potentially out of date or inaccurate documents being referred to during the Examination we recommend that the links are utilised. If the Examining Authority would also like hard copies of the documents please let us know at the earliest opportunity.

**Table 3.1 European Sites**

| Site Name | Citation | Features for which Outstanding Concerns Remain |
|---|---|---|
| River Wensum SAC | River Wensum SAC - UK0012647 - | Watercourses of plain to montane levels with *Ranunculus fluitantis*<br>Desmoulin's whorl snail |
| Southern North Sea SAC | Southern North Sea SAC - UK0030395 | Harbour porpoise (*Phocoena phocoena*) |
| The Wash and North Norfolk Coast SAC | The Wash and North Norfolk Coast SAC – UK0017075 | Sandbanks which are slightly covered by sea water all the time<br><br>Harbour Seal (*Phoca vitulina*) |
| Inner Dowsing, Race Bank and North Ridge SAC | Inner Dowsing, Race Bank and North Ridge SAC - UK0030370 | Sandbanks which are slightly covered by sea water all the time |
| Humber Estuary SAC | Humber Estuary SAC – UK0030170 | Grey Seal (*Halichoerus grypus*) |
| Greater Wash SPA | Greater Wash SPA – UK9020329 | Sandwich tern (*Thalasseus sandvicensis*), breeding<br>Red-throated diver (*Gavia stellata*), non-breeding<br>Little gull (*Larus minutus*), non breeding |
| North Norfolk Coast SPA | North Norfolk Coast SPA - UK9009031 | Sandwich tern (*Thalasseus sandvicensis*), breeding<br>Pink-footed goose (*Anser brachyrhynchus*), nonbreeding |

| Site Name | Citation | Features for which Outstanding Concerns Remain |
|---|---|---|
| North Norfolk Coast Ramsar | North Norfolk Coast Ramsar - UK11048 | Pink-footed goose (*Anser brachyrhynchus*), nonbreeding |
| Outer Thames Estuary SPA | Outer Thames Estuary SPA - UK9020309 | Red-throated diver, non-breeding |
| Flamborough and Filey Coast SPA | Flamborough and Filey Coast SPA - UK9006101 | Gannet (*Morus bassanus*)<br>Kittiwake (*Rissa tridactyla*)<br>Guillemot (*Uria aalge*)<br>Razorbill (*Alca torda*)<br>Seabird assemblage |
| Alde-Ore Estuary SPA | Alde-Ore Estuary SPA - UK9009112 | Lesser black-backed gull (*Larus fuscus*) |
| Alde-Ore Ramsar | Alde-Ore Estuary Ramsar - UK11002 | Lesser black-backed gull (*Larus fuscus*) |

**Table 3.2 National Sites**

| Site Name | Site Detail | Features for which outstanding concerns remain |
|---|---|---|
| Cromer Shoal Chalk Beds MCZ | Cromer Shoal Chalk Beds MCZ - UKMCZ0031 | Peat and clay exposures<br>Subtidal chalk<br>Subtidal coarse sediment<br>Subtidal mixed sediments<br>Subtidal sand |
| Alde-Ore Estuary SSSI | Alde-Ore Estuary SSSI - 1003208 | As per SPA above |
| Flamborough Head SSSI | Flamborough Head SSSI - 1002289 | As per SPA above |
| North Norfolk Coast SSSI | North Norfolk Coast SSSI - 1001342 | As per SPA above |

3.2. **Protected Species** - An application for a European Protected Species and/or wildlife licence may be required if the application will have impacts on the following species:

- Harbour Porpoise
- Great Crested Newt (GCN)
- Bats
- Badger
- Water Vole

Both SEP and DEP have been approved by Natural England to use District Level Licence (DLL) prior to construction to ensure compliance with the legal status of GCN and mitigate for potential impacts on this species. A provisional DLL certificate for GCN was provided by Natural England 15 August 2022.

In addition, draft Letters of No Impediment for badger and bats were issued to the Applicant in July 2022. on the basis of the information and proposals provided, Natural England sees no impediment to a licence being issued, should the DCO be granted.

Should the DCO be granted, Natural England advises the Applicant progresses with a licence application at the earliest opportunity. For reference, Natural England has adopted standing advice for protected species which includes links to guidance on survey and mitigation.

3.3. Competent Authorities must have regard for the Habitats Regulations, the 1981 Act, Section 40 of the Natural Environmental and Rural Communities (NERC) Act 2006, and the Marine and Coastal Access Act 2009 when discharging any of their functions, including the granting of a DCO/DML and the discharge of associated conditions and plans. The advice provided in this letter is based on the information currently available in support of this application and may be updated on the basis of additional information such as pre-construction surveys.

## 4. The Overall Position of Natural England

4.1. In relation to SPAs and SACs, the assessment provisions of the Conservation of Habitats and Species Regulations 2017 (and the Offshore Habitat Regulations as amended) require that a Competent Authority may only agree to a plan or project of this nature after having ascertained, on the basis of an appropriate assessment, that it will not affect the integrity of the site(s). By this it is meant that such a plan or project may be granted authorisation only on the condition that the competent authority is certain, beyond reasonable scientific doubt, that it will not adversely affect the integrity of the site(s) concerned[9]. On the basis of the information submitted, Natural England is not satisfied that it can be excluded beyond reasonable scientific doubt that the project would have an adverse effect alone or in-combination on the integrity of the:

- Inner Dowsing, Race Bank and North Ridge SAC
- Southern North Sea SAC
- The Wash and North Norfolk Coast SAC

[9] CJEU Case no. C-127/02. *Landelijke Vereniging tot Behoud van de Waddenzee & Nederlandse Vereniging tot Bescherming van Vogels –v- Staatssecretaris van andbouw, Natuurbeheer en Visserij [2004].*

- Flamborough and Filey Coast SPA
- Greater Wash SPA
- North Norfolk Coast SPA and Ramsar site
- Alde-Ore Estuary SPA and Ramsar site
- Outer Thames Estuary SPA

4.2. In relation to MCZs, the provisions of the Marine and Coastal Access Act 2009 require that the decision-making authority be satisfied that there is no significant risk of hindering the achievement of the conservation objectives of an MCZ. On the basis of the information submitted Natural England has concerns about the following site:

- Cromer Shoal Chalk Beds MCZ

4.3. In relation to SSSIs, the provisions of the 1981 Act require that the statutory undertaker take account of Natural England's advice when determining whether or not to permit an activity and/or whether to attach conditions to that permission. On the basis of the information provided, Natural England is concerned that the protected features of the following SSSIs may be damaged or destroyed:

- North Norfolk Coast SSSI
- Flamborough Head SSSI
- Alde-Ore Estuary SSSI

## 5. Summary of Key Environmental Concerns

Please note: These Summaries should be read in conjunction with their associated Appendix.

**Offshore Ornithology**

Collision Risk Modelling (CRM) Parameters

5.1. Updated CRM parameters including updated avoidance rates are shortly to be published in a SNCB guidance note produced by the University of Exeter. A draft interim copy is provided in Appendix B1. Natural England assures the Applicant that if they choose to submit revised mortality estimates using the new parameters then we will base our position on these. As a minimum we advise revised figures are presented for Sandwich Tern, Gannet, Kittiwake, Great black-backed gull, Lesser black-backed gull and Little gull.

Natural England's Position

5.2 As part of our ongoing engagement with OWF NSIP Examinations, Natural England has identified potential risks of significant impacts on seabird populations at the EIA or HRA scales as follows:

5.3. **Natural England has identified significant adverse impacts at the EIA scale to gannet, kittiwake, great black-backed gull, guillemot, razorbill and red-throated diver irrespective of whether SEP & DEP are included in the cumulative totals.** SEP & DEP will be making an

additional contribution to those totals.

5.4. **At the end of the Hornsea 4 Examination Natural England could not rule out adverse effects on the integrity of the kittiwake, guillemot, razorbill and seabird features of FFC SPA, irrespective of whether SEP & DEP were included in the in-combination totals. We have also previously advised in-combination adverse effects cannot be ruled out for sandwich tern at North Norfolk Coast SPA.** Again, SEP & DEP will make contributions to the in-combination impacts.

5.5. **Providing there are no further significant changes to the collision and displacement figures provided for SEP and DEP, Natural England is likely to reach a conclusion of no AEOI for FFC SPA gannet when considering the in-combination impact including SEP and DEP**. Hence the Applicant is unlikely to require compensation for this species/SPA.

5.6. **We have also previously advised that adverse effects cannot be ruled out for lesser black-backed gull at Alde-Ore Estuary SPA and red-throated diver at Outer Thames Estuary SPA. We also have concerns about adverse effects on the Greater Wash SPA for red-throated diver.** We highlight that the potential for SEP and DEP to make contributions to the in-combination impact is as yet unclear.

BDMPS Apportioning in the Breeding Season

5.7. Within the Report to Inform the Appropriate Assessment (RIAA), there are a number of qualifying features assessed that are within the mean max foraging range (as presented in Woodward *et al* 2018) of the project sites (e.g. puffin at FFC SPA and lesser black-backed gull at Alde Ore SPA) and others that are within the mean max plus one SD (e.g. razorbill and guillemot at FFC SPA) yet have not had any impact apportioned to them in the breeding season.

5.8. In the case of guillemot and razorbill, Natural England accepts that on balance it is reasonable to exclude the extreme Fair Isle values in the mean max foraging ranges, nonetheless, razorbill is still within mean max plus 1 SD. It is not sufficient to demonstrate that SEP and DEP are outside core utilisation areas, as this does not wholly preclude the use of the area by breeding adults. While being outside a modelled utilisation area may suggest that a large proportion of say razorbill from FFC SPA are not using SEP and DEP, it does not preclude the situation that a proportion of birds at SEP and DEP are breeding adults from the colony in question. Natural England recommends that some level of apportioning is presented for qualifying features within mean max and mean max plus one SD.

Red-throated Diver Disturbance/Displacement Impacts

5.9. Natural England is increasingly becoming concerned in relation to disturbance and/or displacement of red-throated divers from the more persistent presence of infrastructure-related vessels making transits through diver SPA (e.g. due to OWF O&M requirements) and consider that these could make a meaningful contribution to in-combination effects on the SPAs. Further investigation of all potential vessel movements within the Greater Wash SPA (and Outer Thames Estuary SPA) is needed, and the mitigation hierarchy applied. Permanent displacement effects arising from the presence of the SEP array also need consideration.

5.10. Regarding array displacement, Natural England have recently developed a more refined displacement gradient for red-throated diver and this is presented in Appendix B. This provides a more evidence-based approach to calculating displacement gradients. The use of this displacement gradient is not agreed with the other SNCBs and is not supplied as definitive advice. Natural England is happy to discuss the gradient further, including consideration of modifications or alternative approaches.

### Mitigation Hierarchy

5.12. Natural England wishes to highlight that as noted in the recent draft Defra guidance on compensation within MPAs, when developers are considering an activity / development they should make every effort to work through the 'avoid, reduce, mitigate' hierarchy in a sequential manner, exhausting the possibilities of one level before proceeding to consider the next.

5.13. In the case of SEP and DEP, some mitigation actions have been taken and others explored. However, the assessment has also presented scenarios for DEP that involve placing all turbines in DEP N (as opposed to turbines in both DEP N and DEP S), this scenario is somewhat at odds with the mitigation hierarchy.

5.14 Natural England recommends this scenario is not progressed into any DCO that might be granted, as it departs from the mitigation hierarchy, would increase the project's impacts on key SPA features of concern and raise the demands on the proposed compensatory measures, the performance of which is inevitably uncertain. We also observe that should further mitigation be sought as part of the Examination's consideration of alternative project configurations, DEP N would appear to offer greater opportunities to reduce impacts on kittiwake and sandwich tern through reducing the number of turbines in this part of the site.

## Offshore Ornithology Compensation

### Sandwich Tern

5.15. The principal measure to compensate for impacts on North Norfolk Coast SPA/Greater Wash SPA sandwich tern has significant potential to deliver benefits to this species. However, the proposals for habitat restoration at Loch Ryan are not sufficiently ambitious and currently lack the required detail on location, scale, design, water supply and security of delivery, such as landowner agreement. Natural England does not support the use of a pontoon as opposed to a lagoon and islands. We do not consider the proposed interventions at Farne Islands SPA provide meaningful compensation.

### Kittiwake

5.16. The proposals for compensatory measures to address in-combination impacts on FFC SPA kittiwake are not without merit, however the provision of Artificial Nesting Structures (ANS) as currently proposed are likely to be of limited value in light of existing compensation commitments. The proposal therefore requires significant further development before it can be considered effective compensation. Natural England recommends that the Applicant explores the potential for a 'rapid response' approach to dealing with negative urban interactions with

local kittiwake partnerships as a potential avenue for compensation, and/or prioritises collaboration on an offshore ANS with other developers and brings forward a specific proposal regarding this.

Guillemot and Razorbill

5.17. The proposals for compensatory measures to address in-combination impacts on FFC SPA guillemot and razorbill through bycatch reduction and predator management are relatively undeveloped. The proposals lack the required detail on location, scale, technical feasibility and long-term implementation. Crucially, there is no clear evidence that bycatch or predation impacts at an identified site are occurring to a degree that offers opportunities for compensatory measures.

**Marine Mammals**

5.18 There remain significant uncertainties regarding the effects of construction noise on marine mammals, namely seals with respect to disturbance and impacts on prey availability. These uncertainties should be addressed and we have outlined the gaps in the assessment in more detail within Appendix D. Specifically the estimations of temporary disturbance when considered at various population scales exceed the Applicants own thresholds of significant effect both in terms or EIA and HRA. For example, significant proportions of the harbour porpoise Management Unit (MU) or the Humber Estuary SAC grey seal population have the potential to be disturbed. Natural England feel the impacts to marine mammals, namely seals is potentially underestimated, and the effects could be significant. This is concerning as the mitigation measures proposed in the MMMP and SIP would contribute little to reducing these impacts as these measures are specifically designed to maintain the Southern North Sea SAC harbour porpoise disturbance thresholds or prevent injury, they are not intended to alleviate disturbance to seals or address issues of disturbance to the wider harbour porpoise population. If significant impacts to marine mammals cannot be disproved then the further mitigation measures such as those which reduce noise levels should be considered.

5.19. The vessel code of conduct is a key mitigation measure designed to protect marine mammals at important sites. This code of conduct should be a standalone statement and should be conditioned as to protect marine mammals throughout the various stages of the development.

5.20. The monitoring plan should have specific objectives to monitor the impacts on seals due to the potentially significant effects.

**Marine and Coastal Processes**

5.21. Natural England advises that further information should be provided in relation to sandbanks/waves, sediment deposition, sediment transport, and suspended sediments; with particular consideration of impacts to marine protected areas. Until this is provided Natural England remains concerned that potential significant impacts may occur as a result of the proposed activities. We advise any response from the Applicant should be in the form of updated track changed documents rather than a tabulated response to our comments.

## Water and Sediment Quality, Benthic and Intertidal Ecology and Fish and Shellfish Ecology

5.22. Natural England advises that further clarification/information on the assessments undertaken is required to ensure that the significance of the impacts have been appropriately assessed and taken account of in any HRA/MCZ assessment. We advise that any response from the Applicant should be in the form of updated track changed documents rather than a tabulated response to our comments

## Cromer Shoal Chalk Beds MCZ

5.23. Whilst we acknowledge that the predicted impact from SEP and DEP combined poses a lower risk to the site features than Hornsea Project Three; Natural England doesn't agree with the Applicant's conclusion that there will be no significant risk of the activity hindering the achievement of the conservation objectives for Cromer Shoal MCZ.

5.24. Of particular concern is the area of mixed sediment within the cable corridor, which has a more diverse community. Should cable protection be placed in this location then the conservation objectives to restore/maintain features will not be achieved.

5.25. In-combination/cumulative assessment: Whilst the Marine and Coastal Access Act (2009) does not provide any legislative requirement for explicit consideration of in-combination or cumulative impact assessment to be undertaken when assessing the impacts of licensable activities upon an MCZ; we agree with the MMO in considering that in order to fully discharge regulatory duties under section 69 (1) of the MCAA, in combination and cumulative effects must be considered.

5.26. Natural England notes that Cromer Shoal MCZ assessments undertaken by previous competent authorities concluded, significant adverse impact on the designated features of the MCZ from the placement of cable/pipeline protection could be ruled out. However, Natural England advises that as with cable/pipeline protection within SACs the lasting habitat change/loss over the lifetime of the projects and beyond is hindering the conservation objectives of the site and is in the process of updating our condition assessment for Cromer Shoal MCZ accordingly. Thereby, Natural England considers the O&M phase activities for DEP (and or) SEP combined with DOW, SOW, Hornsea Project Three and on-going Oil and Gas impacts will result in lasting habitat change / physical disturbance which will further hinder the conservation objectives of the CSCB MCZ.

5.27. The risk of, and observed, reduction in designated habitat extent which has occurred and/or is predicted to arise from the above developments has meant that the MCZ is highly likely to be taken further away from its required conservation state in the future. Unless these unanticipated significant impacts on the MCZ are addressed, Natural England advises that the overall coherence of the national site network as designated is at risk from a lasting habitat change/loss over the lifetime of the consented/built projects.

5.28. This is important context for future licensing and condition discharge decisions, as it substantially increases the risk that subsequent licence applications (including this Application) could result in further significant impacts on the MCZ.

5.29. Natural England advises that further clarification and/or information is required to ensure that the significance of the impacts have been appropriately assessed and taken account off to inform the MCZ assessment. We advise that any response from the Applicant should be in the form of updated track changed documents rather than a tabulated response to our comments.

## Onshore Ecology

5.30. Natural England is broadly satisfied that the Environmental Statement adequately assesses the impact on onshore ecology of the three broad development scenarios for the cable route construction and that this assessment encompasses the worst case scenario.

5.31. Further clarity is required on some details of the assessment data collection methodology, baseline characterisation and mitigation measures. In addition, further clarity and commitment is required on the level and range of pre-construction surveys that will be carried out and how these will inform future mitigation decisions and undecided crossing point methods. Natural England require the Outline Ecological Management Plan and the Outline Landscape Management Plan to be combined into one document (Outline Landscape and Ecological Management plan (OLEMS)) prior to Deadline 1.

5.32. With respect to the onshore elements of the Habitats Regulations Assessment, further clarity is required as to why the decision was taken to screen out three of the qualifying features of the River Wensum SAC between the initial screening assessment and the subsequent screening matrices and appropriate assessment given that a potential impact pathway exists. However, clarification of this matter is unlikely to affect the final outcome conclusion of the HRA (no adverse effect on integrity of the River Wensum SAC) as appropriate mitigation is proposed.

5.33 We would advise that any response from the Applicant should be in the form of updated track changed documents rather than a tabulated response to our comments.

## Seascape and Landscape Visualisation Effects

### Seascape Visualisation Assessment

5.34. With regards to Seascape and Landscape Visualisation Effects, Natural England concludes that:

- The turbines of SEP in particular are too big and too close to the coastline of the Norfolk Coast Area of Outstanding Natural Beauty (NCAONB).

- The presence of SEP and DEP in the seascape setting of the NCAONB will further comprise the statutory purpose of the NCAONB.

- The key test is the acceptability of further significant adverse harm to the statutory purpose of the NCAONB, a designation already compromised by the existing OWFs.

5.35. As set in the ES the turbines of the SEP Worst Case Scenario 2 are too big and located too close to the coastline of the NCANOB. Their presence in the seascape setting of the NCAONB will further degrade the quality of views out to sea. Their sheer size combined with the marked contrast in height with the existing arrays will be visually incoherent and simply clutter-up the seascape. This will lead to a further loss of natural beauty for which this landscape was designated. It will increase the industrialisation of the seascape setting of the NCAONB leading to further loss of the sense of wildness and tranquillity which is still, despite the presence of the Sheringham Shoal array, a special quality of this remote coastline'.

5.36. Despite being located further offshore and so 'behind' the Sheringham Shoal array, those turbines of the DEP Worst Case Scenario 2 which are located in the southern portion of the DEP development area will also result in significant adverse effects on the natural beauty of the NCAONB. Here the apparent height of the turbines is the prime cause of significant adverse effects. Although the geographical extent of these effects covers a smaller area that those of the SEP scheme, they will nevertheless be transformative for those portions of the coastline effected.

5.37. We draw the examiners attention to our experience from recent Offshore windfarm NSIP examinations, namely East Anglia ONE North and East Anglia TWO, and highlight that due to professional judgements it is unlikely that agreement between Natural England and the Applicant on the significance of the impacts will be reached during the examination process, thereby we are likely to 'agree to differ' in our views.

Landscape Visualisation Assessment

5.38. Natural England agrees with the Applicant that direct adverse effects will occur on the Norfolk Coast Area of Outstanding Natural Beauty (NCAONB) during the construction phase of the onshore cables works and that during the operational phase no landscape effects will occur.

5.39. However, to achieve this a vital mitigation measure during the construction phase, should both projects be approved, is for the onshore cabling to be installed for both simultaneously and not sequentially. If sequential is progressed then the first project must install the infrastructure for both projects as agreed for the recently consented East Anglia ONE North and East Anglia TWO OWFs, which cable through the Suffolk Coast and Heaths AONB. The former will restrict construction phase impacts to the short term, but the latter would produce medium term impacts on the AONB. The importance of the AONB (a nationally designated landscape with the highest level of planning policy protection) justifies the most effective mitigation being applied i.e. both onshore cabling stages to be completed together and the landscape fully restored as soon as possible.

5.40. Natural England advises that close attention is made to the advice of the NCAONB Partnership and relevant local authorities.

## 6. Summary of Overarching Comments on the Application

### Project Scenarios

6.1. Natural England welcomes the Applicant's preference to develop SEP and DEP with an Integrated transmission system via one offshore substation platform. Further, we continue to advise that simultaneous installation of the cable infrastructure for both the SEP and DEP projects when the first of the two proceeds will significantly lessen any ecological impacts (both offshore and onshore) where the route and/or infrastructure is shared.

6.2. If this is not possible, we advise that when the first project proceeds the cable ducts for the second project are installed at the same time to avoid unnecessary direct and indirect impacts for habitats and species. This will significantly reduce the construction time and significantly reduce ecological and visual impacts for these projects.

6.3. Onshore, the three scenarios considered for cable route construction are: build SEP and DEP in Isolation, Sequentially or Concurrently. Each scenario has different parameters and impacts. As the duration of the work is unknown at this stage, Natural England advises the impacts cannot be fully assessed and potentially mitigation may not be possible/able to be secured.

6.4. Natural England notes a key offshore design decision for DEP is whether to use all of the DEP North and DEP South array areas, or whether to use the DEP North array area only. We highlight our concerns if only the DEP N scenario were progressed above with respect to key SPA features of concern in particular sandwich tern and kittiwake.

### Environmental Impact Assessment Methodology

6.5. EIA Matrices. Natural England notes that the approach to the Environmental Impact Assessment (EIA) is proposed to align with other OWF NSIPs. This matrix approach has been used throughout Environmental Statement's to date to support the assessment of the magnitude and significance of impacts. Natural England notes numerous instances where significance has been presented as a range (i.e., slight, or moderate, or large) and it is nearly always the lower value that has been taken forward. Indeed, to date no offshore windfarm has identified ecological impacts that are assessed as significant in EIA terms, either cumulatively or in-combination which is surprising. In the absence of evidence to support the use of the lower value in a range, Natural England's view is that the higher value should always be assessed in order to ensure that impacts on features are not incorrectly screened out of further assessment. This is in line with the principles of the Rochdale Envelope approach.

6.6. We also observe that the definition of magnitude used in the assessment of impacts are very broad with no suitable incremental step between minor and moderate. This has caused concerns throughout the Environmental Statement chapters. The definitions are as follows:

- Low Magnitude is defined as 'Discernible, temporary (throughout project duration) change, over a minority of the receptor, and/or limited but discernible alteration to key characteristics or features of the particular receptors character or distinctiveness.

- Moderate Magnitude is defined as ‘Considerable, permanent / irreversible changes, over the majority of the receptor, and/or discernible alteration to key characteristics or features of the particular receptors character or distinctiveness.

6.7. Within these definitions there is no room for a permanent/irreversible change over a small proportion of the site (such as long-term habitat loss from wind turbine foundations or external cable protection) or a temporary loss or disturbance over a large proportion of the site / receptor (such as temporary habitat loss from cable preparation works). We highlight to the Examining Authority that these definitions may result in the underestimation of impacts.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix A to the Relevant Representations of Natural England**

**Development Consent Order and Deemed Marine Licence**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

**Appendix A – Development Consent Order, Deemed Marine Licence**

**In compiling this response, the following documents have been considered:**

- [APP-024] 3.1 Draft Development Consent Order
- [APP-025] 3.2 Explanatory Memorandum
- [APP-083] 5.7.1 Appendix 1 In-Principle Cromer Shoal Chalk Beds (CSCB) Marine Conservation Zone (MCZ) Measures of Equivalent Environmental Benefit (MEEB) Plan
- [APP-090] 6.1.4 Chapter 4 Project Description
- [APP-300] 9.13 Disposal Site Characterisation Report
- [APP-289] 9.5 Offshore In Principle Monitoring Plan (IPMP)

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| BEIS | Department for Business, Energy & Industrial Strategy |
| CSCB MCZ | Cromer Shoal Chalk Beds Marine Conservation Zone |
| DML | Deemed Marine Licence |
| DCO | Development Consent Order |
| DEP | Dudgeon Extensions Project |
| DEPN | Dudgeon Extension Project North |
| DEPS | Dudgeon Extension Project South |
| DOW | Dudgeon Offshore Wind Farm |
| DOWF | Dudgeon Offshore Wind Farm |
| EcIA | Ecological Impact Assessment |
| EIA | Environmental Impact Assessment |
| EPS | European Protected Species |
| ES | Environmental Statement |
| ExA | Examining Authority |
| GW SPA | Greater Wash Special Protection Area |
| KMP | Kittiwake Management Plan |
| MCZ | Marine Conservation Zone |
| MCZA | Marine Conservation Zone Assessment |
| MEEB | Measures of Equivalent Environmental Benefit |
| MMO | Marine Management Organisation |
| NSIP | Nationally Significant Infrastructure Project |
| NE | Natural England |
| O&M | Operation & Maintenance |
| OWF | Offshore Wind Farm |
| PEIR | Preliminary Environmental Information Report |
| RoC | Review of Consents |
| RTD | Red Throated Diver |
| RWCS | Realistic Worst-Case Scenario |
| SAC | Special Area of Conservation |
| SEP | Sheringham Extensions Project |
| SNCB | Statutory Nature Conservation Body |
| SoCG | Statement of Common Ground |
| SoS/SOS | Secretary of State |
| SOWF | Sheringham Shoal Offshore Wind Farm |
| SPA | Special Protection Area |
| SS | Sheringham Shoal |
| WCS | Worst Case Scenario |

**Detailed Comments**

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| Document used: [APP-024] 3.1 Development consent order | | | |
| 1. | Part 2 Interpretations | The interpretations have included a definition of: the habitats regulations derogation provision of evidence, annex 2A outline sandwich tern compensation implementation and monitoring plan. There is no issue on the face of this interpretation, however, they refer to a plan that may change during the examination process as discussion regarding the compensation are ongoing. Therefore, there may be a need to update this definition later.<br><br>This comment applies to the interpretation related to Annex 3A as well. We advise there is no action needed now, but once derogations issues have reached their conclusion, this interpretation should be reviewed to ensure it remains appropriate | |
| 2. | Schedule 2 Part 1. Requirement 2 | This requirement does not include a maximum number of turbines per development. This should be limited to the maximum considered by the project of 23 for SEP and 30 for DEP. Including the maximum number of turbines is included in all previous Offshore Wind Farm DCO's as it defines an important upper limit in impact. Please add additional text to make the limitation on the maximum number of turbines clear. | |
| 3. | Schedule 10 Part 2 Condition 1 | As per Schedule 2 Requirement 2, a maximum number of turbines should be included here. As per above. | |
| 4. | Schedule 10<br><br>Part 2 Condition 4 | Given the importance of in-combination and cumulative impacts of the development, the relevant Statutory Nature Conservation Body (SNCB) should be consulted upon the scheme setting out the phases of construction. The approval of this scheme can have significant effect on the required mitigation for this and other developments and input from statutory consultees at this early stage may be helpful in identification of best mitigations and approaches. Natural England advises the text should be amended to include consultation of the relevant SNCB. | |
| 5. | Schedule 10 Part 2 Condition 13 (1) | This condition notes the requirement to consult MCA and Trinity house, the statutory navigational authorities. It should also include the need to consult the relevant SNCB as appropriate. Natural England advises the condition should be amended to include consultation with the relevant SNCB as appropriate. | |
| 6. | Schedule 10 Part 2 Condition 13 | At no point within this condition is the requirement to micro-site cables around identified features of conservation importance identified. This is a standard mitigation measure and is normally secured within the requirements at | |

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| | | Condition 13 (1) (a). We advise the Applicant amends Condition 13 to make it clear that identified features of nature conservation importance will be micro-routed around. | |
| 7. | Schedule 10 Part 2 Condition 13 (c) (ii) | This condition allows for the scour and cable protection plan to be amended after installation. However, Natural England has concerns about the deployment of scour and cable protection across the entire lifetime of the project and consider that any cable or scour protection required after ten years of operation outside designated site and 5 years within should be secured through a new consent, with appropriate consultation and consideration of relevant environmental considerations. We advise the Applicant amends the condition to make it clear the plan may only be amended and resubmitted to a maximum period of ten years after commencement of operation. | |
| 8. | Schedule 10 Part 2 Condition 14 (3) | Natural England does not agree with the requirement for this plan to be submitted 4 months prior to construction. The approval of this protocol is likely to include detailed consideration of implications on the Southern North Sea (SNS) Special Area of Conservation (SAC). A minimum period of 6 months should be included to allow for the detailed technical discussions required. Further, after experience on previous developments Natural England would request further wording to state this document may not be submitted for approval earlier than 9 months prior to commencement of piling. The Site Integrity Plan (SIP) is needed due to uncertainties of in-combination impacts, submission of this document earlier means there is still a lot of uncertainties to address and also less detail is often available on the final works methodology. Amend the timing to require the SIP to be submitted no earlier than 9 months or later than 6 months prior to commencement. | |
| 9. | Schedule 10 Part 2 Condition 15 (1) | Natural England does not consider 4 months an appropriate timeframe to approve all plans and documentation. Some of the documents are likely to require detailed assessment. This may take multiple consultation periods of 4 weeks. Natural England would recommend this be amended to 6 months prior to commencement, to ensure sufficient time to sign off the large volume of complex documentation that will need to be submitted. Natural England recommend amending the time period to 6 months or adopt a more document specific timing requirement.<br><br>Alternatively, we are willing to discuss with the Applicant and the MMO which documents are likely to take additional time and extend the time period for those. The current one size fits all approach may not be the best approach to take as some documents require less time and others need more. It also leads to a large peak of work for all involved. | |
| 10. | Schedule 10 Part 2 condition 20 | Natural England note that this condition is for monitoring only. The monitoring is required due to uncertainties within the assessment. However, there is no requirement within the condition for the applicant, or regulatory authority, to take action should the monitoring highlight that there is impact significantly in excess of the impact assessed. Consideration should be given to amending the monitoring requirements to make it clear that if impacts are identified that are in excess of those assessed there is a need to provide a consideration of | |

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| | | appropriate action that could be taken. This could include a consideration of further mitigation, of further monitoring or assessment. | |
| 11. | General | Comments raised on schedule 10 also apply to Schedules 11,12 and 13 where similar conditions exist. | |
| 12. | Schedule 12 Part 2 Condition 19 | There does not appear to be a requirement here for post construction monitoring of the Cromer Shoals MCZ. Condition 12 (1) (e) refers to monitoring of the cables within the MCZ, but there is no monitoring condition that links to this requirement.<br><br>Text should be added to this condition to make it clear the need to monitor the works within the MCZ are secured. The monitoring condition should also secure the requirement to take appropriate restoration measures or mitigations should the monitoring highlight an impact of concern. | |
| 13. | General | Comments raised on Schedule 12 also apply to schedule 13 where similar conditions exist. | |
| 14. | Schedule 17 Part 1 and 2, conditions 2 and 11 | These conditions require the submission of plan of works for the Sandwich Tern Compensation Steering Group or the Kittiwake Compensation Steering group. The plan of works contains the membership of the Steering groups, timetables of involvement and dispute resolution mechanism. However, there is no requirement for consultation with the proposed members of the group prior to submission. Given the plan commits the membership to following a plan and to adherence to a dispute resolution procedure it should only be agreed once the membership have been able to voice concerns.<br><br>Natural England advises this is amended to include a requirement to consult the membership of the steering group prior to approval of the plans. | |
| 15. | Schedule 17 Part 1 and 2 Conditions 3 and 12. | This condition says following consultation with the relevant steering groups the relevant compensation implementation and monitoring plan must be submitted for approval. Should this not also be in accordance with the timetable and process approved under the pan of works. As currently drafted, there is no requirement to adhere to the plan that is approved.<br><br>We advise the Applicant considers an amendment to the wording to make it clear the implementation and monitoring plans will be submitted at the appropriate juncture. | |
| 16. | Schedule 17 Part 1 and 2 Conditions 4 (1) and (2)(a) and 13 (a). | When choosing a suitable site consideration is needed on the potential for changes in the location, such as the potential for development nearby that might cause a detriment to the compensation. | |

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| 17. | Schedule 17 Part 1 and 2 Conditions 4 (1) (f) and (2) (f) and 13 (f) | Within these conditions monitoring is secured, including a requirement to implement adaptive management, or alternative compensation where monitoring hits identified triggers. However, nowhere within the schedule is it secured that adaptive management measures, or alternative compensation measures must be implemented as approved. | |
| 18. | Schedule 17 Part 1 and 2 Conditions 5 and 14 | These conditions disapply conditions 6,7 and 8 or 15,16 and 17 respectively. These provisions depend at least partially on a third party outside the DCO delivering the compensation. Natural England queries what would happen should the third party fail to deliver? The conditions that are disapplied are the conditions that secure that the compensation will be delivered and to an appropriate timetable. | |
| 19. | Schedule 17 Part 1 and 2 Condition 6 and 15 | Condition 6 does not secure a time requirement for the delivery of the compensation. While Condition 15 secures delivery 3 full breeding seasons prior to the works. A timing requirement should be included for both proposals. We also note the decisions on the Hornsea 3, Boreas, Vanguard, East Anglia 2 and East Anglia 4 which secure compensation under similar circumstances 4 full breeding seasons prior to generation. | |
| | Document Used: [APP-083] 5.7.1 In-Principle Cromer Shoal Chalk Bed Marine Conservation Zone Measures of Equivalent Environmental Benefit Plan | | |
| 20. | Annex D Condition 20 | See comment on DCO Schedule 17 Part 1 and 2 Conditions 2 and 11 | |
| 21. | Annex D Condition 21 | See comment on DCO Schedule 17 Part 1 and 2 Conditions 3 and 12 | |
| 22. | Annex D Condition 21 (a) | See comment on DCO Schedule 17 Part 1 and 2 condition 3 (a) and 12 (a). | |
| 23. | Annex D Condition 21 (b) | The requirement for a marine licence should also include the timetables for expected issue of a marine licence and a demonstration that it can be obtained within the timescales of the plan. | |
| 24. | Annex D Condition 21 (f) | See comment on DCO Schedule 17 Part 1 and 2 condition 4 (1) (f), 4 (2) (f) and 13 (f) | |
| 25. | Annex D Condition 22 | This condition secures that no works may commence until the plan is approved. However, it does not secure the measures of benefit being undertaken prior to works. Similar to our comments on Schedule 17 Part 1 and 2 Conditions 6 and 15, we consider that it is important the plan secure that the measures will be in place and functioning prior to the impact occurring. | |

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix B to the Relevant Representations of Natural England**

**Offshore Ornithology**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix B – Offshore Ornithology

**In compiling this response the following documents have been considered:**

- [APP-059] 5.4 Report to Inform Appropriate Assessment.pdf
- [APP-060] 5.4.1 Appendix 1 Habitats Regulations Assessment Screening Report
- [APP-061] 5.4.2 Appendix 2 Habitats Regulations Assessment Screening Matrices
- [APP-063] 5.4.3 Appendix 3 Habitats Regulations Assessment Integrity Matrices
- [APP-090] 6.1.4 Chapter 4 Project Description
- [APP-091] 6.1.5 Chapter 5 EIA Methodology
- [APP-097] 6.1.11 Chapter 11 Offshore Ornithology
- [APP-117] 6.2.4 Chapter 4 Project Description (Figures)
- [APP-123] 6.2.11 Chapter 11 Offshore Ornithology (Figures)
- [APP-195] 6.3.11.1 Offshore Ornithology Technical Report
- [APP-196] 6.3.11.2 Information to Inform the Offshore Ornithology CIA
- [APP-289] 9.5 Offshore In Principle Monitoring Plan

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| AA | Appropriate Assessment |
| E | Adverse Effect on Integrity |
| AR | Avoidance Rates |
| BDMPS | Biologically Defined Minimum Population Size |
| CRM | Collision risk Modelling |
| DCO | Development Consent Order |
| DEP | Dudgeon Extension Project |
| DEP N | Dudgeon Extension Project North |
| DEP S | Dudgeon Extension Project South |
| EA1N | East Anglia ONE North OWF |
| EA2 | East Anglia TWO OWF |
| EIA | Environmental Impact Assessment |
| ETG | Expert Topic Group |
| FFC SPA | Flamborough and Filey Coast SPA |
| HP4 | Hornsea Project Four |
| HRA | Habitats Regulations Assessment |
| HPAI | Highly Pathogenic Avian Influenza |
| JNCC | Joint Nature Conservation Committee |
| LBBG | Lesser black-backed gull |
| MPA | Marine Protected Area |
| NE | Natural England |
| O&M | Operation & Maintenance |
| OWF | Offshore Wind Farm |
| OTE | Outer Thames Estuary |
| PEIR | Preliminary Environmental Information Report |
| PVA | Population Viability Analysis |
| RIAA | Report to Inform Appropriate Assessment |
| RTD | Red-throated Diver |
| SEP | Sheringham Extension Project |
| SNCB | Statutory Nature Conservation Body |
| SPA | Special Protection Area |

**Please note:** This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations. Our headline advice and detailed comments, where appropriate, are colour coded according to perceived risk as outlined in the cover letter.

## Summary of Main Offshore Ornithology Issues

### 1. EIA Population Scale

1. Natural England advises that in terms of EIA, the key assessment should be an annual assessment of impact at the largest population size, as opposed to individual seasonal impacts, and further note that in the case of black-legged kittiwake ('kittiwake'), common guillemot ('guillemot') and Atlantic puffin ('puffin') the largest biologically defined minimum population size is in the breeding season. Natural England acknowledges that most of the relevant information is presented within the species accounts, but we suggest that the Applicant briefly presents the annual impacts of SEP and DEP and cumulatively with other relevant projects for the species listed in Table 1 below, using the population sizes provided.

**Table 1 Largest Biologically Defined Minimum Population Size (BDMPS) to conduct Annual Impact Assessment**

| Species | Biogeographic | Largest BDMPS | BDMPS region | Breeding/Non-breeding |
|---|---|---|---|---|
| Gannet | 1,180,000 | 456,298 | UK North Sea and Channel | Non-breeding |
| Kittiwake | 5,100,000 | 839,456 | UK North Sea | Breeding |
| Guillemot | 4,125,000 | 2,045,078 | UK North Sea and Channel | Breeding |
| Razorbill | 1,707,000 | 591,874 | UK North Sea and Channel | Non-breeding |
| Puffin | 11,840,000 | 868,689 | UK North Sea and Channel | Breeding |
| Great black-backed gull | 235,000 | 91,399 | UK North Sea | Non-breeding |
| Lesser black-backed gull | 864,000 | 209,007 | UK North Sea and Channel | Non-breeding |
| Herring gull | 1,098,000 | 466,511 | UK North Sea and Channel | Non-breeding |
| Sandwich tern | 148,000 | 38,051 | UK North Sea and Channel | Non-breeding |
| Common tern | 480,000 | 144,911 | UK North Sea and Channel | Non-breeding |
| Red-throated diver | 27,000 | 13,277 | UK North Sea | Non-breeding |

### 2. CRM Parameters

2. The SNCBs have been working for some time to provide updated CRM parameters, including updated avoidance rates. Several studies have been commissioned to review and update evidence-based avoidance rates (AR). Most recently Exeter University was commissioned by JNCC (and overseen by a project steering group including industry stakeholders) and have produced a final report providing updated avoidance rates derived from the existing evidence base.

3. The report has yet to be published, and the SNCB guidance note is not yet available for distribution. However Natural England has produced an interim note, for use by developers that require the updated parameters immediately. Please see the interim note presented separately in Appendix B1. Natural England advises that while we cannot ensure the SNCB guidance, when it is released, is identical to this interim note, we can assure the Applicant that if they choose to submit revised mortality estimates using the new parameters then we will base our position on these. However, as this note was not available at the time of submission, we are also open to forming a position for some species on the submitted mortalities.

4. We would advise that, as a minimum, revised figures based on a subset of variables (i.e. using mean density data and CRM parameters (central value only) from the Natural England interim guidance note) are presented for the following species:

- Sandwich Tern (noting that Natural England advise the use of the published flight speed of 10.3ms), and further noting that the modelling presented within the report at 98% with a 50% Macro avoidance rate is the equivalent of a 99% AR;
- Gannet (noting new AR and approach to macro-avoidance will substantially reduce both the project alone and cumulative/in combination assessments);
- Kittiwake;
- Great black-backed gull;
- Lesser black-backed gull;
- Little gull.

## 3. Natural England's Position

5. We advise that Natural England's key positions on in-combination ornithological impacts on seabird Special Protection Area features are set out during the examination of Hornsea Project Four (HP4) [REP7-104] and EA1N and EA2 [REP13-048] OWF. Our position regarding the red-throated diver feature of the Outer Thames Estuary SPA is as set out in EA1N and EA2 examination [REP9-067] and for the Greater Wash SPA in the HP4 examination [again REP7-104].

6. Table 2 below summarises our most recent position at the close of these examinations. Natural England advises the following:

i. Table 2 represents the species and populations that Natural England have identified potential risks of significant impacts on seabird populations at the EIA or HRA scales. For other species/designated sites Natural England does not have any outstanding concerns and is unlikely to comment further on these matters in the Examination.

ii. In the case of HRA, where Natural England has been unable to rule out an Biologically Defined Minimum Population Size (AEoI) for qualifying features at SPAs, and where SEP and DEP make an additional contribution to the in-combination impact, then a derogation case will be required, unless the impact can be substantially mitigated. Where impacts have been deemed to be significant at the EIA scale, the Applicant should demonstrate that its contribution to those impacts has been duly reduced through mitigation.

iii. In instances where Natural England has concluded there is no significant adverse impact or AEoI, then the SEP and DEP assessment must seek to demonstrate that the additional impact from SEP and DEP does not change this position to one of significant adverse impact or AEoI.

**Table 2 Summary of conclusions for assessments of cumulative / in-combination impacts**

**with other plans and projects for species and designated site features up to and including Hornsea Project 4 but EXCLUDING SEP and DEP (apart from North Norfolk Coast SPA, see table).**

| **EIA species** | **Current Position (not including SEP and DEP)** | **Relevant project** |
|---|---|---|
| Gannet: collision + displacement | Unable to rule out significant adverse impact | HP4 |
| Kittiwake: collision | Unable to rule out significant adverse impact | HP4 |
| Little gull: collision | No significant adverse impact incl. HP4 | Norfolk Boreas |
| Lesser black-backed gull: collision | No significant adverse impact incl. HP4. | HP4 |
| Herring gull: collision | No significant adverse impact incl. HP4. | HP4 |
| Great black-backed gull: collision | Unable to rule out significant adverse impact | HP4 |
| Guillemot: displacement | Unable to rule out significant adverse impact | HP4 |
| Razorbill: displacement | Unable to rule out significant adverse impact | HP4 |
| Red-throated diver | Unable to rule out significant adverse impact | EA1N/EA2 |
| | | |
| **HRA species & site** | **Current Position** | **Project** |
| Gannet, Flamborough & Filey Coast SPA: collision + displacement | No AEoI in-combination incl. HP4. | HP4 |
| Kittiwake, Flamborough & Filey Coast SPA: collision | Unable to rule out AEoI in-combination | HP4 |
| Guillemot, Flamborough & Filey Coast SPA: displacement | Unable to rule out AEoI for HP4 alone (and it therefore follows also in-combination) | HP4 |
| Razorbill, Flamborough & Filey Coast SPA: displacement | Unable to rule out AEoI in-combination | HP4 |
| Breeding seabird assemblage, Flamborough & Filey Coast SPA | Unable to rule out AEoI for HP4 alone (and it therefore follows also in-combination) | HP4 |
| Lesser black-backed gull, Alde-Ore Estuary SPA: collision | Unable to rule out AEoI in-combination | EA1N/EA2 |
| Little gull, Greater Wash SPA: collision | No AEoI in-combination incl. HP4 | Norfolk Boreas |
| Red-throated diver, Greater Wash SPA: displacement (cable construction and O&M vessel movement) | No AEoI in-combination incl. HP4. | HP4 |
| Red-throated diver, Outer Thames Estuary SPA: displacement | Unable to rule out AEoI alone (EA1N) or in-combination (EA1N and EA2) | EA1N/EA2 |

| EIA species | Current Position (not including SEP and DEP) | Relevant project |
|---|---|---|
| Sandwich Tern, North Norfolk Coast SPA: collision | Unable to rule out AEoI in-combination | The potential impacts on North Norfolk Coast SPA sandwich tern have not been a significant factor in the Examinations of projects within the Round 3 East Anglia and Hornsea zones. However this was already Natural England's advice prior to Round 3. |

7. **We highlight that Natural England has identified significant adverse impacts at the EIA scale to gannet, kittiwake, great black-backed gull, guillemot, razorbill and red-throated diver irrespective of whether SEP & DEP are included in the cumulative totals.** SEP & DEP will be making an additional contribution to those totals.

8. **Similarly, at the end of the HP4 Examination Natural England could not rule out adverse effects on the integrity of the kittiwake, guillemot, razorbill and seabird features of FFC SPA, irrespective of whether SEP & DEP were included in the in-combination totals. We have also previously advised in-combination adverse effects cannot be ruled out for sandwich tern at North Norfolk Coast SPA.** Again, SEP & DEP will make contributions to the in-combination impacts.

9. **However, providing there are no further significant changes to the collision and displacement figures provided for SEP and DEP, Natural England is likely to reach a conclusion of no AEOI for FFC SPA gannet when considering the in-combination impact including SEP and DEP**. Hence the Applicant is unlikely to require compensation for this species/SPA. However we do welcome the provision of the without prejudice compensation proposal for gannet submitted as part of the application should this be required.

10. **We have also previously advised that, lesser black-backed gull at Alde-Ore Estuary SPA, red-throated diver at Outer Thames Estuary SPA. We also have concerns about adverse effects on the Greater Wash SPA red-throated diver.** We highlight that there is potential for SEP and DEP to make contributions to the in-combination impact, and that the extent of this contribution is as yet unclear. Regarding the two red-throated diver sites, please see Section 9 below for further information.

## 4. BDMPS Apportioning in the Breeding Season

11. Within the RIAA, there are a number of qualifying features assessed that are within the mean max foraging range (as presented in Woodward *et al* 2018) of the project sites (e.g. puffin at FFC SPA and lesser black-backed gull at Alde Ore SPA) and others that are within the mean max plus one SD (e.g. razorbill and guillemot at FFC SPA) yet have not had any impact apportioned to them in the breeding season.

12. In the case of guillemot and razorbill, Natural England accepts that on balance it is reasonable to exclude the extreme Fair Isle values in the mean max foraging ranges, nonetheless, razorbill is still within mean max plus 1 SD. It is not sufficient to demonstrate that SEP and DEP are outside core utilisation areas, as this does not wholly preclude the

use of the area by breeding adults. While being outside a modelled utilisation area may suggest that a large proportion of say razorbill from FFC SPA are not using SEP and DEP, it does not preclude the situation that a proportion of birds at SEP and DEP are breeding adults from the colony in question. Natural England recommends that some level of apportioning is presented for qualifying features within mean max and mean max plus one SD.

## 5. BDMPS Apportioning for Kittiwake and Gannet in the Non-breeding Season

13. Natural England advises that it is not appropriate to correct the BDMPS apportioning in the non-breeding season for the proportion of adults (or adult types in the case of kittiwakes) observed in the at sea survey data. The proportion of adults is already corrected for with the BDMPS figures, and applying this correction 'double corrects', reducing the level of impact apportioned (albeit to a relatively small extent).

## 6. Flamborough and Filey Coast SPA

14. Natural England advises that puffin, as a component species of the FFC SPA seabird assemblage, will need to be considered as part of the assessment of impacts on the seabird assemblage in the HRA.

## 7. Highly Pathogenic Avian Influenza (HPAI)

15. Natural England has formulated some initial guidance regarding the implications of HPAI for OWF impact assessments. This is presented separately in Appendix B2.

## 8. Population Modelling

16. In regard to population modelling, Natural England has been notified by the developers (BioSS/CEH) of an issue (coding bug) with the NE/JNCC Population Viability Analysis (PVA) tool. The identified issue causes the tool to produce incorrect results in situations where environmental stochasticity is included and a standard deviation (SD) of exactly zero is used for at least one of the baseline demographic rates. There appears to be no problem when using any other values, including very small but non-zero values, for the SD. In the case of SEP and DEP, based on parameters supplied in Section 11.1.2.7 of the Technical Appendix, then it does not seem that this bug will be an issue.

17. For further information please see the advice we submitted during the Hornsea Project 4 Examination on this matter: [REP5a-029].

## 9. Red-throated diver Disturbance/Displacement Impacts

18. Natural England is increasingly becoming concerned in relation to disturbance and/or displacement of red-throated divers from the more persistent presence of infrastructure-related vessels making transits through diver SPA (e.g. due to OWF O&M requirements) and consider that these could make a meaningful contribution to in-combination effects on the SPAs. Further investigation of all potential vessel movements within the Greater Wash SPA (and Outer Thames Estuary SPA) is needed, and the mitigation hierarchy applied to minimise the potential for SEP and DEP to contribute to these effects. Residual effects should be considered in tandem with permanent displacement effects arising from the presence of the SEP array.

19. Regarding array-related displacement, we note the straight line gradient approach has been used to assess red throated diver impacts, based on the methodology presented during the EA1N and EA2. Natural England have recently developed a more refined displacement gradient for red-throated diver as presented below in Table 3. This evidence-based approach was calculated by taking the max displacement in 1km bins from previously calculated displacement gradients and then applying a linear trend line. Note that the trend line has only been used to derive displacement rates outside the array. Within the array a precautionary 100% rate has been applied. The data used to inform the gradient is from Gunfleet Sands, Kentish Flats, Lincs, Lynn & Inner Dowsing, London Array and a gradient calculated by Raul Vilela for Natural England from the German Bight data in Vilela *et al* (2020).

20. The use of this displacement gradient is not agreed with the other SNCBs and is not supplied as definitive advice. Although we believe it is a sensible approach to implement, we are happy to discuss the gradient further, including consideration of modifications or alternative approaches.

**Table 3 Potential Displacement Gradient for Red-Throated Diver SPA Impact Assessments**

| Buffer region (km) | Displacement rate (%) |
|---|---|
| Within OWF | 100 |
| 0-1 | 80 |
| 1-2 | 74 |
| 2-3 | 68 |
| 3-4 | 63 |
| 4-5 | 57 |
| 5-6 | 51 |
| 6-7 | 46 |
| 7-8 | 40 |
| 8-9 | 34 |
| 9-10 | 29 |

## 10. Mitigation Hierarchy

21. As noted in the recent draft Defra guidance on compensation within MPAs, when developers are considering an activity / development they should make every effort to work through the 'avoid, reduce, mitigate' hierarchy in a sequential manner, exhausting the possibilities of one level before proceeding to consider the next. The report can be found using the following link: Best practice guidance for developing compensatory measures in relation to Marine Protected Areas: consultation document (defra.gov.uk).

22. In the case of SEP and DEP, some mitigation actions have been taken (e.g. in the RIAA *Table 9-2 Embedded Mitigation Measures – Offshore Ornithology*) and others explored (hot/cold spot analysis to identify persistent high density areas of sandwich tern and hence inform placement of turbines, Appendix 11.1 Annex 7). However, the assessment has also presented scenarios for DEP that involve placing all turbines in DEP N (as opposed to turbines in both DEP N and DEP S), this scenario is somewhat at odds with the mitigation hierarchy, as it increases the impact to key species sensitive to collision, indeed the hot/cold spot analysis for sandwich tern identified that '*One of the high and variable hotspot areas occurred within the boundary of the northern section of DEP*', while for kittiwake the offshore ornithology chapter notes that the collision rate may increase by 26.5% if all turbines were built in DEP N.

23. Natural England recommends this scenario is not progressed into any DCO that might be granted, as it departs from the mitigation hierarchy, would increase the project's impacts on

key SPA features of concern and raise the demands on the proposed compensatory measures, the performance of which is inevitably uncertain. We also observe that should further mitigation be sought as part of the Examination's consideration of alternative project configurations, DEP N would appear to offer greater opportunities to reduce impacts on kittiwake and sandwich tern through reducing the number of turbines in this part of the site.

## 11. Updating Cumulative and In Combination Totals

24. Natural England notes the Applicant has explained that '*The cut off for inclusion of other OWFs into the CIA was May 2022*'. This means that for projects in Examination at that point (i.e. Hornsea Project Four), and those submitted for Examination more recently (i.e. Awel Y Mor), updates to the assessment will be required during the Examination for SEP and DEP'.

25. As the Applicant notes, the cumulative and in-combination assessments presenting in the submission will need to be updated to reflect recently submitted/examined projects, particularly as the recent Hornsea Project Four examination has resulted in Natural England advising AEoI on a number of qualifying features at FFC SPA. As well as addressing the points raised above, Natural England will need to receive up-to-date cumulative and in-combination assessments for review before we can provide our final advice.

**Table 4 Detailed Comments**

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| Document Used: [APP-097] Chapter 11 Offshore Ornithology. PINS Doc Number 6.1.11. Doc RefC282-RH-Z-GA-00031 | | | |
| 1 | 54 and Table 11.15 | Seasonality. We note that Natural England recommends a winter period of (Sep-Apr) for red-throated diver (RTD), while the Table presents (September to February). This shortens the impact period and may have an effect on the outcome of the impact assessment. Natural England's standard advice regarding avoiding/mitigating disturbance from vessel movements (including relating to construction) is that 1st November to 31st March inclusive is the key period - this may be a more appropriate frame for the assessment.<br>The Applicant should consider if the different winter season length would impact the assessment outcome, and consider seasonal restrictions to vessel movements in the SPA between 1st November and 31st March. | |
| 2 | 11.5.3 - Existing Pressures on Wider Environment | Natural England notes that this may need updating in light of the current Highly Pathogenic Avian Influenza (HPAI) situation.<br>Natural England recommends the Applicant reviews our guidance (see Appendix B2) on this, and potentially compile available information on current understanding of impacts of HPAI to key species/colonies of relevance to the SEP and DEP application (Species: sandwich tern, kittiwake, guillemot, razorbill, little gull, RTD, gannet, lesser black-backed gull (LBBG), puffin, colonies: Flamborough & Filey Coast SPA, North Norfolk Coast SPA, Alde-Ore Estuary SPA, Greater Wash SPA). We advise the Applicant considers potential implications of HPAI for the impact assessments and submits an update into the Examination. | |
| 3 | 65 | A large body of evidence identifies climate change as a major driver of seabird population demographics'. Should there be some acknowledgement that delivery of offshore wind is a key part of decarbonising our energy supply and hence contributing to mitigating the climate crisis? | |
| 4 | 11.6.1.1.1. | The current approach to assessing displacement during construction uses data from Fleissbech *et al* (2019). However, Natural England advises it may make more sense to just extend the predicted operational impact by 1-2 years rather than going through the process of calculating a different approach, acknowledging that as the construction develops there are more and more turbines present in the array site, which may (whether operational or not) cause displacement. This is only relevant if there is a need for population modelling (i.e. the period of impact is 42 years rather than 40 years). | |
| 5 | 97 and Other Species | Natural England recommends the assessment of an annual impact at the largest BDMPS population scale recommended for EIA, and notes that for some species the appropriate population scale is the breeding season population – please see our outline of this issue in Section 4 above. | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| 6 | 314 | Regarding the assessment of impacts on RTD - please note the latest SNCB advice.<br>https://hub.jncc.gov.uk/assets/9aecb87c-80c5-4cfb-9102-39f0228dcc9a | |
| 7 | 417 and Table 11-101 | See key points above regarding Avoidance Rates. See new interim advice on CRM parameters, as detailed above in summary Section 2 and separately in Appendix B1. | |
| 8 | Table 11-132 | Natural England advises that Rampion 2 PEIR was published in Aug 2021 ([redacted]). This should be included in totals where appropriate. We acknowledge that the Applicant plans to update the assessment with up-to-date Hornsea Project 4 totals. We highlight that a number of OWF PEIRs are anticipated in early 2023, and we advise data from relevant projects should be used to update cumulative/in-combination assessments as required. | |
| Document Used: [APP059] 5.4 Report to Inform Appropriate Assessment – Offshore Ornithology Sections | | | |
| 9 | 9.3.3.4.3<br>Para 1065 | It is unclear why DEP is not being considered for operational phase effects, given that O&M vessels may transit through the Greater Wash SPA on route to the array.<br>Natural England advises the Applicant considers impacts on O&M vessels from DEP as well as SEP, or clarify that O&M vessels from Great Yarmouth will not enter the SPA. | |
| 10 | 9.3.3.4.4.1 | This assessment only considers impacts on SPA divers through mortality impacts, rather the reduction in available habitat resulting from disturbance/displacement from the cable installation vessels. Given the proposed duration of the cable installation phase, this aspect needs to be properly investigated.<br>Assess implications of cable installation on extent of available habitat in the SPA. Consider need for a seasonal restriction to cable installation works between 1st November to 31st March inclusive or other mitigation measures. | |
| 11 | Tables 9-38 to 9-40 and related text | We note that the gradient approach to RTD displacement, as used in EA1N and EA2 has been presented within the RIAA. This accords with advice given in the ETG, but please note Natural England has recently provided updated advice on appropriate gradients, please see advice in Table 3 above.<br>Natural England advises the Applicant amends the tables/results accordingly. | |
| 12 | 9.3.3.4.5.1 | See comment on 9.3.3.4.4.1 above. Natural England is increasingly becoming concerned in relation to disturbance and/or displacement of red-throated divers from the more persistent presence of OWF-related vessels in the Greater Wash SPA (construction and O&M) and consider these could make a meaningful contribution to in-combination effects on the SPAs. For this reason, we do not support the conclusion in paragraph 1096. As a | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| | | minimum, the best practice protocol for all vessel movements through the SPA should be adhered to (see EA1N/EA2 pre-determination submissions regarding the details of the protocol). However, at this stage we are uncertain that this will be sufficient to avoid the project from contributing to potential adverse effects on the SPA.<br><br>Natural England advises mitigation measures are considered to reduce the potential for in-combination impacts, including (but not only) the best practice protocol adopted by other developers and the role of seasonal restrictions. | |
| 13 | 9.3.3.4.5.2 - presence of array | The assessment usefully reveals that that 22.81% of the Greater Wash SPA already falls within 12km of an OWF. This inevitably raises the concern that there are existing adverse effects from existing OWF to which SEP could add further operational displacement i.e. an in-combination adverse effect. This matter will need further discussion during the Examination. We note in Para 1079 that part of the area impacted by operational displacement was classified for species other than RTD. Natural England advises this should be quantified and explored in more detail.<br><br>Natural England advises further investigation of the significance of the impacted area to RTD is needed to help better understand the likely contribution of SEP to in-combination displacement to RTD. If an in-combination adverse effect cannot be excluded, impact avoidance/reduction e.g. array design should be considered. | |
| 14 | Table 9-43 | Data Natural England holds from the NNR manager for the colonies in question present some discrepancies, mainly minor. Please see Table 4 C1 below, highlighted cells indicate discrepancies. We have already provided the data to the Applicant. The key discrepancy is that there is productivity data for Scolt Head in the Seabird Monitoring Programme in 2019 (where the Table reads no data).<br><br>Natural England advises the Applicant to update the figures - and explore whether the changes warrant an updated PVA. | |
| 15 | 9.4.3.1.4.1 | Natural England accepts there is potential for sandwich tern to be displaced, and while we welcome the review of possible evidence and the inclusion of this in the impact assessment, we do not consider the evidence base is sufficiently robust at this stage to incorporate Macro Avoidance into the collision risk assessment.<br><br>Natural England will base our conclusions on collision alone and displacement and collision together (but not with the inclusion of macro avoidance in the collision assessment). However, we note that the advised change to the avoidance rate for sandwich terns from 98% to 99% is the equivalent of the presented 98% figures with a 50% Macro Avoidance. | |
| 16 | 1151 | Please note Natural England recommends the use of the published flight speed (Fijn and Gyimesi (2018)) of 10.3 m/s), as opposed to the selected flight speed of Fijn and Collier (2020) at 8.3 m/s, however we recognise the value | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| | | in colony specific evidence and will take note of both outputs when forming our advice. Note also the advised changed AR of 99% - the use of a 50% MA and 98% AR is the equivalent of 0% MA and 99% AR.<br><br>We advise that the Applicant should refer to the new CRM parameter guidance (see Appendix B1) and present the CRM outputs using the parameters set out in the new guidance (incl flight speed, but limited to a subset of mean values only (i.e. excluding models of outputs using the 95% CI/SDs of key parameters). | |
| 17 | Table 9-63 | Natural England advises there are errors within this table. Pease check numbers in Table and correct errors accordingly. | |
| 18 | Tables 9-66 to 9-70 | We note a number of scenarios have been presented representing the range of possible legal and practical built turbine parameters. Natural England requires that an 'as-built' scenario is 'legally secure' and as such the starting point for assessment will be Scenario A. However, we will also take note of Scenario C (which is as built, but with excess capacity modelled as consented). We also observe there is a scenario not presented, which is all legally secured parameters (for this it would presumably be scenario A but with Dudgeon reflecting the as-built?). | |
| 19 | 9.14.3.1.2 | SEP and DEP are both within mean max foraging range, yet the apportioning rate in the breeding season is 0% - this is not reasonable, despite presence of other nearer colonies, some of which are much smaller than Alde-Ore Estuary SPA. It would be appropriate to conclude there is connectivity and therefore some birds in breeding season should be apportioned. It is also reasonable and appropriate to take into account the presence of these smaller colonies (1330 pairs quoted as the regional population in the ES), but if regional breeding populations are to be calculated, it should be all colonies within foraging range of SEP/DEP and SEP & DEP. Natural England advises it would be worth reviewing the submissions made in the Norfolk Boreas/Vanguard and EA1N/EA2 projects to see what data was marshalled regarding non-SPA colonies in Suffolk (e.g. Lowestoft), as some of those may fall within the foraging range.<br><br>Natural England recommends developing an evidence-based approach to apportioning LBBG mortality to Alde-Ore SPA in the breeding season, considering all colonies within the mean max foraging range. | |
| 20 | 1426 - 1427 | Kittiwake and Gannet apportioning has not been calculated correctly in the non-breeding season. The BDMPS proportions already take account of the number of adults likely to be present in the BDMPS, so it is not appropriate to correct (a second time) for the proportions of adults (or adult type in the case of kittiwake) in the BDMPS. For example, for gannet in the post breeding/autumn migration season the apportioning should be 4.8%, not 4.8%*93.4%.<br><br>Please provide corrected figures. | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| 21 | 1475 | HPAI appears to have spread rapidly within parts of the gannetry at FFC SPA in the 2022 breeding season. The consequences of this for the gannet population and its future growth rate are not known, but may have implications for the impact assessment (and indeed for other affected seabird species). Natural England will endeavour to keep the project updated during the Examination.<br><br>We advise the impact assessment may need to be updated in the light of HPAI impacts, though this cannot be confirmed at this stage (a point also relevant to other seabirds affected by HPAI). | |
| 22 | 1520<br><br>Table 9-107: and other tables relating to auk displacement | In the case of guillemot and razorbill we welcome the presentation of a range of displacement rates (30-70%) and mortality (1-10%) and will rely on a range-based approach to form our position as it acknowledges the uncertainties within the evidence base on this impact. However, we do not consider it appropriate (or suitably evidence based) to rely on one combination of displacement and mortality (50% and 1%) for the impact assessment. | |

**Table 5 Sandwich Tern Data North Norfolk Coast SPA**

| Year | Scolt Pairs | Scolt Productivity | Blakeney Point Pairs | Blakeney Point Productivity | Total Number of Adults |
|---|---|---|---|---|---|
| 2005 | 1800 | 0.83 | 1650 | 0.55 | 6900 |
| 2006 | 2500 | 0.8 | 950 | 0.86 | 6900 |
| 2007 | 1800 | 0 | 1800 | 0.78 | 7200 |
| 2008 | 280 | 0.01 | 2400 | 0.64 | 5360 |
| 2009 | 400 | 0 | 3100 | 0.42 | 7000 |
| 2010 | 480 | 0 | 2500 | 0.36 | 5960 |
| 2011 | 0 | 0 | 3562 | 0.52 | 7124 |
| 2012 | 400 | 0 | 3753 | 0.59 | 8306 |
| 2013 | 550 | 0 | 4120 | 0.41 | 9340 |
| 2014 | 1050 | 0.6 | 2859 | 0.19 | 7818 |
| 2015 | 3550 | 0.9 | 1113 | 0.01 | 9326 |
| 2016 | 3365 | 0.8 | 451 | 0.39 | 7632 |
| 2017 | 4665 | 0.94 | 3 | 0 | 9336 |
| 2018 | 4685 | 0.85 | 165 | 0.12 | 9700 |
| 2019 | 3805 | 0.74 | 788 | 0.51 | 9186 |

## References:


Woodward, I., Thaxter, C.B., Owen, E., Cook, A.S.C.P., 2019. Desk-based revision of seabird foraging ranges used for HRA screening.

Vilela, R., Burger, C., Diederichs, A., Nehls, G., Bachl, F., Szostek, L., Freund, A., Braasch, A., Bellebaum, J., Beckers, B., Piper, W. (2020). Final Report: Divers (Gavia spp.) in the German North Sea: Changes in Abundance and Effects of Offshore Wind Farms. A study into diver abundance and distribution based on aerial survey data in the German North Sea. BioConsult Report prepared for Bundesverband der Windparkbetreiber Offshore e.V.

Fliessbach, K.L., Borkenhagen, K., Guse, N., Markones, N., Schwemmer, P., Garthe, S., 2019. A Ship Traffic Disturbance Vulnerability Index for Northwest European Seabirds as a Tool for Marine Spatial Planning. Frontiers in Marine Science 6, 192. [redacted]

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix B1 to the Relevant Representations of Natural England**

**Natural England Draft Updated Collision Risk Modelling Parameters**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix B2 - Natural England interim advice on updated Collision Risk Modelling parameters (July 2022)

This is a Natural England **interim** update to the current guidance on collision risk modelling (CRM) (SNCBs, 2014) summarising key changes to advice and parameter values relating to CRM. This guidance precedes the release of updated joint SNCB guidance, which is due to be released later this year. Users should be aware that as the joint SNCB guidance note has not yet been finalised there is a risk that these values may be subject to change, however NE consider this risk sufficiently low to issue these draft parameters to provide developers who are close to submission/examination the option of utilising this advice.

Natural England commissioned the BTO to undertake an update of Cook et al (2014), combining evidence from the sites presented in Cook et al. (2014) and any additional sites with available appropriate data (including the ORJIP offshore collision work (Skov et al 2018) to provide avoidance rates based on data across a range of sites (Cook 2021). MacArthur Green undertook a critical review of Cook 2021, which included concerns regarding the influence of one dataset on overall avoidance rates. In response to these concerns, JNCC commissioned a further review and sensitivity analysis (Ozsanlev-Harris et al in prep).

The key changes proposed within the emerging SNCB guidance are as follows:

- Support the use of the stochastic CRM (sCRM, McGregor et al 2018)
- The avoidance rates (ARs) have been updated following the review of the latest evidence base (Cook 2021) and re-analysis (Ozsanlev-Harris et al, in prep).
- The Extended Band model is no longer recommended for any species (i.e. Options 3 and 4)
- All ARs are taken from Ozsanlev-Harris et al (in prep) and are not species specific, instead species groups have been used; large gulls, all gulls, small gulls and all gulls and terns (see Table 1)
- There are some changes to the recommended nocturnal activity factors (see Tables 2 and 3)
- The suggested approach to gannet modelling is a novel methodology, which aims to account for three issues: firstly that all ARs calculated (by Ozsanlev-Harries et al, in prep, Cook 2021, Cook 2014) are 'within-windfarm' avoidance rates, secondly, there is not a gannet specific AR and thirdly that there is a clear evidence base that gannets display macro-avoidance. The methodology thus requires the reduction of density of birds in flight by an agreed macro-avoidance rate as an input to the CRM, followed by using an 'all gulls' AR within the CRM. An evidence report has been commissioned by NE to inform this rate using best available evidence. Until this is available, we suggest reducing the density of gannet in flight going into the CRM, either by a representative range of macro-avoidance rates of between 65% - 85% or by selecting a single rate of 70%.

**Table 1: Recommended Avoidance Rates (AR) for Collision Risk Modelling taken from Ozsanlev-Harris et al (in prep)**

| Species | Basic Band (2012) Model AR | Basic sCRM AR |
|---|---|---|
| **Northern gannet*** | 0.992 | 0.993 (±0.0003) |
| **Black-legged Kittiwake** | | |
| (All gulls rate) | | |

| | | |
|---|---|---|
| **Lesser Black-backed Gull**<br>**Herring gull**<br>**Great Black-backed Gull**<br><br>(Large gulls rate) | 0.994 | 0.994 (±0.0004) |
| **Common Gull, Black-headed Gull**<br><br>(Small gulls rate**)** | 0.995 | 0.995 (±0.0002) |
| **Sandwich tern (and all other marine species)**<br><br>(All gulls and terns rate) | 0.990 | 0.991 (±0.0004) |

*****Macro-avoidance to be accounted for by a reduction of density of birds in flight based on the level of macro-avoidance displayed by this species. A project has been commissioned by NE to inform this rate, in the interim NE advise the use of a range of macro avoidance rates between 65% - 85% or a single rate of 70%.

**Table 2 – SNCB recommended parameters for the Basic Band model – Option 1 or 2 (Band 2012)**

| **Species** | **AR** | **Flight Speed (m/s)** [1] | **NAF**[2] | **Body length (m)** [3] | **Wingspan (m)**[4] | **Flight Type** | **% of flights upwind** |
|---|---|---|---|---|---|---|---|
| **Northern gannet*** (All gulls rate) | 0.992 | 14.9 | 8 %<br>1.32 | 0.94 | 1.72 | Flapping | 50 |
| **Black-legged Kittiwake** (All gulls rate) | 0.992 | 13.1 | 25-50%<br>2-3 | 0.39 | 1.08 | Flapping | 50 |
| **Lesser Black-backed Gull** (Large Gulls rate) | 0.994 | 13.1 | 25-50%<br>2-3 | 0.58 | 1.42 | Flapping | 50 |
| **Herring gull** (Large Gulls rate) | 0.994 | 12.8 | 25-50%<br>2-3 | 0.6) | 1.44 | Flapping | 50 |
| **Great Black-backed Gull** (Large Gulls rate) | 0.994 | 13.7 | 25-50%<br>2-3 | 0.71 | 1.58 | Flapping | 50 |

[1] All flight speeds from Alerstam (1997) except for Gannet from Pennycuick (1987) and Sandwich Tern from Fijn and Gyimesi (2018)

[2]All based on Garthe & Hüppop (2004) other than Gannet which is from Furness et al (2018)

[3] All named species from Snow & Perrins (1987)

[4] All named species from Snow & Perrins (1987)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sandwich tern** (All gulls and terns rate) | 0.990 | 10.3 | Defer to Garthe and Hüppop (2004) or where empirical data is available consult SNCB | 0.38 | 1 | Flapping | 50 |
| **Common gull, Black-headed gull** (small gulls rate) | 0.995 | Consult SNCB | | Consult SNCB | Consult SNCB | Flapping | 50 |
| **Other marine species** (All gulls and terns rate) | 0.990 | Consult SNCB | | Consult SNCB | Consult SNCB | Consult SNCB | Consult SNCB |

* See note on page 1 and Table 1 regarding macro-avoidance

**Table 3 – SNCB recommended summary data for the stochastic CRM model (McGregor et al 2018)**

| Species | AR | Flight Speed (m/s) [5] | NAF[6] | Body length(m) [7] | Wingspan (m)[8] | Flight Type | % of flights upwind |
|---|---|---|---|---|---|---|---|
| **Northern gannet*** (All gulls rate) | 0.993 (±0.0003) | 14.9 (0) | 0.08 +- 0.10 | 0.94 (0.0325) | 1.72 (0.0375) | Flapping | 50 |
| **Black-legged Kittiwake** (All gulls rate) | 0.993 (±0.0003) | 13.1 (0.40) | Use central value 0.375 and SD of (0.0637) that results in 0.25 and 0.5 being captured in the 95% CI | 0.39 (0.005) | 1.08 (0.0625) | Flapping | 50 |
| **Lesser Black-backed Gull** (Large Gulls rate) | 0.994 (±0.0004) | 13.1 (1.90) | | 0.58 (0.03) | 1.42 (0.0375) | Flapping | 50 |
| **Herring gull** (Large Gulls rate) | 0.994 (±0.0004) | 12.8 (1.80) | | 0.6 (0.0225) | 1.44 (0.03) | Flapping | 50 |
| **Great Black-backed Gull** (Large Gulls rate) | 0.994 (±0.0004) | 13.7 (1.20) | | 0.71 (0.035) | 1.58 (0.0375) | Flapping | 50 |
| **Sandwich tern** (All gulls and terns rate) | 0.991 (±0.0004) | 10.3 (3.4) | Defer to Garthe and Hüppop (2004) or where empirical data is available consult SNCB | 0.38 (0.005) | 1 (0.04) | Flapping | 50 |
| **Common Gull, Black-headed Gull** (small gulls rate) | 0.995 (±0.0002) | Consult SNCB | | Consult SNCB | Consult SNCB | Flapping | 50 |
| **Other marine species** (All gulls and terns rate) | 0.991 (±0.0004) | Consult SNCB | | Consult SNCB | Consult SNCB | Consult SNCB | Consult SNCB |

* See note on page 1 and Table 1 regarding macro-avoidance

[5] All flight speeds from Alerstam (1997) except for Gannet from Pennycuick (1987) and Sandwich Tern from Fijn and Gyimesi (2018)

[6] All based on Garthe & Hüppop (2004) other than Gannet which is from Furness et al (2018)

[7] All named species from Snow & Perrins (1987)

[8] All named species from Snow & Perrins (1987)

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THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

**Appendix B2 to the Relevant Representations of Natural England**

# Highly Pathogenic Avian Influenza (HPAI) Outbreak in Seabirds and Natural England Advice on Impact Assessment (Specifically Relating to Offshore Wind)

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

**Highly Pathogenic Avian Influenza (HPAI) outbreak in seabirds and Natural England advice on impact assessment (specifically relating to offshore wind)**

**September 2022**

1. We are currently unclear what the short, medium and long-term effects of the 2022 HPAI outbreak will be on seabird colony abundance and vital rates (productivity and survival), though impacts at some English colonies in 2022 were likely substantial (e.g. emerging indications of estimates include adult mortality in ~50% of the UK's only roseate tern colony at Coquet Island SPA, and ~10% of Sandwich terns at the North Norfolk Coast SPA). We do not know the extent of population resilience – for instance, how many non-breeding birds might replace adults dying from HPAI in 2022 in future breeding seasons.

2. We expect HPAI to remain a threat to UK breeding seabirds (and terrestrial species of birds, especially perhaps wintering waterbirds) for the foreseeable future. It will take several years for data to be gathered on abundance, mortality and productivity, so we will need to work with imperfect knowledge in the interim.

3. The species understood to be of greatest relevance for imminent impact assessment of offshore wind farms in England are black-legged kittiwake, Sandwich tern, northern gannet, great black-backed gull, common guillemot and razorbill.

4. We expect seabird data collected prior to summer 2022 (approx. June) to remain a valid representation of 'typical' seabird distribution and density, as this was before mass mortality events began to take place. (At this point, we assume affected colonies will recover in the short or long term, depending on available recruits to colonies, scale of further outbreak, and other factors). Data collected at sea from summer 2022 onwards will need discussion with Natural England, to understand how the species and colonies of concern, and their density at sea at certain times, may have been affected by HPAI. We welcome engagement with developers actively engaged in data collection through the Evidence Plan process.

5. Implications for data collection planned for projects beyond Round 4 will largely be site- and species-specific, and we recommend careful interpretation of results in consultation with Natural England. As the duration and severity of the epidemic is unknown and evidence will continue to accumulate over time, an iterative approach seems likely to be required.

6. Broadly, we expect any changes in abundance at colonies to be reflected proportionately in the at sea data. That is, it is reasonable to assume distribution patterns will remain broadly similar, but densities to change accordingly.

7. This assumption means that the scale of impact is likely to remain in proportion to the size of the colony. For instance, if a population were reduced by 10% then we would expect 10% fewer collisions. However, where a population has been significantly depleted, it should be considered whether an equivalent level of impact would have greater implications for the newly reduced population.

8. This would also reflect the likely need to ensure that the sea areas that support SPA (Special Protection Area) seabird colonies provide suitable conditions to restore populations where HPAI impacts have reduced population sizes, rather than simply maintain them. Natural England will aim to provide conservation advice that reflects any such changes.

9. Given the significant uncertainties about the health and resilience of seabird colonies introduced by HPAI, Natural England is likely to further emphasise the need to continue with a risk-based approach to its advice on additional impacts from development, particularly where

populations have been significantly impacted. This is to ensure that the impacts of HPAI are not compounded by those from development.

9. This approach is also likely to be taken to compensation discussions. We are likely to recommend that the nature, scope and scale of compensatory measures reflect the uncertainties around population trends, recovery and resilience introduced by HPAI.

10. We need much more data, and urgently need all concerned with seabird conservation and related developments to fund monitoring of key variables at important colonies, so that collectively we can make best decisions about impact and its effects in the face of the threat from HPAI.

11. Natural England will shortly publish its advice to Defra underpinning an English Seabird Conservation and Recovery Plan, which includes direct recommendations for seabird recovery, some relating to disease as well as seabird monitoring.

12. We must work collectively to ensure that seabird populations are made more resilient to the type of catastrophic event caused by HPAI. This includes delivering the actions relating to feeding, breeding and survival as outlined in Natural England's recommendations to Defra in the England Seabird Conservation and Recovery Plan.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix C to the Relevant Representations of Natural England**

# Offshore Ornithology Compensation

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix C – Offshore Ornithology Compensation

**In compiling this response the following documents have been considered:**

- [APP-063] 5.5 Habitats Regulations Derogation: Provision of Evidence
- [APP-064] 5.5.1 Appendix 1 Compensatory Measures Overview
- [APP-065] 5.5.1.1 Annex 1A Initial Review of Compensatory Measures for Sandwich Tern and Kittiwake
- [APP-066] 5.5.1.2 Annex 1B Sandwich Tern and Kittiwake Ecological Evidence
- [APP-067] 5.5.1.3 Annex 1C: Initial Review of Compensatory Measures for Gannet, Guillemot and Razorbill
- [APP-068] 5.5.1.4 Annex 1D: Record of HRA Derogation Consultation
- [APP-069] 5.5.2 Appendix 2: Sandwich Tern Compensation Document
- [APP-070] 5.5.2.1 Annex 2A: Outline Sandwich Tern Compensation, Implementation and Monitoring Plan
- [APP-071] 5.5.2.2 Annex 2B: Sandwich Tern Nesting Habitat Improvements Site Selection
- [APP-072] 5.5.3 Appendix 3: Kittiwake Compensation Document
- [APP-073] 5.5.3.1 Annex 3A: Outline Kittiwake Compensation Implementation and Monitoring Plan
- [APP-074] 5.5.4 Appendix 4: Gannet, Guillemot and Razorbill Compensation Document
- [APP-075] 5.5.4.1 Annex 4A: Outline Gannet, Guillemot and Razorbill Compensation Implementation and Monitoring Plan
- [APP-076] 5.5.5 Appendix 5: Derogation Funding Statement (Habitats Regulations and Marine and Coastal Access Act)

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| AA | Appropriate Assessment |
| ANS | Artificial Nest Structure |
| DCO | Development Consent Order |
| DEP | Dudgeon Extension Project |
| DEP N | Dudgeon Extension Project North |
| DEP S | Dudgeon Extension Project South |
| EIFCA | Eastern Inshore Fisheries and Conservation Authority |
| FFC SPA | Flamborough and Filey Coast SPA |
| HRA | Habitats Regulations Assessment |
| HPAI | Highly Pathogenic Avian Influenza |
| LEB | Looming Eye Buoys |
| NE | Natural England |
| NLO | Net Limitation Order |
| SEP | Sheringham Extension Project |
| SNCB | Statutory Nature Conservation Body |
| SPA | Special Protection Area |

**Please note:** This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations.

## Summary of Main Issues

### 1. Sandwich Tern Compensation

1. Natural England consider the principal method of compensation for Sandwich tern at Loch Ryan to represent the best available option for project-level delivery. The provision of breeding habitat at a location that has a historical population (no longer present), but with apparently suitable conditions to support a colony once again with sufficient intervention represents a major potential conservation gain for the species. The measure is likely to be technically deliverable, though some issues such as water supply need to be properly established, and some degree of certainty regarding likely success can be established from the evidence. The measure could help re-establish the species range, increase resilience by reducing reliance on a few major breeding colonies, and deliver ancillary net gain benefits to other species. As such, in principle we are supportive of the measure. However, Natural England remain of the opinion that further development, refinement, and expansion is required before this primary measure can be considered effective and secured.

2. Of particular concern is that a site has not been secured, and efforts to do so appear preliminary. As such it feels premature to be so focused on a particular site for the creation of habitat for sandwich tern and there has been limited exploration and scoping of back-up sites. Until greater confidence is gained that the primary measure can indeed be delivered, Natural England would encourage ongoing exploration of opportunities at other sites.

3. Natural England have very little confidence that a pontoon structure will be colonised by Sandwich tern. Without detailed designs, and preferably testing, we cannot support retaining this option for delivery of compensation. Instead, it is suggested that the focus should be on scoping and progressing alternative sites for habitat creation in case of insurmountable issues at Loch Ryan.

4. The scale of compensation is not yet clearly defined, and the methodology for determining the population required to compensate a specific level of estimated mortality has not been described. Natural England acknowledge that the Applicant proposes compensating for the estimated upper 95% confidence interval impact through the habitat creation measure.

5. The scale of the lagoon and islands design is relatively limited. While it is accepted that sufficient island space is proposed to accommodate a breeding population approximating that which was present at the site historically and would be expected to address an estimated impact of 28 birds/annum, we urge a more ambitious approach to lagoon habitat creation that seeks to reduce uncertainties by increasing the attractiveness of those islands. This would also maximise the potential for wider biodiversity benefits.

6. A number of management interventions are proposed at the Farne Islands SPA to aid the recovery of the Sandwich tern population there. Natural England have significant concerns about the likely efficacy of the measures proposed, the reliance on evidence from other tern species, the true additionality of the measures considering the historical implementation of them at the site (and for shelters, likely future use), and setting a precedent of allowing such measures to be implemented and defined as compensation. We do recognise that the interventions on the Farne Islands SPA are not the primary means of compensation here, but at this stage we conclude they add very limited value to the proposed package of measures.

7. There remains a need to fully detail the proposed scale of the measures if they will both be deployed. I.e., a target population (allowing for inter-annual variation) at the new colony to ensure success in terms of productivity required to compensate for impacts over the lifetime of the project. Currently, measures have loosely ascribed potential benefit quantified, but need to have clearly justified and defined scales to enable delivery and monitoring of benefits/success or need for adaptive management. It is not clear if both measures will aim to compensate the impact, in effect committing to a 2:1 ration of compensation, or if the suite of measures is to increase resilience and the overall aim of them is to compensate at a 1:1 ratio.

8. We note the proposed approach regarding prey availability is a wholly strategic one. Whilst fisheries management itself is likely to be beyond the gift of the Applicant, Natural England considers that evidence-gathering on sandwich tern prey species could make a meaningful, if secondary, contribution to the proposed package of measures, through facilitating future strategic measures. We would be pleased to discuss potential options the Applicant, which are likely to relate to collecting data on the distribution and abundance of herring and sandeel at the spawning and larval stages of their lifecycles in areas used by foraging terns from NNC SPA.

## 2. Kittiwake Compensation

9. Compensation for kittiwake is proposed by making nest site improvements to enhance the breeding success of nesting pairs occupying unsuitable or high-risk sites where they are currently failing, primarily due to displacement.

10. Natural England considers that the most effective way of compensating for impacts on FFC SPA kittiwake would be to increase prey availability and thereby kittiwake productivity. However, we recognise the Applicant's position that this is not achievable through project-led compensation.

11. An alternative compensation approach that is deliverable at the project level aims to increase the breeding kittiwake population and productivity through provision of artificial nest structures (ANS). Natural England consider the approach to have broad merit but believe that further onshore ANS implementation is now of uncertain benefit in the light of the planned provision of approximately 3,000 nest spaces on the Southern North Sea coast by other OWF projects. It has not been demonstrated that there is a sufficient pool of habitat-limited kittiwake recruits, suitable locations and/or prey availability to meet and sustain the existing demand for this measure.

12. Natural England therefore advise that any further ANS should be provided offshore. There is a comparative shortage of nesting opportunities available offshore, and the potential to site ANS in areas where the prey resource may be under-exploited by coastal-nesting kittiwakes. Predation pressure is also expected to be much reduced offshore. Furthermore, we note the Applicant's interest in collaborating with other developers to deliver ANS and consider that in the case of an offshore structure, collaboration and co-funding is likely to be more beneficial in delivering what we accept is a challenging and relatively expensive measure. At present however there is no detail provided on such a collaborative approach.

13. There may be alternative opportunities for compensation by reducing negative interactions with breeding kittiwakes in urban areas, as set out to some extent by the Applicant. Natural England consider that there may be compensatory opportunities here for SEP and DEP, given the level of predicted impact. However, we have concerns that the proposals submitted will not be responsive enough to adequately address the issues highlighted in Lowestoft. Further, we consider that elements of the proposal, especially at Gateshead, are essentially for the provision of onshore ANS. We reiterate that we do not support further onshore ANS provision.

14. An ongoing 'rapid response' version of the proposed measure, that aims to 'save' nests each year from problematic locations that are identified (or reported) early in the breeding season may have more merit, though we recognise this would be logistically difficult, and have uncertain prospects for ongoing validity over the project lifetime. These challenges notwithstanding, we do see potential scope for working with both the Tyne and Lowestoft Kittiwake Partnerships along these lines, and recommend the Applicant further explore this approach. This could be undertaken in tandem with targeted small-scale local ANS provision close to those existing 'flashpoints' identified by the Applicant. Equally, the measure may seek to mitigate impacts arising from problematic nests or encourage short term tolerance in exchange for future deterrent measures.

15. We highlight that it may be difficult to secure agreements for the provision of nest sites on or near buildings that are actively discouraging nesting kittiwakes, even if a lower-impact site can be provided. The nest site provision measure sets out some locations where nests are known to have failed recently, however, there is no guarantee that sufficient failing sites will be identified at the time of implementation, and that a solution could be provided in a timely fashion. Currently, we expect birds that fail will move to a new site the following year, so it is not clear how to quantify the additional benefit of this measure.

16. Furthermore, we retain concerns that the project timelines introduce a risk that the measure will effectively be superseded prior to implementation by the proposed large-scale installation of bespoke ANS in the Lowestoft and Gateshead areas which are designed to offer high quality nest sites to displaced birds, or those currently utilising sub-optimal habitat. We highlight that planning permission has been granted for three kittiwake walls at Lowestoft Harbour, and a marine licence is being sought for two large ANS a short distance offshore, totalling in excess of 1200 nest spaces. Furthermore, it is the intention of ABP Lowestoft to restore the original, but no longer functioning, kittiwake 'wall' in the harbour.

17. At Gateshead, a planning application has been submitted for a bespoke ANS adjacent to the existing Saltmeadows kittiwake tower. With a new purpose-built structure built immediately adjacent, it is hard to see there being sufficient benefit to a modification to the existing tower there.

18. Natural England therefore recommends that the Applicant explores the potential for a 'rapid response' approach to dealing with negative urban interactions with local kittiwake partnerships as a potential avenue for compensation, and/or prioritises collaboration on an offshore ANS with other developers and brings forward a specific proposal regarding this.

## 3. Gannet

19. Natural England can advise that on the basis of the information so far provided, we believe there will be no requirement for provision of gannet compensation. As such we have not provided detailed comments on the without-prejudice proposals for delivery of compensation for that species.

## 4. Guillemot and Razorbill

20. The proposals for compensatory measures to account for impacts on guillemot and razorbill are relatively undeveloped and lack the required detail on location, scale, technical feasibility and long-term implementation. Crucially, there is no clear evidence that bycatch or predation impacts at an identified site are occurring to a degree that offers the Applicant sufficient opportunity to reduce those impacts at the scale required to provide compensation.

**Detailed Comments**

| Point | Section | Comment | Risk |
|---|---|---|---|
| Document used: [APP-063] 5.5 Habitats Regulations Derogation: Provision of Evidence | | | |
| 1 | All | Reviewed, no comments, agree with content | |
| Document used: [APP-064] 5.5.1 Appendix 1 - Compensatory Measures Overview | | | |
| 2 | All | Reviewed, overview document | |
| 3 | Plate 5-1-2 | Figure gives a useful overview of the submitted documents. | |
| Document used: [APP-065] 5.5.1.1 Annex 1A Initial Review of Compensatory Measures for Sandwich Tern and Kittiwake | | | |
| 4 | All | Initial scoping of options, no detailed comments | |
| Document used: [APP-066] 5.5.1.2 Annex 1B Sandwich Tern and Kittiwake Ecological Evidence | | | |
| 5 | All | Ecological evidence, all sound. No comments | |
| Document used: [APP-069] 5.5.2 Appendix 2 - Sandwich Tern Compensation Document | | | |
| 6 | 143 | Agreed, and this argument is strengthened further by the recent HPAI outbreak. | |
| 7 | 145 | Natural England reiterate that we consider it very unlikely that Sandwich terns would colonise a pontoon structure of a similar design to that frequently deployed for common tern.<br><br>Anecdotally, it appears that sandwich terns tend to select nest sites on higher ground and often further from the tide line or water compared to common tern, a species which shows greater flexibility and variation in nest site selection. A pontoon structure would seem unlikely to offer suitable opportunities for sandwich tern should this be the case, and it is unclear whether the design would (or could) be modified compared to previously installed pontoons. A very large pontoon with a graded sand and shingle covered topside could conceivably attract sandwich tern. Although introducing some management issues, vegetation could be used to approximate embryonic dunes.<br><br>It is stated that, *"Although it is uncertain whether Sandwich terns would choose to colonize a pontoon (as common terns have in other locations), no attempts have been made to make this possible and so the lack of evidence is due to a lack of tests rather than to Sandwich terns failing to colonize such a structure."* However, this may be an oversimplification of the situation, i.e., while it could be argued that pontoons have not been designed for sandwich tern specifically, they have been installed in locations where the species breed and have not been colonised. | |

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| | | Tern pontoons have been installed at locations with, or close to, breeding sandwich tern populations. For example, in the eastern Solent (South coast of England) there are tern rafts/pontoons in Langstone Harbour, at Farlington Marsh and in Chichester harbour, with Sandwich tern colonies utilising natural habitat at Langstone harbour and Pagham harbour. There has been no colonisation of pontoons by Sandwich tern. The fact that such pontoons have not been colonised may offer some first step in establishing design principles for pontoons by contrasting them with known natural sites (e.g., size comparisons, height above water level, etc).<br><br>To have any confidence in the suitability of a pontoon for breeding sandwich tern Natural England will need to review detailed designs, which should be informed by species-specific preferences regarding breeding site characteristics. Preferably, these designs would be tested at a location where sandwich terns currently breed at sub-optimal locations (e.g., due to disturbance or predation pressures) or are habitat limited.<br><br>On the evidence and information presented, Natural England advise that the Applicant commit to the preferred option of habitat creation by provision of a lagoon with nesting islands. Contingency should be provided through alternative locations rather than potentially suboptimal alternatives with high levels of uncertainty regarding colonisation potential. | |
| 8 | 148 & 149 | The proposed scale of compensation is to compensate the annual upper 95% CI of adult mortality. According to the Applicants estimates this will require the equivalent of 28 adult Sandwich terns to be delivered into the population annually for the lifetime of the project. It is suggested that *"120-150 pairs be likely to produce about 100 chicks per year (equivalent to about 38 adults)"*.<br><br>To provide the requisite confidence in the number of recruits that would be produced, the methodology for calculation of a reasonable target population for the compensatory measure should be fully detailed.<br><br>It would be useful to stress test the proposed colony size in terms of its ability to deliver the required compensation under a worst-case productivity scenario.<br><br>Natural England agree that the restoration of lost breeding range is of significant conservation benefit. It is of note that this benefit could also be considered scalable, i.e., the value of the measure in terms of population resilience will increase with scale of provision. However, it should also be recognised that the measure does not directly benefit the impacted site. This gives further weight to the need for an ambitious approach to habitat creation to benefit sandwich tern. | |
| 9 | Figure 6.1 | The land to the southwest of Scar Point would appear to offer opportunities for habitat creation. Natural England requests clarification regarding the extent of the area of search, and exclusion of the apparently suitable adjacent area to the south and west. | |

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| 10 | 155 | Natural England agree that increasing the size of islands within the pool is not likely to impact colonisation potential. However, the proposed lagoon/pool and islands therein are of relatively limited size. We consider that provision of a greater number of islands within a larger lagoon could increase the likelihood of colonisation, given the limited understanding of what drives sandwich tern nest selection. There would be increased certainty in the measure being able to accommodate the population required if more space was available as the potential for habitat heterogeneity would be increased. The works would also then deliver greater ancillary benefits, e.g., to shorebirds in winter.<br><br>While the evidence clearly indicates that sandwich tern breed at high density on small or restricted areas of suitable habitat, it is not as clear what other factors relating to the surrounding area may be of importance for this habitat to be so well utilised. Outline drawings of the pool would be useful to visualise the proposed habitat creation.<br><br>Consideration of increasing the scale of habitat provision should also account for the fact that other species are likely to colonise. This may be of overall benefit, e.g., in the case of black-headed gull. However, it should be considered that there will be increased competition for nest site space. Further, a very spatially compact colony of sandwich terns might be more vulnerable to kleptoparasitism (by black-headed gull) or avian predators that directly predate eggs and chicks, such as grey heron.<br><br>Aspects of the design such as electric fencing should follow best practice guidance, e.g., Babcock and Booth (2020) Anti-predator Fencing. Tern Conservation Best Practice.[1]<br><br>**Overall, Natural England would strongly encourage the Applicant to be more ambitious regarding the scale of habitat provision, and to present detailed proposals for the habitat creation during the Examination.** | |
| 11 | 156, 157, 158 | The pontoon design outlined here is essentially a scaled-up version of the general design that has frequently been provided for common terns. Sandwich tern have not colonised these pontoons previously, and the designs and locations may be unsuitable.<br><br>Natural England are of the opinion that the provision of a pontoon for breeding Sandwich tern is a high-risk option due to a lack of any species-specific evidence to suggest that colonisation is likely. Moreover, in some locations where pontoons have been deployed such as Chichester Harbour, Sandwich terns have never even been noted to approach the rafts (Peter Hughes, Chichester Harbour Conservancy, *pers.* | |

[1] Anti-predator fencing - ROSEATE TERN LIFE PROJECT

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| | | *comms*) although it is noted there are a number of factors that could contribute to this (specific location, design, time of deployment).<br><br>If a pontoon option is to be progressed, it is suggested that significant development of the design should be considered to increase the chance of colonisation by Sandwich tern. For example, creating a more diverse habitat by grading the surface, increasing the height above the water level, or planting vegetation might all be beneficial. Nevertheless we consider that the risk of non-colonisation would remain considerable. | |
| 12 | 170 | We note that *"Discussions with relevant landowners are underway to secure land or rights to deliver nesting habitat improvement measures at Loch Ryan, Scotland. The Applicant will provide PINS with a further update on the progress of these discussions following DCO application submission."*<br><br>Natural England welcome this and highlight the importance of progressing efforts to secure land or rights to deliver nesting habitat. The measure cannot be considered secured until the completion of this process.<br><br>We anticipate updates throughout the Examination and will advise as appropriate. | |
| 13 | Table 6.4 | We note that the outline roadmap for the implementation of the habitat provision compensation measure aims to allow 2 full breeding seasons of operation prior to first power at SEP and DEP.<br><br>Sandwich tern recruit into the breeding population in their third year, and therefore the measure could in theory be delivering adults into the wider breeding population at the point of impact. However, colonisation of habitat is highly uncertain in terms of time taken, and uptake/growth. With a 2-year lead in it is highly likely that the measure will accrue a mortality debt in the formative years. Calculations relating to the scale of the measure required to compensate a specified impact should be stress tested against mortality debt scenarios, especially when further adaptive management options are limited. | |
| 14 | 177 | We note that the Applicant states, "*During early informal engagement with National Trust on the Plan it was confirmed that this does not include deployment of tern nest boxes and shelters that have been used successfully at Isle of May (Steel and Outram 2020) and does not include deployment of cameras to monitor tern nesting and any attempts at predation of tern nests. Both of these measures therefore can be considered 'over and above' management of this SPA and therefore are additional measures that can provide compensation."*<br><br>It is important to note that Sandwich tern on the Isle of May do not nest in boxes, but in the open on the terraces. To our knowledge, there is no record from any colony of Sandwich terns nesting within boxes/shelters and there is only qualitative evidence of any benefit. For example, on the Isle of May, *"Sandwich terns do not use the boxes directly, but we found pairs like to nest against the side of them and the chicks definitely use them. On ringing missions, we would sometimes find every Sandwich tern chick had run to hide in boxes to escape us. This similar behaviour was used if a predator was in the area, so yes* | |

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| | | *as we found that every little helped so putting boxes down had more benefits than not."* (David Steel, Isle of May warden, *pers. comms*).<br><br>It must also be acknowledged that terraces (with boxes) have previously been built on Inner Farne but were not colonised by Sandwich terns.<br><br>While Natural England are supportive of efforts to restore the Sandwich tern population on the Farne Islands, we highlight that the principal issues identified as affecting the colony relate to vegetation management (resulting in limitations to nesting space) and predation from large gulls. It is anticipated that the forthcoming National Nature Reserve (NNR) plan will include sufficient measures to address these. Should that plan then be implemented, it is difficult to support the delivery of compensation through measures that are not thought of sufficient importance to be delivered by the site management plan.<br><br>While the provision of cameras to further understand predation would undoubtedly provide useful scientific data, and possibly inform further management, this should not be considered as a measure that could directly provide compensation. | |
| 15 | 178 | Provision of nest boxes, monitoring by camera, and potential installation of bamboo canes to deter gull predation is proposed at the Farne Islands to improve breeding success of Sandwich terns.<br><br>It should be noted that both nest boxes/shelters and bamboo canes have previously been used on the Farne Islands for the benefit of breeding terns, and boxes/shelters are likely to be deployed in the future. It is also unclear whether the provision of 400 nest boxes and 400 shelters in areas which could support sandwich tern is feasible, and whether this is proposed for areas already occupied by sandwich terns or where it is hoped they could return.<br><br>Natural England remain concerned that the measures proposed are not truly additional, and in any event are likely to provide only minor benefits compared to an ongoing programme of vegetation and large gull management. | |
| 16 | 181 | We consider that the evidence supplied regarding expected reductions to nest and chick predation is not specific to Sandwich tern. It is not expected that Sandwich terns will nest inside boxes, so nest predation is unlikely to be significantly reduced.<br><br>If reducing predation of chicks is proposed as a compensatory measure, then a full understanding of existing levels and impacts of that predation will be required in order to design solutions and quantify any benefits.<br><br>The current estimates of potential gains from these measures appear highly speculative. | |

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| 17 | 189 | The Applicant states that, *"High uptake of nest boxes by terns is anticipated at the Farne Islands, and a significant boost to their breeding numbers and breeding success, as found at the Isle of May (Steel and Outram 2020)."*<br><br>It is also noted here that a study relating to the efficacy of canes used data from the Farne Islands. Natural England do not consider that the cited evidence is sufficient to suggest high uptake of nest boxes by Sandwich tern. Sandwich tern do not nest within the boxes at the Isle of May (or elsewhere). Productivity benefits have not been quantified.<br><br>Again, it is very difficult to support the implementation of bamboo canes as compensation due to issues of additionality and the danger of simply repurposing as compensation low-cost interventions that, if effective, should be incorporated into routine site management. | |
| Document used: [APP-070 and APP-071] 5.5.2.1 and 5.5.2.2 Annex 2A - Annex 2B - Sandwich Tern Nesting Habitat Improvements Site Selection | | | |
| 18 | <u>General comments</u><br>• Natural England agrees with the suitability of the area and identified preferred site within it. The species conservation benefit of increasing resilience by range restoration and population dispersal is particularly highlighted by the recent HPAI outbreak.<br>• It would be useful to clearly identify and prioritise locations other than Loch Ryan in case of insurmountable issues with acquiring or developing a site there, or for potential adaptive management options if required.<br>The RSPB proposal to install a common tern raft in very close proximity to the identified site raises some concerns, but also possibilities. For example, if the pontoon was to be designed with Sandwich tern in mind it would still be reasonable to assume common tern could colonise it. A pontoon and lagoon could then conceivably be implemented alongside one another. | | |
| 19 | 47 | The Applicant claims that *"Until now no pontoon has been deployed at a site where Sandwich terns are likely to nest, so it is uncertain whether Sandwich terns would use a pontoon."*<br>We are not convinced this is strictly true – see comments 7 and 11 above. To our knowledge, Sandwich terns have not interacted with habitat created on pontoons in any way despite using nearby natural habitat. However, it is possible that this is simply due to the pontoons being deployed later in the season to reduce 'swamping' by breeding black-headed gull. It is not clear if there is a pool of habitat limited black-headed gull in Loch Ryan, but it is conceivable that a similar issue could occur. The scale of habitat provision may need to account for this likelihood.<br><br>There is no evidence to suggest that Sandwich terns might colonise a pontoon structure, although it does appear highly unlikely that those deployed to date for common tern will be attractive or suitable. Provision of a pontoon for Sandwich tern should be considered experimental, and thus carries a relatively high risk of failure. | |

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| 20 | 51 | We note that the RSPB have received funding to install a common tern pontoon just offshore of Wig Sands, immediately to the west of Scar Point in Loch Ryan. To help understand the spatial implications better, we request that the Applicant define the potential area for common tern pontoon installation on Figure 5. | |
| 21 | 53 | Five potential sites have been identified around Loch Ryan, two of which are in the preferred area of search. We request that the Applicant mark all of the potential sites on Figure 5 and/or 6. | |
| Document used: [APP-072] 5.5.3 Appendix 3 - Kittiwake Compensation Document | | | |
| 22 | 94 | The Applicant states, *"There is a limit to how many sites would be satisfactory locations for new artificial colonies of kittiwakes, but there is also a limit to how many immature prospecting kittiwakes will be available to take advantage of such opportunities. Although there clearly is a pool of immature kittiwakes seeking to recruit into colonies, the size of that pool is uncertain. Therefore, other possible, and complementary, approaches to increasing productivity of kittiwakes should be explored."*<br><br>Agreed. Natural England consider the lack of knowledge regarding likely recruits to new nest sites, and the difficulty in securing locations to deploy ANS, to be significant problems. | |
| 23 | 95 | The Applicant states, *"…in principle, an adaptation to an existing structure that increased breeding success could be a greater contribution to kittiwake conservation than provision of new structures if those new structures achieved no greater breeding success than currently achieved by kittiwakes already nesting on existing artificial sites."*<br><br>Natural England does not believe that adaptations to an existing structure are inherently more likely to deliver productivity gains than provision of new structures. In fact, if well located and designed bespoke structures could well be more effective. | |
| 24 | 96 | The Applicant highlights that the measure is *"very well aligned with the Lowestoft Kittiwake Partnership 'vision, objectives and outputs'"*<br>Agree. If appropriately designed and targeted, the measure could deliver ancillary benefits by reducing conflict and ill-feeling toward nesting kittiwakes generally. | |

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| 25 | 112 and 128 | Regarding scale of the measure, the Applicant states that, *"… the target of replacing 48 failing nest sites with 48 optimal nest sites is considered to be a sufficient and appropriate scale of compensation for SEP and DEP."*<br><br>*"Given that the proposal for making nest site improvements for kittiwakes has been demonstrated to be feasible from an ecological perspective at a range of sites and locations, the detailed design of any such improvements will be developed at a later stage and agreed through the Kittiwake CIMP"*<br>It is not clear that this approach will continue to be viable once other projects have installed ANS.<br><br>A method to quantify benefit has not been fully detailed. This should be submitted into the Examination. We also observe that the Applicant equates birds lost from FFC SPA with birds entering the biogeographic population from which FFC SPA draws its recruits. Given all the other colonies that kittiwake produced by the ANS could colonise, Natural England does not consider this equivalence is likely to maintain the coherence of the national site network<br><br>The measure is described as an intervention to an identified issue, but it envisaged that once ledges have been provided to compensate for losses from a known displacement then they will continue to function. I.e., it is the intention that in following years the productivity of those ledges will constitute the measure of success. It remains unclear how this measure is fundamentally different to the provision of an ANS, and ultimately, if it is appropriate to continue facilitating or encouraging opportunistic nesting kittiwakes on buildings in urban environments given the future provision of purpose-built ANS. | |
| 26 | 131 | The measure is scheduled to be implemented 4 (worst case 3) years before the SEP and DEP turbines are operational.<br><br>Due to the proposed timing and definition of success, there are high levels of uncertainty that suitable locations identified (or otherwise) will be available for the required scale of intervention over the lifetime of the project. It is plausible that prior to implementation, improvements and proliferation of deterrent measures and the new provision of bespoke ANS installed nearby may already be excluding birds from nuisance sites while providing high quality alternative sites. I.e., birds that would have been targeted by the measure may have relocated, and the potential for colonisation of inappropriate urban locations, some of which are clearly sub-optimal, may be reduced. | |
| 27 | 147 | The Applicant highlights that, *"However, Concerns have been raised by stakeholders around the potential for diminishing returns with an increasing number of new structures."*<br><br>Natural England confirm that we are not supportive of the further provision of onshore ANS, especially in the Lowestoft area, until the results of the currently planned provision start to emerge. In the light of the recent | |

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| | | planning application for an additional ANS next to the existing one at Gateshead Saltmeadows, further provision on the Tyne seems also of questionable benefit.<br><br>It is not clear that the measures proposed here offer any real-world additional benefits distinct from the provision of new ANS. | |
| Document used: [APP-074] 5.5.4 - Appendix 4 - Gannet, Guillemot and Razorbill Compensation Document | | | |
| 28 | 84 | We note that 50% displacement and 1% mortality rates have been used to estimate mortality of 6 guillemot a year to be compensated. Natural England does not support the use of a single rate for the purposes of impact assessment, advising that a range-based approach is taken instead. Please see our offshore ornithology comments. We also do not support the use of this specific rate for scaling compensation. | |
| 29 | 104 | We note that 50% displacement and 1% mortality rates have been used to estimate mortality of 0.5 razorbill a year to be compensated. Please see comment 30 above, which also applies to razorbill. | |
| 30 | 130 | The Applicant highlights that Loch Ryan area hosts a wide range of migrant and wintering shorebirds, seabirds and waterfowl, and that habitat provision, *"will contribute to improving the conservation status of the broader network and these bird populations".*<br><br>Natural England do not consider the provision of a pontoon will deliver any meaningful secondary benefits for non-target species.<br><br>If provision of an inland pool is also intended to provide non-like-for-like compensation for project impacts other than Sandwich tern the design must balance the varied habitat requirements appropriately and the habitat provided be of a scale and nature that would result in meaningful levels of benefit. | |
| 31 | 143 | The Applicant states, *"Evidence from St John's Pool is that waterfowl arrived within days of the habitat being created and other similar habitat creation schemes have experienced rapid take up by waterfowl and shorebirds. Therefore, it is reasonable to expect some benefits at Loch Ryan immediately following installation, allowing for the time of year that this is completed."*<br><br>Natural England agree that the creation of a protected inland pool with islands would be utilised by waterfowl and shorebirds immediately. However, we highlight that if a pontoon was to be installed instead there would be few, if any, substantial benefits to these species. | |
| 32 | 205 | The nature and scale of set net use in Northeast England is not clear from the text, or information supplied by the Applicant in Annex 1D Record of HRA Derogation Consultation (document reference 5.5.1.4). | |

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| | | Natural England request clarity on the exact nature of set netting activity identified, to understand the potential for bycatch reduction to provide compensation opportunities. Are nets for trout set from beaches and are they attended by fishers? Although it is stated that some fishers operate year-round, it is likely that this activity is predominantly seasonal, to what extent? How widespread is this activity? Has any attempt been made to quantify levels of auk bycatch? Has it been ascertained from fishers or NEIFCA if any best practice measures as adopted in the Filey Bay fishery are being followed voluntarily? | |
| 33 | 210 | Regarding the success of measures implemented at Filey Bay to reduce auk bycatch the Applicant states, *"the reduced bycatch achieved there may relate to the use of high visibility corline and the attendance of fishers at nets with the aim of releasing any birds that become entangled."*<br><br>It is Natural England's understanding that the Filey Bay Net Limitation Order (NLO) bylaws stipulated that a record was kept of birds removed and number released alive. Has this data been obtained to evidence the efficacy of releasing entangled birds? | |
| 34 | 213 | Natural England currently consider the Looming Eye Buoys (LEB) to remain an unproven technology with respect to reducing bycatch of auks, and has significant reservations regarding the conclusions drawn on the trial carried out by Hornsea 4 OWF. Please see Natural England's advice during the Hornsea Project Four Examination available at: EN010098-001970-Natural England - Comments on any submissions received at Deadline 6 1.pdf (planninginspectorate.gov.uk). | |
| 35 | 217 | The Applicant states, *"The most effective measure implemented at Filey Bay is anticipated to be the training of fishers to safely remove and release birds that become tangled in nets so that the birds survive rather than die"*.<br><br>See previous comment, paragraph 210.<br><br>Is there any evidence from any set net fisheries that training fishers to remove and release birds has been successful in reducing bycatch mortality? It is likely that fishers must attend nets very closely with short soak times for birds not to drown prior to retrieval. In this case it may be that bycatch is reducing simply by a disturbance effect reducing bird density in the vicinity of nets.<br><br>It is not clear that the process of removing auks from nets and releasing them is in of itself a problematic process for fishers. Have fishers identified a need for this training? | |
| 36 | 216 | The potential for collaboration with Ørsted on bycatch reduction measure is noted.<br>Natural England are supportive of potential collaborations to deliver compensation measures and consider the approach can facilitate and expediate delivery of costly and/or difficult measures. | |
| 37 | 217 | Natural England acknowledge that the Applicant is proposing that compensation is required for very small numbers of auks, even taking into account our reservations regarding the displacement and mortality rates used. However, before training of fishers to effectively release birds entangled in nets can be considered as | |

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| | | a viable compensatory measure, the current level of bycatch mortality that could be prevented by more effective disentanglement and release needs to be quantified. At present it is not clear that live birds are being bycaught and not surviving the removal and release process. | |
| 38 | 219 | The Applicant has identified sites for delivery of bycatch reduction using the analysis presented by Cleasby *et al* (2022) to identify 'hotspots' of breeding birds from FFC SPA and gillnet fisheries.<br><br>Natural England highlight that Cleasby *et al* (2022) state, *"Fishing effort data presented here did not include an estimate of bycatch rate. As such, the maps highlight areas of potential rather than actual risk."* Accordingly, Natural England do not accept that these locations are necessarily suitable and consider that evidence is required to support the selection of these sites for bycatch reduction measures.<br><br>Has there been any attempt to ascertain if bycatch is occurring, and if so, to quantify rates at the proposed fisheries? | |
| 39 | 221 | The Applicant states, *"Because measures will reduce bycatch of adult guillemots and razorbills (as well as other age classes that are present) the compensation will account one to one for losses to OWF impacts, with no delay."*<br><br>Natural England agree that as bycatch reduction should reduce direct mortality it can deliver compensation instantly upon implementation. However, we consider that the age structure of the population must be accounted for in quantifying the benefit. Only the proportion of adult birds saved from bycatch mortality can be considered as direct compensation for impacts on birds apportioned to the breeding population at FFC SPA. | |
| 40 | 224 | The Applicant states, *"It would be necessary to monitor bycatch of guillemots and razorbills in the gillnet fishery being subject to bycatch reduction measures, preferably including monitoring of bycatch numbers before bycatch reduction measures are implemented in order to be able to quantify the gain being made."* Natural England consider it essential that empirical data is gathered to evidence the levels and nature of pre-existing bycatch in the target fisheries. Without this data the benefits of implementing the compensatory measure cannot be proven, and following implementation, quantified. | |
| 41 | 224 | The Applicant states, *"It would also be desirable to monitor change in guillemot breeding numbers at FFC SPA (corrected for any influence of change in sandeel stock biomass and impacts of climate change) to assess the extent to which the population trajectory at FFC SPA was influenced by reduction in bycatch."*<br><br>Whilst we welcome the proposed monitoring of guillemot trends at FFC SPA, we consider this is best done collaboratively by industry, as a number of developments will be impacting the SPA (and some will be required to provide compensation). It would not be possible to discern the impacts of a given project and/or its compensation, but such monitoring would help provide some comfort that the populations trajectory was | |

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| | | not adversely affected. We recommend the Applicant work with other developers to deliver strategic monitoring of the FFC SPA colony. | |
| 42 | Table 8-1 | Only one year of baseline monitoring of bycatch is proposed, and this monitoring is not implemented until the completion of the development of compensation proposals and site selection. Natural England highlight the necessity of identifying and quantifying bycatch as part of the measure development and site selection process. It is currently uncertain that there is bycatch of the target species that can be reduced. Further, the nature of this bycatch is not understood, so any measure to address it is purely speculative.<br><br>Natural England advise that at least two years of baseline data should be gathered to account for inter-annual variation. | |
| 43 | 234 | The potential for compensation through eradicating rats in the Channel Islands is identified.<br><br>Natural England recommend that the Applicant review our advice relating to the Hornsea 4 compensatory measure proposal, in which we highlight that, "*it is not clear that the sites shortlisted will offer sufficient opportunity to deliver meaningful benefits to auks or the level of compensation that Natural England consider necessary".* This being the case, it is hard to see how predator management in the Channel Islands could offer compensation opportunities to SEP and DEP given the likely requirements of Hornsea 4. | |
| 44 | 235 | The Applicant proposes a collaboration with other developers to deliver a predator reduction measure.<br><br>As previously stated, Natural England are supportive of potential collaborations to facilitate the delivery of compensatory measures. However, for measures to be delivered by these collaborations to be considered secured the agreements must be fully detailed, and a mechanism for quantifying and portioning the benefits to the projects involved should be set out. | |

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

**Appendix D to the Relevant Representations of Natural England**

**Marine Mammals**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix D – Marine Mammals

**In compiling this response, the following documents have been considered:**

- [APP-059] 5.4 Report to Inform Appropriate Assessment (RIAA)
- [APP-096] 6.1.10 Chapter 10 Marine Mammal Ecology
- [APP-191] 6.3.10.1 Marine Mammal Consultation Responses, Information and Survey Data
- [APP-192] 6.3.10.2 Underwater Noise Modelling Report
- [APP-193] 6.3.10.3 Marine Mammals Cumulative Impact Assessment (CIA) Screening
- [APP-194] 6.3.10.4 Marine Mammal Unexploded Ordnance (UXO) Assessment
- [APP-288] 9.4 Draft Marine Mammal Mitigation Protocol
- [APP-289] 9.5 Offshore In Principle Monitoring Plan
- [APP-290] 9.6 In Principle Site Integrity Plan for the Southern North Sea Special Area of Conservation.

**Glossary of Acronyms and Abbreviations**

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| ADD | Acoustic Deterrent Devices |
| BEIS | Department for Business, Energy & Industrial Strategy |
| CEA | Cumulative Effect Assessment |
| CIA | Cumulative Impact Assessment |
| CRP | Cable Route Protocol |
| CS | Coastal Shelf |
| CSCB MCZ | Cromer Shoal Chalk Beds Marine Conservation Zone |
| DLL | District Level Licence |
| DML | Deemed Marine Licence |
| DCO | Development Consent Order |
| DEP | Dudgeon Extensions Project |
| DEPN | Dudgeon Extension Project North |
| DEPONS | Disturbance Effects of Noise on the Harbour Porpoise Population in the North Sea |
| DEPS | Dudgeon Extension Project South |
| DOW | Dudgeon Offshore Wind Farm |
| DOWF | Dudgeon Offshore Wind Farm |
| EC | Export Cable |
| ECC | Export Cable Corridor |
| EcIA | Ecological Impact Assessment |
| ECP | England Coastal Path |
| ECR | Export Cable Route |
| EIA | Environmental Impact Assessment |
| EIFCA | Eastern Inshore Fisheries and Conservation Authority |
| EPS | European Protected Species |
| ES | Environmental Statement |
| ETG | Expert Topic Group |
| ExA | Examining Authority |
| GBS | Gravity Base Structure |
| GW SPA | Greater Wash Special Protection Area |
| HDD | Horizontal Directional Drilling |
| HP3 | Hornsea Project Three |
| HRA | Habitats Regulations Assessment |
| iPCOD | interim Population Consequences of Disturbance |
| IPMP | In-principle Monitoring Plan |
| JNCC | Joint Nature Conservation Committee |

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| km | Kilometre |
| KMP | Kittiwake Management Plan |
| LSE | Likely Significant Effects |
| LVIA | Landscape and Visual Impact Assessment |
| MCZ | Marine Conservation Zone |
| MCZA | Marine Conservation Zone Assessment |
| MEEB | Measures of Equivalent Environmental Benefit |
| MMMP | Marine Mammal Mitigation Plan |
| MMO | Marine Management Organisation |
| MU | Management Unit |
| NAS | Noise Abatement Systems |
| NBIS | Norfolk Biodiversity Information Service |
| NCAONB | Norfolk Coast Area of Outstanding Natural Beauty |
| ND | No Deployment |
| NGESO | National Grid Electricity System Operator's |
| NNHC | North Norfolk Heritage Coast |
| NSIP | Nationally Significant Infrastructure Project |
| NE | Natural England |
| NERC Act | Natural Environment and Rural Communities Act |
| NNC SAC | North Norfolk Coast Special Area of Conservation |
| NNSSR | North Norfolk Sandbanks and Saturn Reef |
| O&M | Operation & Maintenance |
| OLEMS | Outline Landscape and Ecological Management Strategy |
| OSP | Offshore Substation Platform |
| OWF | Offshore Wind Farm |
| PCM | Post-construction Fatality Monitoring |
| PDE | Project Design Envelope |
| PTS | Permanent Threshold Shift |
| RIAA | Report to Inform Appropriate Assessment |
| RTD | Red Throated Diver |
| RWCS | Realistic Worst-Case Scenario |
| SAC | Special Area of Conservation |
| SCOS | Special Committee on Seals |
| SE | South-East |
| $SEL_{ss}$ | Sound Exposure Level |
| SEP | Sheringham Extensions Project |
| SIP | Site Integrity Plan |
| SMRU | Sea Mammal Research Unit |
| SNCB | Statutory Nature Conservation Body |
| SNS | Southern North Sea |
| SoS/SOS | Secretary of State |
| SOWF | Sheringham Shoal Offshore Wind Farm |
| SPA | Special Protection Area |
| SS | Sheringham Shoal |
| TTS | Temporary Threshold Shift |
| UXO | Unexploded Ordnance |
| WCS | Worst Case Scenario |
| WNNC | The Wash and North Norfolk Coast |
| WTG | Wind Turbine Generator |

**Introductory Paragraph**

**General comment 1:** Mitigation measures for disturbance

The construction of the windfarm will cause disturbance that will have significant effects on harbour porpoise and seals. Natural England disagrees with the Applicant's determination that established mitigation measures, namely the Marine Mammal Mitigation Protocol (MMMP) and the Site Integrity Plan (SIP), will reduce the risk of disturbance to all species and all designated site features. The reason for this is outlined below

The MMMP and the mitigation measures therein are designed to reduce the risk of injury, not disturbance. One of the main mitigation measures to reduce injury, the use of Acoustic Deterrent Devices (ADD), is implemented to actively disturb animals away from the injury zone. Similarly, the soft start process for impact piling is designed to deter animals to distances beyond the injury zone before injurious noise levels are reached; and so also aims to actively displace marine mammals to notable distances. The Applicant should remove reference to MMMP as mitigation for disturbance.

- The specific purpose of the SIP is to ensure that in-combination levels of underwater noise disturbance do not exceed the Statutory Nature Conservation Body (SNCB)-advised thresholds for significant disturbance to the harbour porpoise feature of the Southern North Sea (SNS) Special Area of Conservation (SAC). In the SNS SAC, significant disturbance is assessed on both a daily and seasonal basis. One of the main methods proposed in the SIP, and used by offshore wind farms so far, is co-ordination of timings so that the daily thresholds are not exceeded. However, this does nothing to reduce the overall disturbance at the level of the reference population, for any marine mammal species, nor does it reduce the disturbance to harbour porpoise on a seasonal basis. It also does not reduce the disturbance to marine mammals from the project alone, which in some circumstances I.e. for seals is significant. Furthermore, the in-principle SIP assumes that there will be sufficient capacity for all possible activities to occur, an assumption which cannot be relied upon, especially if multiple offshore windfarms are being constructed in the SAC simultaneously.

  The only measure in the SIP which may reduce disturbance is the use of noise abatement systems (NAS), as these reduce the noise level at source. As there is no guarantee that this specific measure will be implemented through the SIP process, we cannot consider that the SIP will reduce disturbance other than in the specific context for which SIPs were designed i.e., the in-combination underwater noise disturbance of the harbour porpoise feature of the SNS SAC. Furthermore, at the time of finalising the SIP there will be no consideration of other receptors (to seals for example) when determining what mitigation is needed.

The lack of mitigation measures specifically targeting disturbance to marine mammals means there remains the potential for significant effects from disturbance to both seals and harbour porpoise at both EIA and HRA level, the risk of which is currently underestimated within the various assessments and documentation provided. Natural England recommend further assessment is given to the risk and significance of disturbance to harbour porpoise and seal species and recommend that further mitigations measures which reduce disturbance and sound propagation I.e., sound abating measures, be retained as possible necessary options in the MMMP and SIP to reduce the effects of disturbance

**General comment 2:** Vessel code of conduct

We advise that the vessel code of conduct is secured via a licence condition within the Deemed Marine Licence (DML). This could be part of a vessel management plan. The code of conduct should be a standalone document, rather than an annex to the MMMP, and so it can be applied to all vessels. Such a code of conduct should be adhered to at all stages of the development e.g. not just the construction phase. The code of conduct should include the measure that established vessel routes between ports and the sites will be used, where possible, as this is an important assumption in the assessment of impacts from vessels . If it is not secured, then Natural England will not be able to consider the mitigation measures in the assessment. The vessel code of conduct must include measures to mitigate impacts to marine mammals e.g. minimum approach distances to seal haul outs, particularly during sensitive seasons (breeding and moulting). Natural England requests to be consulted on the code of conduct.

**Please note:** This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations

1. **Summary of Main Issues**

| Subject | Comments | RAG |
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| **Project Parameters** | | |
| Project description | No comment. | |
| NE position on Worst Case Scenario (WCS) | Natural England largely agree, however there are refinements to the WCS regarding proximity of piles to the SNS SAC which need to be considered. More details are provided in detailed comments on the RIAA regarding section 8.4.1.1.1.2.2.1 | |
| **Baseline Characterisation** | | |
| Data suitability and baseline characterisation | Broadly yes. Natural England however has concerns over the characterisation of seal presence in the site and impact zones.<br><br>Natural England recommend that post-consent monitoring is undertaken aimed at seal usage of sites, to validate ES assumptions.<br><br>Natural England suggest improvements to how the seal abundance, density, and reference populations have been determined to make them more accurate; but we are satisfied that the figures presented represent the worst case scenario. | |
| Data gaps | No further comment | |
| **Environmental Impact Assessment** | | |
| Identified impacts | | |

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| Methodology | Natural England do not agree with the sensitivity of harbour seal to changes in prey availability; this has been under-estimated. Natural England recommend that sensitivity should change along with improvements be made to the assessment on prey impacts in general be made in line with our detailed comments.<br><br>There are some impact pathways where Natural England feel effects from the project-alone assessments could be significant but have been underestimated in the documentation. Natural England has outlined these recommendations in the detailed comments section. For example, the EIA methodology outlies proportions of a population which if impacted would trigger a significant effect. There are occasions in assessment e.g. with seal impacts where these levels are reached but the impact magnitude is considered minor the reasoning for which is difficult to understand. | |
| Cumulative Effect Assessment (CEA) | The impact distances/parameters from other OWF projects considered in the CEA have been standardised to those considered applicable for SEP and DEP, which we do not agree with as variables namely water depth and project design can result in large differences in the way noise propagates. Natural England recommends the applicant should demonstrate that the approach is appropriate.<br><br>The WCS has not always been assessed e.g., vessel numbers, prey disturbance. Natural England recommends the applicant update the assessment to include the WCS in the CEA.<br><br>No rationale has been provided for screening out certain impacts. Natural England recommends that the Applicant provide rationale on screening out these pathways.<br><br>Geophysical and seismic surveys has not been assessed as a mobile source. Natural England recommends that these surveys are assessed as a mobile source. | |
| Assessment conclusion | Our main concern, in addition to the points above, is that some potentially significant impact pathways that have not been appropriately mitigated.<br><br>Natural England recommend that the assessment approach is reviewed and/or commit to further mitigation to reduce disturbance, and so ensure no significant effect. | |
| **Habitats Regulations Assessment** | | |
| Screening | Natural England do not agree that physical and permanent auditory injury should have been screened out of the test of likely significant effects (LSE), as mitigation is relied on. Natural England recommends that the pathways; physical and permanent auditory injury should be assessed as having a LSE. We would not however expect a conclusion of AEoI due to the use of appropriate mitigation | |

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| | We do not agree that impacts to supporting habitats of the Humber Estuary SAC can be screened out of having a LSE as there could be some material effect on the behaviour of seals associated with the site. Natural England recommends that the following pathway: impacts to grey seal habitats, should be assessed as having a LSE. | |
| Methodology | We request to see more details in the assessment of barrier effects to seals (*also see points on screening, on in-combination assessment, and broader concerns over characterisation of seal presence*). Further detail should be provided in the assessment of barrier effects to seals, specifically regarding movement between important sites and feeding areas. | |
| Assessment | There are some instances where clarification on the WCS is needed, for example simultaneous piling at DEP vs simultaneous piling across sites, in relation to impacts on the SNS SAC. Natural England recommends that clarity is required for the WCS for these scenarios.<br><br>The number of piling days in the seasonal scenario is slightly lower than the WCS. It is advised to use the WCS of piling days in the seasonal scenario.<br><br>The WCS of impacts to prey has not been assessed. It is advised to assess WCS of impacts to prey.<br><br>Natural England request an assessment of disturbance to seals based on the WCS distances from the literature. It is advised to assess disturbance to seals using WCS impact ranges as these may have significant effects on protected sites as well as wider populations. Specifically, the number of grey seals potentially disturbed could have significant implications for the Humber SAC | |
| Assessment: In combination | All appropriate plans and projects have been identified. However in the cumulative assessment of impacts to the SNS SAC summer area (8.4.1.6.1 RIAA document) only 2 other windfarms are considered to have the potential to overlap temporally with DEP and SEP. It is not clear why Outer Dowsing is not considered as potentially overlapping and whether there is a risk that the other projects in the SAC may be delayed and thus overlap with SEP and DEP.<br><br>We do not agree with the in-combination assessment method used for the Wash and North Norfolk Coast SAC. It is advised that the Applicant undertake an in-combination assessment against the WNNC SAC population specifically.<br><br>An incorrect approach to determining the seasonal average of disturbance has been taken. It is advised that the Applicant assess potential for disturbance over a season using the correct method. | |

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| | Mitigation measures have been inappropriately applied to reduce the significance of impact pathways. It is advised that the Applicant review the mitigation that is proposed and can be committed to at this stage.<br><br>We have overall concerns about the SIP process in that it is highly uncertain as to what other projects might eventually look to operate at the same time. Whether in a high activity scenario there would be sufficient capacity to allow all activities to occur as planned without exceeding daily and seasonal thresholds of the SAC even with the use of coordination. There should be consideration and acceptance that further mitigation measures may be required to reduce noise and disturbance if a situation where more activities are occurring in the SAC that expected. | |
| Assessment conclusion | Natural England has concerns over potentially significant (AEoI) impact pathways that have not been appropriately mitigated.<br><br>It is advised to review the assessment approach and/or commit to further mitigation to reduce disturbance, and so ensure no significant effect. | |

**Mitigation Summary**

The applicant has submitted a Draft MMMP. Approval of the final piling MMMP by the Regulators (in consultation with Natural England) and this has been secured in the DCO. The Outline MMMP itself had a suitable range of mitigation measures to address the risk of injury.

The applicant has submitted an In-Principle SIP. Similarly, approval of the final SIP by the Regulators (in consultation with Natural England) has been secured in the DCO, however we have outlined some recommended timings for SIP production within our comments on the DCO (Appendix A Development Consent Order, Deemed Marine Licence, Project Description, In-Principle Monitoring Plan_.

Natural England do have some concerns regarding the SIP namely whether it's able to ensure the project is able to continue in a season where there is a high level of other activity and these have been outlined in the response. We advise that the Applicant consider committing to further SCOS Special Committee on Seals

Natural England advise that a standalone vessel code of conduct/management plan is secured as a consent condition, and contains appropriate measures for marine mammal mitigation.

Natural England assume that the worst-case scenario used to underpin the marine mammal assessment e.g., no more than 2 monopiles or 4 pin piles across the two sites will need to be secured by condition within the DCO, along with maximum hammer energies. It will be important to have these limits on construction to ensure that the assessment remain valid. Can we have clarity over what exactly will be the maximum/worst case scenario in the consent?

| Subject | Comments | RAG |
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| **Other Reports** | | |
| In-Principle Site Integrity Plan | This is necessarily high level and has a suitable list of potential mitigation measures but we are too early in the examination process to provide detailed comment. We have ssuggested change to timelines of final SIP within our comments on the DCO. Broadly speaking Natural England has concerns over how the SIPs can be used to manage multiple projects to ensure that significant disturbance thresholds are not exceeded; we therefore advise the Applicant to consider committing to mitigation at this time and not relying on the SIP | |
| Draft Marine Mammal Mitigation Plan | As with the Outline SIP, it is necessarily high level, and has a suitable list of potential mitigation measures. The Applicant should clarify whether a low strike rate is proposed. | |
| Offshore In-Principle Monitoring Plan | The marine mammal section lacks detail and is generally not fit for purpose. More detail is needed on the assumptions in the assessment, and how these could be tested through monitoring programmes, to confirm the outcomes of the assessments. We have made several suggestions throughout the response on topics for post-consent monitoring. The Applicant should identify potential strategic projects that could be contributed to. | |

**Detailed Comments**

| Point | Section | Natural England's Comment | Risk |
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| Document used: [APP-191] 6.3.10.1 Marine Mammal Consultation Responses, Information and Survey Data.pdf | | | |
| 1. | 10.1.3.3.1 | Natural England advises that the Developer will need to consider the need for an EPS licence to injure (as well as disturb), should the full injury zones during noisy activities not be fully mitigatable. | |
| 2. | 10.1.4.1 (and others) | Natural England notes that bottlenose dolphin has been included in the ES, based on recent increase in sightings in the area. Connectivity to the Coastal East Scotland (CES) Management Unit (MU) has been included. A reasonable approach to assessing the density of bottlenose dolphin, by using the SCANS Block R values, has been used. We understand from the ES chapter that both the Greater North Sea(GNS) MU and CES MU have been used as reference populations. We welcome this approach. | |
| 3. | 10.1.4.2 | The Applicant has screened in the Wadden Sea region for both grey and harbour seals, which significantly increases the reference populations for these species. However, there is no corresponding inclusion of non-UK animals in the seal at-sea density maps used by the Applicant. There is therefore a mismatch in the scope of the populations in the assessment, which could lead to underestimating the magnitude of the impact. The Applicant should clarify how this has been taken into account in their assessment. | |
| 4. | 10.1.4.4.5 | We have the following points to note on how the grey seal abundance estimate has been calculated.<br><br>Firstly, there is inconsistency in the timing of counts used for each site. Most counts (presented in Table 10.5) are taken from SCOS. Reports which report the counts observed during the moult surveys undertaken in August (outside of any key period for grey seals where they would be expected to haul out in high numbers i.e., breeding or moulting). The count presented for Horsey Corner is based on a count during the breeding season and is therefore not comparable to the other counts. To note, the counts at Horsey Corner outwith the breeding season are much lower, greater than a factor of 10 (119 in 2019; SCOS, 2021).<br><br>Furthermore, the counts used have since been superseded by the 2021 counts (SCOS, 2021). We acknowledge that this report was not available at the 'cut off' time for new sources for the ES. Nevertheless, Natural England has reviewed this report to ensure that any changes in numbers would not affect the assessment. Overall, the average August count of grey seals in the Southeast England MU in 2021 was 6,946, which is notably lower than the 8,667 figure used by the Applicant. Similarly, the Northeast England MU for grey seal has reported a lower count in 2020 of 4,660 (SCOS, 2021), compared to the 6,501 count from 2019.<br><br>These points notwithstanding, we consider that the SMU estimate by the Applicant is likely to be a significant under-estimation because they do not take into account any correction factor to correlate the | |

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| | | number of animals counted to the total population count across the SMU. The August count data is typically only ~23% of the population size (Russell *et al.,* 2015). To illustrate, SCOS (2021) show that the grey seal population in the southeast England SMU alone is in excess of 40,000.<br><br>Therefore, although we do not consider it an accurate estimate of the population size, it is likely over-precautionary and therefore can be considered the worst-case scenario.<br><br>We also note that there is a mismatch between the timings of counts in the Wadden Sea and English MUs. Therefore, the feasibility to produce an accurate MU population, should been considered when determining which MU(s) to use in future i.e. can the Wadden Sea be appropriately considered or should it not be included.<br><br>Natural England advise that steps should be taken in the future to produce more precise estimates for the reference population. | |
| 5. | 10.1.4.4.5 | The Applicant notes that the correction factor used represents the time that grey seals spend at the surface. The Applicant should clarify how they took into account time seals spent below the surface but are still detectable to aerial surveys. This is also applicable to harbour seals (Section 10.1.4.4.6) | |
| 6. | 10.1.4.4.5 | We welcome the use of the updated seal at-sea maps from Carter *et al.* (2020) to determine seal density in the project area. | |
| 7. | 10.1.4.4.6 | To note, our points on the accuracy of the grey seal reference population estimate due to it being based on un-corrected counts, are broadly applicable to the harbour seal reference population estimate also.<br><br>We have also reviewed the more up-to-date SCOS report (SCOS 2021) and find the counts of harbour seals to be broadly similar. Though we note decreases in harbour seal counts on the smaller sites of Blakeney (2021 average of 181 compared to 329 presented) and Scroby Sands (2021 average of 25, compared to 193). | |
| 8. | 10.1.4.4.6 (and 10.1.4.4.5) | It is Natural England's view that digital aerial surveys are not a suitable method for characterising the presence of seal species in project sites, due to difficulty in species identification when using this method. When it is not possible to determine the species of a number of sightings, it is precautionary to include unidentified seals in the estimates of density and abundance of both species. However, if the number of 'seal species' is particularly high, then it risks inflating these estimates beyond what is likely to be accurate for either species due to double-counting. It would also obscure any species-specific trends in the estimates for the site. | |

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| | | This issue is present in the ES. The number of unidentified seal sightings have resulted in high abundance estimates of both harbour and grey seal in the site. To illustrate, the maximum abundance estimate for grey seal (1,700) is ~20% of the reference population; and the maximum abundance estimate for harbour seal (2,342) is ~62% of the reference population. Whilst we do not consider that either of these abundance estimates are accurate, the Applicant has not attempted to improve the accuracy of these abundance estimates. We would welcome suggestions from the Applicant on ways to get a more accurate abundance estimate of seals in the sites.<br><br>The abundance estimate is of particularly concern for harbour seal. If the site did indeed support up to 62% of the population at any one time, then the site would be of significant importance to the harbour seal MU population. This would increase the significance of any effects identified, necessitating greater scrutiny of whether the effects may hinder the restoration of this population.<br><br>Due to the aforementioned issues, we have low confidence that the results of the Digital Aerial Surveys reflect the true presence of seals in the site.<br><br>The Applicant has used other sources to support their assessment of abundance and density estimates in the site. Particularly, they use Carter *et al.* (2020), which does provide species-specific information on at-sea usage by grey and harbour seals. However, these data are not without issue. The telemetry data of seals which Carter *et al.* (2020) used to determine at-sea abundance is not that recent for The Wash (grey seal tag data from 2005, 2008 and 2015; harbour seal tag data from 2012 and 2016). Given the age of the tag data, it will not reflect any potential changes as a result of the recent harbour seal decline (2018-19).<br><br>As a result of these uncertainties, we do not have a high confidence in the estimation of density of seals in the project zones, and therefore the number of seals which may be impacted. This has a knock-on effect in our confidence on the assessment conclusions in the ES.<br><br>This is of particular concern for the designated harbour seal feature of the Wash and North Norfolk Coast SAC, which are due to be set to restore.<br><br>We therefore strongly advise that the Applicant undertake post-consent monitoring aimed towards better understanding of seal usage of the site. | |

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| Document used: [APP-192] 6.3.10.2 Underwater Noise Modelling Report | | | |
| 9. | 4.3.2 | Natural England welcomes the inclusion of modelling of simultaneous and sequential piling, as these are within the project design envelope. | |
| 10. | 5.3 | We acknowledge the rationale behind the applicant not presenting a range of impact for simultaneous piling. However, as ADD duration is often linked to the worst-case impact range, we query how an appropriate ADD duration can be calculated for simultaneous piling. This point should be discussed post-consent in the context of the MMMP and the draft MMMP should be updated to reflect this commitment. | |
| 11. | 6.1 | We note that the Applicant has modelled the continuous sources over a 24 hour period, which we welcome. | |
| 12. | 6.2 | We note that the Applicant has used a novel approach to determining the operational WTG noise at range. We defer to Cefas, the MMO's technical advisers, for comment on this approach. However, we do note that this method provides a slightly higher source level than previous extrapolation methods, so the overall level of precaution appears higher with this new method. | |
| 13. | 6.3 | Our understanding is that the weight of donor charge for large UXOs is notably higher than the 0.5 kg modelled; typically, it is a minimum of 5kg, and we have seen up to 25 kg being used too.<br><br>The Applicant should provide evidence on the appropriate weight of donor charges and ensure that the underwater noise modelling reflects this.<br><br>Natural England notes that this relates to the UXO assessment, which is only illustrative at this stage, this could be done post-consent. | |
| 14. | 6.3.3.1 | Should a bubble curtain be used for UXO clearance, we advise that underwater noise monitoring should be undertaken, to demonstrate their effectiveness of reducing noise propagation and validate the assumption of a 10dB reduction. | |
| Document used: [APP-096] 6.1.10 Chapter 10 Marine Mammal Ecology | | | |
| 15. | 10.4.1 | It is important that the need for an EPS/Marine Wildlife Licence is considered sufficiently in advance. This will ensure that, should additional mitigation measures be needed to reduce the likelihood of an offence, | |

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| | | and satisfy the alternatives test, they can be implemented adequately and be taken into account in financial decisions.<br><br>Natural England anticipates being consulted on any EPS licence application, should it be required. | |
| 16. | 10.4.4 | Natural England welcomes that the Applicant has defined their tiers for the CIA based on JNCC and Natural England guidance. | |
| 17. | 10.6.1.1.1 | There is significant uncertainty around Temporary Threshold Shift (TTS) and the levels at which is becomes ecologically significant for an animal. We do not disagree with the Applicant's assessment of medium sensitivity to TTS but equally we do not consider there to be sufficient evidence to confidently conclude the sensitivity of marine mammals to TTS.<br><br>We also note the limitations in the assumption that 100% of animals that experience TTS will flee. The Applicant considers this very precautionary, however Natural England consider that there is also a risk of disturbance/fleeing at lower noise levels than the TTS threshold, therefore this in effect 'balances out' some of the precaution. Disturbance at greater distances than the TTS range may still impact an individual's natural/key behaviour e.g. foraging, reproduction, which could have lasting effects if it happens repeatedly. | |
| 18. | 10.6.1.1.2.1 | In the list of simultaneous piling scenarios, the scenario of simultaneous piling at one of the sites i.e., DEP or SEP is not listed. However, Table 10-1 lists "potential for simultaneous piling" at DEP and at SEP. We therefore require clarity whether simultaneous piling at one site is indeed within the PDE. If so, the Applicant should provide information to demonstrate that simultaneous piling at one site is not in fact the worst-case scenario when assessing the number of animals within the impact zone. This is particularly relevant to species which were detected in higher densities at one site only. For example, for the assessment of underwater noise impacts on harbour porpoise based on simultaneous piling, we query whether simultaneous piling at DEP would be worst due to the higher densities at this site. | |
| 19. | 10.6.1.1.6 | We note that the Applicant has not calculated that number of animals that may be impacted after the implementation of mitigation. We acknowledge that it would be very difficult to estimate numbers (?).<br>There are many assumptions about the effectiveness of the mitigation measures proposed e.g. effectiveness of ADD at displacing beyond Permanent Threshold Shift (PTS)/TTS distances; the nature of the fleeing response (straight line, onset at distance); behavioural disturbance ranges; displacement | |

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| | | around vessels prior to pile driving. Validation of these assumptions around the mitigation measures should be considered for post-consent monitoring, to demonstrate that the assessment conclusions are valid.<br>This and other assumptions made in the assessments should be listed in the In Principle Monitoring Plan. | |
| 20. | 10.6.1.1.7.1 | There are some minor errors in Table 10-40 – we infer that the magnitude the corresponds to 0.008% of the harbour porpoise NS MU being affected is Low, rather than the Medium stated.<br><br>Similarly, the 0.006% of the grey seal SE MU population corresponds to a magnitude of Low, rather than Medium. The % of the wider ref pop should be ~0.002% (still a Low magnitude).<br><br>The % of the harbour seal populations are incorrect. 0.3 individuals should correspond to ~0.008% of the SE MU (which is low, rather than negligible) and ~0.0009% of the wider ref pop (negligible magnitude, rather than low). | |
| 21. | 10.6.1.2.2.1 | We note that the assessment of ADD disturbance is indicative only. However, we do not consider that the 10 or 20 minute ADD activation period is appropriate given the Applicant's commitment in the MMMP to base the duration of the ADD activation time on the maximum PTS range (as the PTS range based on SELcum would require notably longer ADD activation periods). We advise that an updated assessment of the disturbance impact from ADDs will be needed when the ADD activation time is finalised. We therefore do not believe it is appropriate to make a conclusion on impact significance of ADD disturbance at this time and cannot agree the conclusions presented in Table 10-51 (and Table 10-57). | |
| 22. | 10.6.1.2 | In this section the impact being assessed is "Disturbance from Underwater Noise Associated with Piling Activities". Whilst the assessment of disturbance from ADDs covers all marine mammal species, the following sections (10.6.1.2.2-4; and 10.6.1.2.2.5 to an extent) only provide information on harbour porpoise. We infer that there is limited equivalent information on disturbance in other species (e.g. no disturbance threshold; no dose-response curves; no monitoring of return times; no equivalent to DEPONS).<br><br>We assume that the assessment of TTS in the previous section/Table 10-46 is being used to inform the impact significance of disturbance from piling itself for other marine mammal species. We note that these assessments are all minor adverse before mitigation. | |

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| | | However, as detailed in general comment 1, the MMMP aims to reduce injury but will not reduce disturbance. This is a key difference between assessing TTS as an injury, or as a disturbance. The Applicant should consider committing to mitigation measures that are directly aimed at reducing disturbance in species, and/or monitoring disturbance in marine mammal species. | |
| 23. | 10.6.1.4.3.1 | To note, the harbour seal population in the East of England is no longer increasing and has undergone a recent decline. Therefore, the conclusion that the high intensities of vessels in this area is not affecting the seals may not hold true.<br><br>Should an investigation into the link between offshore wind farm development and the harbour seal decline occur (see other comments), presence of vessels could be one of the factors investigated. | |
| 24. | 10.6.1.5 | We do not agree with the Applicant's interpretation of seal usage and foraging routes at the sites. As shown in the usage maps from Russell *et al.* (2017), which more closely reflects telemetry tracks and so known migratory routes, there are areas of higher seal usage that overlap or are adjacent to (but further from the coast from) the SEP and DEP sites. This is relevant for both harbour seals (Figure 10.1.4 in ES Appendix 10.1) and grey seals (Figure 10.1.1 in ES Appendix 10.1). Telemetry data for seals from the SE MU should be presented. Whilst there is suitable habitat available in the wider area to seals (Carter *et al.,* 2022), the usage of the site should not be underestimated.<br><br>Subsequent to our comment over the accuracy of the baseline characterisation of seals, we have low confidence in the outcomes of this assessment.<br><br>We therefore advise that seal usage of the SEP and DEP sites before, during and after construction should be considered for post-consent monitoring. | |
| 25. | 10.6.1.7 | Natural England consider that the moult season for harbour seals, which occurs in August, is also a sensitive period and any mitigation measures pertaining to the sensitive period should be undertaken at this time too. | |
| 26. | 10.6.1.8.2 | We do not agree that harbour seal sensitivity to changes in prey is low. Wilson and Hammond (2019) drew the tentative conclusion that declines in harbour seals in northern regions of Scotland was linked to | |

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| | | diet (particularly declines in sandeels). At the time of this publication the southeast England population of harbour seals was not declining, but a decline has since been observed. It is therefore possible that this decline is linked to prey, which could reflect a heightened sensitivity to changes in prey. We therefore advise that harbour seal sensitivity to changes in prey should be medium.<br><br>Wilson, L. J., & Hammond, P. S. (2019). The diet of harbour and grey seals around Britain: Examining the role of prey as a potential cause of harbour seal declines. Aquatic Conservation: Marine and Freshwater Ecosystems, 29, 71-85. | |
| 27. | 10.6.1.8.2.4 | The Applicant has based their assessment of impacts to prey on fish with a swim bladder involved in hearing and a fleeing response. This is a combination of the most sensitive receptor group, but a less conservative assumption of fleeing. Sandeel, an important prey species for marine mammals and are unlikely to be as sensitive to noise impacts, however it is not clear whether a fleeing response would be appropriate for this species group. It would be beneficial for the Applicant to undertake a brief assessment of impacts to sandeel specifically, using appropriate assumptions about auditory and behavioural response. | |
| 28. | 10.6.1.8.2.4 | In relation to the figures presented in Paragraph 558 – the Applicant should present the area of prey response (and inferred temporary loss) as a proportion of the total foraging area. We anticipate this proportion to be low for cetaceans, however for seals, with smaller foraging ranges, it may be of greater significance.<br><br>We note that the impact ranges from Hawkins *et al.* (2014) are greater than the impact predicted to both seals and their prey using the TTS thresholds, and so comprises the worst-case scenario for prey loss.<br><br>It is important to note that temporary loss of feeding opportunities within these impact ranges will likely result in the affected individuals feeding elsewhere, increasing competition. This increase in competition 2may be both intra- and inter-specific in seals, for which the area of loss around SEP&DEP is within the foraging range of large colonies of both species. The assessment for SEP&DEP alone (Table 10-80) indicates that approximately 1,100 seals would be temporarily affected (displaced) by the loss of prey in the impact areas. This impact would occur for up to 3 months at DEP, and then 3 months at SEP (see | |

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| | | point below re 3 months). These added considerations should be factored into a revised assessment of impact magnitude.<br><br>Table 10-80 – the Applicant has not presented any information on potential recovery rates of fish within these behavioural response impact ranges. Given this, we consider that recovery should not be assumed to be instant, and so the assumption that the impact will only occur for the duration of active piling is not suitably precautionary. We consider that the 3 month piling window at each site would be more appropriate.<br><br>Based on this comment, and the comment 2 above, we do not agree with the assessment of negligible magnitude. These added considerations should be factored into a revised assessment of impact magnitude.<br><br>This is of concern because of some of the species, the combination of high magnitude and low sensitivity would otherwise be considered moderate adverse, a significant impact in EIA terms. This and our advice that harbour seal sensitivity should be medium. | |
| 29. | 10.6.1.8.3 | In line with General comment 1, we do not consider that the measures in the MMMP will reduce impacts to changes in prey, nor the SIP (unless noise abatement is implemented). Particularly with regards to the MMMP, the mitigation measures are only effective for animals which will flee directly away from the noise source; there is limited evidence of such fleeing capability in fish.<br><br>Whilst mitigation is not currently relied on to conclude no significant residual impact, this may need reviewing following a revision of the assessment in line with our comments above. | |
| 30. | 10.6.1.8.5 | The assessment for SEP and DEP has been based on TTS alone. The approach taken for SEP or DEP, using the Hawkins *et al.* (2014) impact areas, should also be undertaken for SEP and DEP. | |
| 31. | 10.6.2.1.1 | The tagging data from Russell *et al.* (2014) is from 2011-2012, and therefore is 10 years old. It would be interesting to understand if the observation that grey and harbour seals forage within operation wind farms has changed in the southern North Sea. This could be tied into an overall post-consent monitoring programme targeted at seals specifically. | |

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| 32. | 10.6.2.7.2.4 | The effects of offshore wind farms as fish aggregating devices on marine mammals is poorly understood. The effects may not be beneficial to all marine mammals, and indeed may have a knock-on negative effect to those marine mammals that cannot exploit the offshore wind area as well, by potentially reducing prey availability outside of the wind farm. Due to lack of evidence, we do not necessarily agree that the magnitude of the effect is negligible. We acknowledge that the evidence on potential changes to prey communities is limited and is being looked at through some strategic-level projects. Given our concerns about impacts to the unfavourable harbour seals in particular, and how this could be linked to prey, the Applicant should consider this for their post-consent monitoring. | |
| 33. | 10.7 | The CIA scenario of vessels during construction is stated to be based on 16 vessels. However, the construction of SEP&DEP concurrently would result in 25 vessels being present (see Section 10.6.1.4.6). This is the worst-case scenario that should be used in the CIA. | |
| 34. | 10.7 (also 10.7.1.1.1.4) | The approach taken by the Applicant in the CIA is to standardise impact distances to those calculated for SEP and DEP specifically; the distances used are not industry-standard and may not be directly applicable to other projects. To illustrate, projects in deeper water may have larger predicted impact ranges – this is seen in the underwater noise modelling for Hornsea 4, for which the TTS zone from a monopile is 2200 $km^2$ for minke whale (2x that assessed by the Applicant) and 670 $km^2$ for seals (3x that assessed by the Applicant). Further information is required to demonstrate that the approach of standardising to SEP and DEP is appropriate. | |
| 35. | 10.7.1 | We would welcome the Applicant undertaking an assessment using DEPONS or iPCOD to support their CIA.<br>The Applicant has based on the CIA on what they determine to be a “most realistic worst-case scenario”, and not a “highly unrealistic” worst-case scenario. It therefore follows that any significant effects are not the result of the assessment being highly unrealistic. This places further importance on using other tools such as DEPONS or iPCOD to determine impacts to populations, where significant effects have been identified. | |
| 36. | 10.7.1.1.1.2 | We welcome that the worst-case scenario is based on SEP and DEP piling together, as this is within the project envelope. | |
| 37. | 10.7.1.3.1 (and 10.7.1.3.2). | For clarity, the magnitude of the cumulative disturbance impact for grey seals is Medium, as stated in Table 10-114. It is incorrectly stated as Low in Paragraphs 803 and 805. Therefore, the assessment | |

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| | | result for grey seal is Moderate Adverse, not Minor Adverse (as stated in Paragraph 809). We note that the impact magnitude is correct in Table 10-118.<br>As stated in the general comment 1, we do not consider that the SIP is appropriate mitigation to reduce disturbance to other species. They are also not designed to reduce overall disturbance at the MU-level of harbour porpoise.<br><br>We therefore cannot agree with the conclusion of a residual Minor Adverse effect on harbour porpoise (at the North Sea MU level) and grey seal.<br>We strongly advise that the Applicant commit to further mitigation at this time to reduce the risk of a significant disturbance effect. | |
| 38. | 10.11 | Please see our comments on the Offshore IPMP, as well as comments on monitoring suggested throughout our response. | |
| Document used: [APP-193] 6.3.10.3 Marine Mammals Cumulative Impact Assessment (CIA) Screening | | | |
| 39. | 10.3.1 | We consider that the Applicant's approach of only including projects in the GNS for white-beaked dolphin and minke whale is reasonable, given the location of the project. | |
| 40. | 10.3.2 | Based on Tables 10-124 and 10-125 of the ES chapter, the only negligible impact is water quality; all other impacts have the potential to be minor adverse. Therefore, the rationale that only negligible impacts were screened out of the CIA is incorrect.<br>The Applicant has summarised the CIA screening in Table 10.3.11 but has not included barrier effects or disturbance to seal haul-outs. The Applicant should provide justification as to why these pathways have not been screened in. | |
| 41. | 10.3.2.1 | We acknowledge the Applicant's rationale for screening out PTS based on requisite mitigation (to be in accordance with the EPS Regulations). We have general concerns that the geophysical surveys that go through marine licence exemptions are overlooked and may not undertake mitigation to reduce the risk of PTS. However, this is a strategic issue that we have raised with the MMO.<br>We strongly advise that Natural England are consulted on any geophysical surveys undertaken for the SEP and DEP project. | |

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| 42. | 10.3.2.5 | We note that the impacts to prey, as per Hawkins *et al.* (2014), generates larger impact ranges than that based on the TTS threshold in seals.<br>More broadly, we acknowledge that the limited evidence base on impacts to prey necessitates a series of assumptions (e.g., impacts to marine mammals are greater than that to prey; that impacts are intermittent, temporary and highly localised, with potential for recovery). We have raised concern on some of these assumptions in our comments on the project alone assessment of impacts to prey. Should the Applicant amend the project alone assessment in light of our advice, we request that they also reconsider whether changes to prey availability should be scoped in to the CIA. | |
| 43. | 10.3.4.1.2 | Geophysical and seismic surveys are a mobile source, which transit along survey lines, often in a grid pattern over a target area. As these sources move they will encounter many animals on their path, and so more animals will be exposed to the sound than just the number within 12km of the source when treated as a point. There is limited evidence of return in these animals; some tagged porpoises showed strong responses for up to 8 hours (van Beest *et al.,* 2018), though we acknowledge that some may be more resistant and move into the area earlier. The likelihood of animals returning to the area will be lower when surveys are repeatedly going back and forth over a grid area, as then the area will be continuously exposed to noise. Based on these reasons we do not consider it appropriate to treat such surveys as a point source when determining the area of disturbance around them. The Applicant should undertake an assessment of these as mobile sources in the CIA. | |
| 44. | 10.3.4.11 | Natural England is supportive of the approach of including a nominal one high order UXO clearance on any given day, as outlined in our Best Practice advice. | |
| Document used: [APP-194] 6.3.10.4 Marine Mammal Unexploded Ordnance (UXO) Assessment | | | |
| 45. | General | Natural England understands that this is an illustrative assessment. Our comments on the assessment should be considered when revising the assessment to accompany the Marine Licence application for UXO clearance, which will occur post-consent. Therefore, our comments do not need to be addressed during the Examination process. | |
| 46. | 10.4.3.1 | Reference is made to the use of scare charges as required; however this is no longer an advised mitigation measure for marine mammals and does not feature in the UXO MMMP. | |
| 47. | 10.4.5.2 | We acknowledge the current limitations in the transition of impulsive noise to non-impulsive over distance. It is an area of ongoing research and new evidence, or assessment approaches should be reviewed when the UXO MMMP is finalised. | |

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| 48. | 10.4.5.2 | Given the listed environmental constraints on using bubble curtains, it would be beneficial to present an assessment of the likelihood bubble curtains could be used in the site, based on the Applicants understanding of environmental conditions in the site. In the context of the UXO MMMP, this could be provided post-consent. | |
| 49. | 10.4.5.2.1 | As previously advised, the donor charge weight of 0.5kg appears anomalously low; we anticipate donor charge weights in the region of 10-25kg for the UXO sizes assumed. This value should be reviewed, and if incorrect, the impact ranges should be recalculated. | |
| 50. | 10.4.5.2.1 | Natural England acknowledges that the evidence base on reduction in noise offered by bubble curtains is limited and there is currently minimal evidence from UK waters. A 10 decibel reduction may not be representative of all systems, and is also not applicable consistently across the frequency spectrum (e.g. bubble curtains are less effective at attenuating low frequency noise). We advise that noise monitoring is undertaken of any UXO clearance with bubble curtains, to add to the evidence base. | |
| 51. | 10.4.5.3.1 | Table 10.4.12: Some incorrect impact magnitudes have been presented. The WCS assessment of harbour seal from the SEP site should be medium (medium), rather than medium (low) – as 0.018% of the wider population is predicted to be impacted, which is above the 0.01% threshold for a medium magnitude. There are similar erroneous magnitudes for the following assessments:<br>• SEP/harbour seals/low order<br>• DEP/grey seals/high order without bubble curtain<br>• DEP/grey seals/low order<br>• DEP/harbour seals/high order with bubble curtain<br>• DEP/harbour seals/high order without bubble curtain<br>• SEP&DEP/grey seal/low order | |
| 52. | 10.4.5.4 | We note that high order UXO clearance has the potential to cause significant (in EIA terms) impacts to several marine mammal species. We are supportive of the proposed mitigation for UXO clearance proposed by the Applicant and will continue to liaise with them on the UXO MMMP post-consent. | |
| 53. | 10.4.6 | The applicant has not provided any justification for why they have assessed disturbance range from low order to be 5km. Whilst Natural England has previously agreed this for harbour porpoise for a different wind farm, it should not be assumed to be applicable to all marine mammal species. | |

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| 54. | 10.4.6.1 | We welcome the Applicant's proposal to activate the ADD for an appropriate duration for each of the UXO clearance scenarios (although please see the earlier comment about sufficient evidence around low order methods). This ensures that the ADD duration is not excessive for activities with reduced impact zones. | |
| 55. | 10.4.6.1 | The Applicant has proposed to turn on the ADD for a period of 155 minutes prior to high order without bubble curtains. This is based on the amount of time needed for animals to leave the injury zone, based on standard fleeing speeds. We query whether there is sufficient evidence to conclude that marine mammals will indeed be displaced out to 13 km/that they will continue to flee over such a long period and when at considerable distance from the ADD.<br><br>The applicant should review the evidence base on effectiveness of ADDs to displace marine mammals over such distances. This could be done post-consent, when finalising the UXO MMMP.<br><br>Where there is low confidence that species will not fully flee the injury zone, an EPS licence should be considered. | |
| 56. | 10.4.6.1 | Table 10.4.19 shows that grey seal impact magnitude from ADD duration for high order UXO clearance without bubble curtains is medium, as opposed to low (which is stated in Paragraph 96). The combination of medium magnitude and medium sensitivity results in an impact significance which is moderate, rather than minor, adverse. This could be significant in EIA terms therefore it requires further consideration/mitigation. The MMMP does not offer any specific additional mitigation of the impact from ADD usage for 155 minutes on grey seals.<br><br>Natural England advise to review the impact significance for grey seals and consider further to avoid a significant impact. | |
| Document used: [APP-288] 9.4 Draft Marine Mammal Mitigation Protocol | | | |
| 57. | 1.3.2 | We support that the mitigation in the MMMP will be based on the latest information. It is likely that the mitigation guidelines for the use of explosives, and the unexploded ordnance clearance joint interim position statement, will be updated and published before the production of the final UXO MMMP. | |
| | 1.3.2.3 and 1.4.1.4 | The Applicant has not provided any information on the anticipated duration of the ADD activation during UXO clearance or piling, nor the principles that would guide the duration. Such information will need to be included in the final MMMP. | |

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| 58. | 1.4.1.5 | The Applicant has not detailed any variation in the strike rate during the soft-start and ramp up procedure. A low strike rate has been included in the most-likely scenario for piling, but not in the maximum design scenario for piling, in the underwater noise modelling. The Applicant should clarify whether variation in strike rate is being included as a possible mitigation measure.<br>Note that the final noise modelling, undertaken post-consent when project design is finalised, should reflect all mitigation measures such as low strike rate. This will ensure accurate PTS ranges are modelled, and mitigation can be applied in a proportionate way (e.g., ADD activation duration). | |
| Document used: [APP-289] 9.5 Offshore In Principle Monitoring Plan | | | |
| 59. | General | The marine mammal section of the Offshore In-Principle Monitoring Plan is short and lacking on detail. There has been no consideration of the areas of the assessment where assumptions have been made and where the project could contribute to filling knowledge gaps that would inform the project's assessment. These should be detailed in Section 1.4.6.<br>At present, the only detailed monitoring that has been proposed is the industry-standard monitoring of underwater noise from the first 4 piles.<br>The other two measures are targeted at monitoring the effectiveness of mitigation measures, namely the MMMP and SIP. Insufficient detail has been provided to understand how these would be monitored.<br>Natural England are concerned that no monitoring has been outlined that would evidence the impacts to marine mammals e.g. monitoring of animal responses to impacts.<br>Further detailed discussion is required on the monitoring plans. We understand that this is proposed to occur post-consent. However, at present we have limited understanding, and so confidence, in how the monitoring will evidence the outcomes of the marine mammal assessments.<br>In this response we have identified several areas which could be suitable targets for monitoring. These should be considered by the Applicant when updating this document. | |
| 60. | 1.4.6.2 | The Applicant should list any strategic monitoring that it is aware of e.g., through the Offshore Wind Strategic Monitoring Research Forum that it would consider appropriate for post-consent monitoring of marine mammals. | |

| Document used: [APP-290] 9.6 In Principle Site Integrity Plan for the Southern North Sea Special Area of Conservation | | | |
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| 61. | 1.1.3 | We welcome that a timeline of the SIP has been included in the draft DCO conditions.<br>Natural England's position on the SIP condition timelines is that the final SIP should be produced no Earlier than 9 months prior to works and no Later than 6 months prior to work. | |
| 62. | 1.1.5 | Natural England maintains its concern over the system that is currently in place to manage multiple SIPs. We infer that the noise management mechanism alluded to by the Applicant is the SNS Activity Tracker, which is more of a tool to monitor projects planned to occur at the same time, and is not itself a management mechanism. There is currently no process in place to manage multiple projects/SIPs where an exceedance of the thresholds has been identified.<br><br>We highlight that the current approach of scheduling activities, in advance of their commencement, led to the seasonal threshold almost being exceeded in summer 2022. Given the number of OWF projects predicted to undertake construction in the vicinity of the SNS SAC before 2030, it is strong possibility that the seasonal threshold could be exceeded without additional mitigation in place (i.e. to reduce noise emissions in the SNS SAC on a project-specific basis). The current approach of a condition to co-ordinate timing is highly unlikely to be sufficient to avoid seasonal thresholds being exceeded in the near future, because co-ordinating timing does not help to reduce the disturbance over a season; it is aimed at keeping under the daily threshold.<br><br>The most effective way that the impact of noisy activities can be managed down is through noise abatement systems (NAS). There are several different types of NAS but all of them work to reduce the level of noise generated at source, therefore reducing the area that is ensonified and reducing the overall impact to marine mammals from the project alone. We encourage the use of NAS on this project, especially where it would reduce the overlap between the project and the SNS SAC. NAS could be committed to at this time, rather than waiting until closer to the works begin, particularly when at this time financial decisions will already have been made and it is unclear whether new mitigation could be introduced.<br><br>To illustrate the possible benefits of NAS: if NAS was included as standard for any monopiles within 26 km of the SNS SAC, then the EDR would be reduced to 15 km. There would therefore be no overlap between the SEP wind farm site and the SNS SAC; and no overlap between the DEP wind farm site and the SNS SAC winter area. The only remaining concern would be the DEP wind farm site and the summer area of the SNS SAC. | |

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| | | For illustrative purposes, it would be beneficial to present the area of overlap between the SNS SAC and the project if noise abatement systems were used with monopiles as standard (i.e. using a 15km EDR), both as a $km^2$ and as a percentage of the relevant seasonal area of the SNS SAC.<br><br>In addition, the remaining overlap between the DEP site and the SNS SAC summer area, could be avoided through a commitment to undertake piling out with the summer season at this location specifically. This would only be needed for locations within 15km of the summer area – it would be beneficial for the Applicant to present this. The DEP installation window, of 3 months, could fully occur within the 'winter' season (October-March inclusive). | |
| 63. | 1.5.1 | The Applicant should update the in-combination assessment in the SIP at the time of finalisation. They should ensure that the following updates are included:<br><br>• Whether oil and gas construction could overlap with the project, based on the recent announcement of the new North Sea licensing round for oil and gas.<br>• Reflects the possibility of simultaneous piling at the wind farms that could be piling at the same time.<br><br>Please also see the comments made on the in-combination assessment in the RIAA. The summary of the in-combination assessment in the SIP should reflect changes made in the RIAA following these comments. | |
| | Document used: 5.4 Report to Inform Appropriate Assessment | | |
| 64. | 5.4 | As was previously agreed, the Applicant has screened out the Berwickshire and North Northumberland Coast SAC for grey seal. Since the completion of the HRA Screening, further information has been published (Carter *et al.,* 2022) which has reported that the maximum foraging range of grey seals is 448 km. The closest distance between the project and this SAC is 284 km, therefore the Berwickshire and North Northumberland SAC is within the foraging range. Natural England considers that there is potential connectivity between the Berwickshire and North Northumberland Coast SAC and the project area, though the level of connectivity is likely considerably lower than that for the nearer Humber Estuary SAC. Consequently, we consider that the outcome for the Humber Estuary SAC represents that most precautionary assessment for grey seal sites, and any potential impact to the Berwickshire and North Northumberland SAC would be lower. | |

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| 65. | 8.2.1.4.4 (also 8.2.2.4) | As previously commented, mitigation cannot be taken into account in the assessment of LSE, in accordance with the People over Wind court judgement (Case C-323/17 People Over Wind v Coillte Teoranta). It is therefore not appropriate to state that because an effect is mitigated there will be no potential for LSE. This pathway (physical and permanent auditory injury, Table 8-6) should therefore be taken through to Stage 2 of the HRA i.e., assessed for AEoI.<br>This being said, we would not expect an AEoI on the site from this pathway due to the mitigation proposed and secured through the MMMP. | |
| 66. | 8.2.3.2 (also 8.2.4.2) | Some of our previous comments on the seal baseline characterisation are also applicable to the RIAA due to the same approach being used (in relation to using August counts; mismatch between spatial scales of density and abundance and so underestimation of impacts). Amendments made in light of these comments should also be applied to the RIAA. | |
| 67. | 8.2.3.2.1 (and 8.2.4.2.1) | The Applicant has proposed to use two different scales of reference population, one for the project alone against the local SAC and MU population, and one for the project in-combination against the wider MU (termed the in-combination reference population). We have concerns about this approach. In particular, this will result in no in-combination assessment against the local SAC population.<br>We are particularly concerned about the lack of in-combination assessment, i.e., assessment of the impact of multiple projects on the Wash and North Norfolk Coast SAC specifically, given the population's recent decline. It is therefore imperative that in-combination impacts to this site specifically are fully assessed. | |
| 68. | 8.2.3.4 (and 8.2.4.4) | Natural England has provided Supplementary Advice to the Conservation Objectives (SACO) for the Humber Estuary SAC (and Wash and North Norfolk Coast SAC). The SACO for the site acknowledges the importance of connectivity between the "*habitat within sites and wider environment…to allow movement of migratory species*." It is therefore important to consider impacts to functionally habitat outwith the site, not only in the site.<br>Hence we do not agree with the assessment of no LSE to the habitats of qualifying species conservation objectives listed (Table 8-8), given the evidence presented so far. It would be precautionary to take these assessments through to Stage 2 of the HRA. | |
| | 8.2.3.4 | We are supportive of the Applicant considering disturbance to seals foraging at-sea. | |

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| 69. | General | Natural England has completed our update to The Wash and North Norfolk Coast (WNNC) Special Area of Conservation supplementary advice on conservation objectives for Harbour (common) seal (*Phoca vitulina*). We hope to publish the updated conservation advice at the next available opportunity in March 2023. However, we have enclosed a copy of our finalised draft advice (Appendix D1) to aid in the undertaking of any Habitats Regulation Assessment.<br>This adds further weight to the overall unfavourable conservation status of the species, and the species in the site. It also adds further importance to taking a more precautionary approach in the assessment and/or when interpreting the assessment conclusions. Therefore, the Applicant must ensure that the project will not hinder (neither stop nor slow) the recovery of the species in the site. | |
| 70. | 8.3.1.1 | It is not clear what the Applicant means by soft start and ramp up. Natural England considers that the soft start, as detailed in the MMMP, is mitigation rather than project design. We acknowledge that an element of starting at lower energies and ramping up would be implemented irrespective of marine mammal mitigation. However, the specific nature of the soft start, e.g., starting at lowest energy possible, ramping up over 30 minutes, low strike rate (if included), has been designed to be in accordance with the mitigation guidelines. Hence our position that this mitigation should not be included in the assessment of LSE (as per previous comments).<br>We note that in Section 8.4.1.1.1.1.1, the Applicant has included mitigation in the assessment of AEoI, which we consider to be the correct approach. | |
| 71. | 8.3.1.2 | In Table 8-12 the Applicant has listed a series of measures on co-ordination with piling should high order clearance be needed. Whilst we are supportive in principle of such measures, they need to be secured (either in the UXO MMMP, or UXO licence conditions) for Natural England to take them into consideration. The Applicant should consider how these measures will be secured at the time of applying for their UXO licence. | |
| 72. | 8.4.1.1.1.1.2.2 | We request assurance from the Applicant that the assumption of one location being complete per day is appropriate for pin piles, where 4 piles need to be installed with associated set up in between.<br>Furthermore, we request clarification on what is meant by a recovery day, what activity would occur on a recovery day? As these have been included as a day of disturbance in Table 8-19. | |
| 73. | 8.4.1.1.1.1.2.2 | To note, we consider that ADD activation for 55 minutes will disturb (most) harbour porpoise to a minimum of 4.95km. The value of 4.95km is based on an animal starting next to the ADD and fleeing at a | |

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| | | constant swimming speed of 1.5m/s. However, the ADD could induce a startle response in animals already at distance from the ADD and lead to larger impact areas. To illustrate, a median ADD deployment of 66 minutes resulted in disturbance out to 12 km in Dahne *et al.* (2017). Whilst we consider that harbour porpoise disturbance to 12 km is more appropriate than the 4.95 km detailed, we acknowledge that this disturbance range does not overlap with the SNS SAC, therefore the conclusions of the Applicant remain valid.<br><br>Monitoring of disturbance due to ADD activation could be considered for post-consent monitoring. | |
| 74. | 8.4.1.1.1.2.2.1 | Whilst this is a minor point, it is not clear how the overlap of both SEP and DEP sites over the winter area of the SNS SAC (30.45 km2 – Table 8-24) is less than the overlap of DEP site alone (32.7 km2 – Table 8-18). The latter number may be incorrect.<br><br>Nonetheless, the sum of the SEP and DEP overlaps with the winter SNS SAC in Table 8-18 is only marginally more than DEP alone therefore we expect that the assessment conclusion remains valid. | |
| 75. | 8.4.1.1.1.2.2.1 | Based on the information in Table 8-13, it appears that simultaneous piling at one site (i.e. SEP or DEP) is within the project envelope. Whilst simultaneous piling across sites may represent the worst-case spatial area, it is unlikely to represent the worst-case spatial overlap with the SNS SAC because of the differing distances between the sites and the SNS SAC. Indeed, simultaneous piling at the DEP site would lead to greater overlap with the SNS SAC summer area than has been presented and would be the worst-case scenario. We advise that this scenario, of simultaneous piling at DEP site, must be assessed as it is the worst-case. In this scenario consideration should be given to the maximum separation distance of such simultaneous piling, and whether a maximum separation distance should be considered to be secured as a mitigation measure, to reduce the project's overall contribution to disturbance at the SNS SAC. Similarly simultaneous piling at DEP would also likely represent the worst-case overlap with the winter area of the SNS SAC. | |
| 76. | 8.4.1.1.1.2.2.2 | The Applicant has used a value of 53 days for foundation installation. This number however should be 55 days, to take into account 2 piling days for installation of the OSPs. | |
| 77. | 8.4.1.1.3.1 | We welcome the Applicant's inclusion of studies that have monitored the behavioural response of harbour porpoise to piling construction vessels. These empirical observations provide useful context to the modelling results. | |

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| 78. | 8.4.1.1.6.1 | As water quality changes have been assessed as negligible in the ES chapter, we agree with the conclusion that any water quality changes will not significantly affect harbour porpoise and other marine mammals. | |
| 79. | 8.4.1.1.7.1.4 | The Applicant has based their assessment of impacts to prey on fish with a swim bladder involved in hearing and a fleeing response. This represents the most sensitive receptor group, but uses a less conservative assumption of fleeing. Sandeel is an important prey species for marine mammals, are unlikely to be as sensitive to noise impacts, however it is not clear whether a fleeing response would be appropriate for this species group. It would be beneficial for the Applicant to undertake a brief assessment of impacts to sandeel specifically, using appropriate assumptions about auditory and behavioural response. | |
| 80. | 8.4.1.1.7.1.4 | The Applicant has not made any reference to the behavioural response distances of prey based on Hawkins *et al.* (2014), which is detailed in the ES chapter, and are inferred to be larger than those derived through the underwater noise modelling. An assessment based on these larger distances should be undertaken against the various marine mammal sites. This is of particular importance where these larger distances would lead to direct overlap between prey impact distances and designated sites. This pathway should also be reconsidered for the in-combination assessment. | |
| 81. | 8.4.1.1.7.1.4 | To note, the mitigation proposed by the Applicant will only work for fish that flee. Fish that do not show a fleeing capability will not benefit from measures such as ADDs or soft start. Even in those species with some fleeing capability, there is little research to suggest that fleeing responses are prolonged and directional (i.e. away from noise). The mitigation measure that would benefit all fish species would be a reduction in the noise emitted, e.g. by using noise abatement systems. Therefore, as per general comment 1, the measures in the MMMP have limited benefit for prey species. | |
| 82. | 8.4.1.6.1 | We consider that the list of offshore wind farms that may be piling in 2028 is appropriate given current knowledge of projects. When the SIP for the SNS SAC is updated closer to construction, potentially, additional projects need to be included in the updated in-combination assessment therein. | |
| 83. | 8.4.1.6.1 | Natural England notes that simultaneous piling is within the scope of SEP&DEP, and would have advised the in-combination assessment to include simultaneous piling at SEP and DEP. It is possible that Dogger Bank South (DBS), which comprises two projects (DBS East and West), will have concurrent piling between these two projects. Similar applies to the two East Anglia Hub projects (ONE North and TWO). Simultaneous piling is also within the scope of Hornsea 4. We consider it a possibility that the worst-case | |

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| | | scenario could be greater than what has been assessed (single piling at each project), especially due to the targets for offshore wind by 2030.<br><br>However, including a greater number of piling events would not affect the outcome of the assessment as it is already predicted to exceed the disturbance thresholds for the SNS SAC. The Applicant proposes to manage this through the SIP. The SIP must be based on the understanding of in-combination piling scenarios at the time, which therefore would capture simultaneous piling.<br><br>There are mitigation measures available to SEP&DEP which could result in the avoidance of overlap between the project and the SNS SAC. If implemented, this would remove the need for a SIP. Natural England considers this would be a beneficial way to proceed given our current concerns over managing multiple SIPs, as outlined in this response. This would potentially reduce risk to project if the current SIP process cannot does not give us confidence in the conclusion of no AEoI on the SNS SAC, given the number of offshore wind farms due to construct before 2030. | |
| 84. | 8.4.1.6.1.2 | The seasonal averages presented by the Applicant do not represent the whole season; they only represent the contribution of those 33/26 days on which SEP&DEP are piling. This is not the correct way to present the seasonal average as it does not take into account the noisy activities occurring during the remainder of the season. Therefore, the conclusion that this demonstrates that the seasonal threshold would not be exceeded is incorrect.<br><br>We advise the Applicant to present an assessment of the disturbance due to piling <u>across the whole season</u>.<br><br>This applies to all seasonal assessments undertaken.<br><br>It is of particular importance that this is applied to the overall in-combination assessment in Table 8-53. | |
| 85. | 8.4.1.6.2.5.1 | As per our comment on the ES chapter/CIA screening, we advise that seismic and geophysical sources should be assessed as mobile sources in the assessment.<br><br>The Applicant should use the available evidence to inform a realistic assessment of disturbance from seismic and geophysical vessels per day. For example, they could use the information on Marine Noise Registry, or in BEIS HRAs, on past surveys. | |

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| | General | To note, we only consider the assessment conclusion for all noise sources in-combination (i.e. presented in Section 8.4.1.6.3) as relevant. It is not appropriate to conclude no AEoI between individual sectors and SEP and DEP as this does not represent that full in-combination scenario. | |
| 86. | 8.4.1.6.3 | Table 8-53 presents that the number of harbour porpoise potentially disturbed could exceed a significant effect in both EIA and HRA terms.<br><br>In terms of EIA, the Applicant has presented that 5.25% of the NS MU population of harbour porpoise may be disturbed. This is over the Applicant's threshold of a significant effect (for temporary effects) – temporary impacts that affect more than 5% of the population have the potential to have long term significant impacts on the population (see Paragraph 408). Note that the NS MU population is used as the reference population for the SNS SAC, hence its relevance to the RIAA.<br><br>In terms of HRA, the Applicant has presented that 12.0% of the winter area of the SNS SAC could be subject to noise disturbance in an in-combination scenario over the season. This is in exceedance of the 10% threshold for significant disturbance over a season.<br><br>The Applicant states that the measures in the SIP will mitigate disturbance, however as detailed in general comment 1 we disagree with this. We therefore require further safeguards which ensure that a significant impact to the NS MU population will not occur.<br><br>The applicant must present further information which demonstrates that a significant effect/AEoI could not occur on the harbour porpoise feature of the SNS SAC as a result of in-combination underwater noise. Specifically, what would happen in the event that there are multiple other OWF construction or noise producing projects proposed at the same time. | |
| 87. | General | We defer to NatureScot for advice on impacts to the Moray Firth SAC. | |
| 88. | 8.4.2.1.5 | In Table 8-16 the Applicant has presented that 24 individuals could be affected at the SEP site, stating that this equal to 0.11% of the east coast of Scotland population. Can the Applicant please confirm that this is a typographical error, and should read 0.24? | |
| 89. | 8.4.2 | The greatest concern with regards to the coastal east Scotland/Moray Firth bottlenose dolphin population is impacts in the coastal area where this population is more commonly observed. It is important that the future UXO assessment considers the overlap between the impact ranges around UXO clearance and the more coastal habitat of this population. | |

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| 90. | 8.4.3.1.1 | The Applicant has predicted that 382 grey seals, or 9.8% of the Humber Estuary SAC population, may be at risk of disturbance (based on TTS as a proxy). This is higher (almost double) the Applicant's threshold for a significant effect.<br><br>As detailed in general comment 1, we consider it not appropriate to say that the MMMP will reduce the likelihood of disturbance to grey seals.<br><br>We are therefore not satisfied that the mitigation will reduce the risk of a significant effect on the population and require further information from the Applicant to justify their assessment conclusion.<br>One part of this is evidence to support the Applicant's assertion that not all animals would be from the Humber Estuary SAC.<br><br>The Applicant should provide further information on the assessment of disturbance to grey seals of the Humber Estuary SAC during simultaneous piling, to demonstrate no AEoI. | |
| 91. | 8.4.3.1.4 (and 8.4.4.1.4) | In the assessment of barrier effects on seals, we request to see information on:<br>• Likely movements/pathways of seals from the nearby SACs, based on telemetry data<br>• Location of the barrier effect in relation to these movements<br>• Area lost due to barrier effect as a proportion of available habitat, with consideration of access to areas beyond the area of barrier effect.<br>To note, whilst the effect may be temporary it may overlap with the most sensitive periods for seals, the breeding season, when seals may also have the lowest adaptability to forage in other areas. | |
| 92. | 8.4.3.1.9 | Strictly the Applicant has not assessed the worst-case area of disturbance to fish; this should be the in-combination area of disturbance to fish during simultaneous piling, which is 680 km2 (Table 5-83, Volume 3 Appendix 10.2 Underwater Noise Modelling Report) or even higher if based on Hawkins *et al.* (2014).<br>Note that this also applies to the same impact assessment for harbour seals in Section 8.4.4.1.9. | |
| 93. | 8.4.3.4 | Based on the Applicant's in-combination assessment of potential disturbance in Table 8-47, up to 1,610 individual grey seals may be impacted. This is equivalent to 41.3% of the SAC, and 6.68% of the wider reference population.<br>We do not agree with the Applicant's assessment that this is not significant. The Applicant has come to this conclusion based on: | |

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| | | • It being a highly precautionary assessment – however they have not presented any way to reduce the level of precaution and so get a better understanding of what a "realistic" level of precaution would mean for the number of animals affected;<br>• Taking into account mitigation for UXO – because the worst-case UXO clearance is still high order and ADDs, which would cause a high level of disturbance;<br>• Taking into account the SIP – because the SIP is not aimed at reducing disturbance for other species, and most measures in the SIP would not reduce disturbance for grey seal.<br>We require further evidence from the Applicant to demonstrate how this number of animal disturbed would not have an AEoI on the Humber Estuary SAC.<br><br>In particular, we request the Applicant consider what appropriate mitigation could be secured at this stage to reduce the number of individuals which may be disturbed. | |
| 94. | 8.4.4.1.7 | Upon further reading it appears that the Sheringham Shoal Offshore Wind Farm did not undertake any pile installation in 2012 ([redacted]). Indeed, Russell *et al.* (2016) demonstrated that harbour seals showed significant decrease in usage up to 25 km from the piling activity. We therefore do not consider that harbour seals will still undertake foraging activity, at least during piling activities.<br><br>Russell, D.J., Hastie, G.D., Thompson, D., Janik, V.M., Hammond, P.S., Scott-Hayward, L.A., Matthiopoulos, J., Jones, E.L. and McConnell, B.J., 2016. Avoidance of wind farms by harbour seals is limited to pile driving activities. Journal of Applied Ecology, 53(6), pp.1642-1652.<br><br>Note that this also applies to Section 10.6.1.3 of the ES Marine Mammal Chapter. | |
| 95. | 8.4.4.1.1,<br>8.4.4.1.4,<br><br>8.4.4.1.7,<br><br>8.4.4.4 | We advise that the Applicant present an assessment of disturbance of harbour seals during piling, using the 25km disturbance range from Russell *et al.* (2016). This range, gathered through empirical data, is considered more likely to be accurate than using TTS as a proxy.<br><br>Given the overall status of the Wash and North Norfolk Coast SAC harbour seal feature, it is important that the assessment is precautionary and shows the full possible impact. | |
| | 8.4.4.2.9 | For the Applicant to note: in response to the harbour seal decline in the Wash and North Norfolk Coast SAC, Natural England is looking to further research to investigate the possible causes of decline. The cause of the decline is unknown but has occurred over a timeframe of significant increase in both grey seals and offshore wind farms in the area. How these may be interacting with harbour seals, perhaps through affects to prey, will be one of the likely focusses of any further research.<br><br>This could be an area to consider for post-consent monitoring. | |

# FINAL DRAFT

## The Wash and North Norfolk Coast (WNNC) SAC – updates to supplementary advice on conservation objectives for Harbour (common) seal (*Phoca vitulina*)

## November 2022

The following text presents Natural England's updated supplementary advice on conservation objectives for Harbour seals in the WNNC SAC for the following four attributes, planned to be published to Designated Sites View in March 2023:

1. Disturbance caused by human activity
2. Population: population size
3. Population: recruitment and reproductive capability
4. Presence and spatial distribution of the species

### Disturbance caused by human activity

**Target:**

Restrict the frequency, duration and / or intensity of disturbance affecting seals whilst hauled out to rest, moult, breed, or pup/suckle so that they are not significantly disturbed.

**Site-specific supporting notes:**

Within the SAC, harbour seal use many sites to haul out throughout the year, including sand spits, open sandbanks, and locations along the tidal creeks in the coastal mudflats and saltmarsh (Thompson et al., 2022).

These haul-out sites can be close to areas of human activity. Potential sources of human disturbance at this site include coastal walkers, fisheries, dogs and vessel disturbance (both commercial and recreational).

Disturbance and displacement from haul-out sites may lead harbour seal to seek alternative haul-out locations within the site. If there are no alternative sites close by that are available, this can increase swimming effort and so energy expenditure. During the pupping season, increased swimming and/or less time hauled out could lead to a reduction in suckling opportunities for mothers and pups (Thompson et al., 2022). Disturbance to harbour seal should be restricted at all times especially during the pupping season which runs from June-July, and during the moult which generally occurs in August. Fisheries management is in place in The Wash during the months of June, July and August to limit disturbance to seals during this sensitive time.

There is currently a lack of site-specific data on the impacts of disturbance caused by human activity at this site and it is not known if disturbance events are increasing within the SAC. Dedicated site-specific studies are needed to fully understand what impacts human disturbance is having on this population.

The population at this site is currently in decline. Any activity within the site must not hinder the recovery of this population. Please see the 'Population' attribute for more information on the current population decline of harbour seal in The Wash and North Norfolk Coast SAC.

The target has been set due to a lack of evidence that the feature is being impacted by any anthropogenic activities.

## Population: population size

**Target:**

Restore the population size within the site

**Site-specific supporting notes:**

Before the 1988 phocine distemper virus (PDV) outbreak, the population using the site included around 3,800 individuals. This declined by 50% and began gradually increasing until 2001 when the count of individuals in the site was approximately 4,000. Another PDV outbreak occurred in 2002, when the population suffered a 22% loss (Thompson, 2012). After this decrease the moult counts in The Wash stabilised by 2007 and begun increasing after 2008. After this increase, the site population plateaued over the period 2014-2018 (mean number of individuals was 3,658) (SCOS, 2021). The Wash currently supports approximately 9% of the UK harbour seal population (SCOS, 2020).

Harbour seal populations across The Wash and adjacent sites (from Donna Nook to Scroby Sands), have recently undergone a decline. Population trends differ between sites: The Wash showed population increases from 2004 to 2014-18 followed by sharp declines; while at Blakeney there has been a gradual decline between 2002 and 2021 (SCOS, 2021). Additional surveys in 2020 and 2021 have confirmed these decreases (SCOS, 2021).

The count for the Wash and North Norfolk Coast SAC (i.e. The Wash and Blakeney) has decreased by approximately 21% from a mean count of 3,658 (2014-2018) to a mean count of 2,883 (2019-2021) (SCOS, 2021). This decline is of similar magnitude to the decline caused by the 2002 PDV epidemic. It is still uncertain whether this represents the beginning of a sustained decline or a step change (like those seen following the PDV epidemics) (SCOS, 2021).

The cause of this decline, whether it be emigration, mortality or a change in behaviour is currently unknown (SCOS, 2021). This decline does not coincide with any major disease events e.g. PDV. The population will continue to be monitored to assess what is causing these declines within the site.

A restore target has been set for this attribute to reflect the current population decline. Any activity within the site must not hinder the recovery of this population.

There is evidence from monitoring that shows the population of harbour seals within the site to be in decline.

## Population: recruitment and reproductive capability

**Target:**

Maintain the reproductive and recruitment capability of the species.

**Site-specific supporting notes:**

Aerial surveys of the harbour seal population during the breeding season (June-July) are attempted annually, in addition to the annual moult surveys in August. However, due to a combination of factors, no aerial breeding surveys were conducted in the years 2019, 2020 and 2021. Therefore, the most recent breeding survey data is from 2018 (SCOS, 2021).

In 2018 a total of 1,498 pups and 3,747 older seals (1+ age classes) were counted in The Wash. This pup count was 18% higher than the 2017 peak but similar to the average peak count for the preceding 5 years, demonstrating the high inter-annual variability (SCOS, 2019). Pup production increased on average 5.6% per annum between 2001 and 2018 in The Wash.

The ratio of pup counts to the all-age population index remained high in 2018, at around 0.4. This ratio was 2.7 times higher than in 2001 suggesting that the large increase in apparent fecundity after 2001 was being maintained (SCOS, 2019). Given the recent increase in apparent fecundity in another large population in the Wadden Sea, it is no longer thought that the increase in apparent fecundity is The Wash is simply due to movement between these two areas.

Blakeney is not considered to be a key breeding site for harbour seals and few pups are recorded there during annual breeding surveys (SCOS, 2016). 4 pups were counted in 2015 and 2016, and only 1 pup counted in both 2017 and 2018 (SCOS, 2016, 2017, 2018, 2019).

Recent annual moult surveys have shown that harbour seal populations in The Wash and adjacent sites have been declining since 2018 (SCOS, 2021). Additional surveys in 2020 and 2021 have confirmed this decrease (SCOS, 2021). It is currently unclear what impact this overall population decline is having on population recruitment and reproductive capability in The Wash.

Please see the 'Population' attribute for more information on the current population decline of harbour seal in the Wash and North Norfolk Coast SAC.

The target has been set due to a lack of evidence that the feature is being impacted by any anthropogenic activities.

**Presence and spatial distribution of the species**

**Target**:

Maintain the presence and spatial distribution of the species and their ability to undertake key life cycle stages and behaviours.

**Site-specific supporting text:**

Within the SAC, harbour seal use many sites to haul out throughout the year, including sand spits, open sandbanks, and locations along the tidal creeks in the coastal mudflats and saltmarsh (Thompson et al., 2022).

The most recent moult surveys (2021) show that the distribution of harbour seal haul-out sites in The Wash have remained broadly similar since the late 2000s (SCOS, 2021). Between years, there can be significant changes in the fine-scale distribution and spatial extents of the haul-out sites used during the breeding season within the SAC (Thompson et al., 2022). Reported changes in population size at different haul-out sites, e.g. at Blakeney, may affect the local distribution.

When considering the distribution of harbour seals at sea, a study by Carter et al. (2022) determined that distance to a haul-out site was the primary driver of at-sea distribution for harbour seal in the southern north sea, including The Wash, but variables such as sea surface temperature and depth were also important factors. High at-sea density areas in this

region extended further offshore than other locations where harbour seal are present in the UK (Carter et al., 2022).

Please see the 'Population' attribute for more information on the current population decline within the site. Please also refer to the 'Disturbance caused by human activity' attribute for more information on the pressures faced by harbour seals within the SAC.

The target has been set due to a lack of evidence that the feature is being impacted by any anthropogenic activities.

**References**

Carter MID, Boehme L, Cronin MA, Duck CD, Grecian WJ, Hastie GD, Jessopp M, Matthiopoulos J, McConnell BJ, Miller DL, Morris CD, Moss SEW, Thompson D, Thompson PM and Russell DJF. 2022. Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Front. Mar. Sci. 9:875869

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Thompson D, Blight C.J, Sparling C.E. Mapping the fine scale distribution of harbour and grey seal haulout sites in The Wash. 2022. Sea Mammal Research Unit, Scottish Oceans Institute, University of St Andrews. Report for Natural England (DRAFT)

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix E to the Relevant Representations of Natural England**

**Marine Geology, Oceanography and Physical Processes**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

**Appendix E – Marine Geology, Oceanography and Physical Processes**

**In compiling this response, the following documents have been considered:**

- [APP-092] 6.1.6 Chapter 6 Marine Geology, Oceanography and Physical Processes
- [APP-090] 6.1.4 Chapter 4 Project Description
- [APP-102] 6.1.16 Chapter 16 - Petroleum Industry and Other Marine Users
- [APP-117] 6.2.4 Chapter 4 Project Description (Figures)
- [APP-118] 6.2.5 Chapter 5 - EIA Methodology
- [APP-119] 6.2.6 Chapter 6 Marine Geology, Oceanography and Physical Processes (Figures)
- [APP-180] 6.3.6.1 Physical Processes Method Statement
- [APP-181] 6.3.6.2 Wave Climate Assessment
- [APP-182] 6.3.6.3 Sedimentary Processes in the Cromer Shoal Chalk Beds MCZ
- [APP-183 ] 6.3.6.4 Sheringham Shoal Nearshore Cable Route - BGS Shallow Geological Assessment
- [APP-289] 9.5 Offshore In Principle Monitoring Plan

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| AA | Appropriate Assessment |
| CEA | Cumulative Effect Assessment |
| CRP | Cable Route Protocol |
| CS | Coastal Shelf |
| CSCB MCZ | Cromer Shoal Chalk Beds Marine Conservation Zone |
| DEP | Dudgeon Extensions Project |
| DEPN | Dudgeon Extension Project North |
| DEPS | Dudgeon Extension Project South |
| DOW | Dudgeon Offshore Wind Farm |
| DOWF | Dudgeon Offshore Wind Farm |
| EC | Export Cable |
| ECC | Export Cable Corridor |
| EcIA | Ecological Impact Assessment |
| ECR | Export Cable Route |
| EIA | Environmental Impact Assessment |
| EPS | European Protected Species |
| ES | Environmental Statement |
| ExA | Examining Authority |
| GW SPA | Greater Wash Special Protection Area |
| HP3 | Hornsea Project 3 |
| HRA | Habitats Regulations Assessment |
| IPMP | In-principle Monitoring Plan |
| km | Kilometre |
| MCZ | Marine Conservation Zone |
| MCZA | Marine Conservation Zone Assessment |
| MEEB | Measures of Equivalent Environmental Benefit |
| NSIP | Nationally Significant Infrastructure Project |
| NE | Natural England |
| NNC SAC | North Norfolk Coast Special Area of Conservation |
| NW | North-West |
| O&M | Operation & Maintenance |
| OWF | Offshore Wind Farm |
| PEIR | Preliminary Environmental Information Report |
| RWCS | Realistic Worst-Case Scenario |
| SAC | Special Area of Conservation |
| $SEL_{ss}$ | Sound Exposure Level |
| SEP | Sheringham Extensions Project |
| SoS/SOS | Secretary of State |
| SOWF | Sheringham Shoal Offshore Wind Farm |
| SPA | Special Protection Area |
| SS | Sheringham Shoal |
| SSC | Suspended Sediment Concentrations |
| WCS | Worst Case Scenario |
| WTG | Wind Turbine Generator |
| ZoI | Zone of Influence |

**Please note:** This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations

## 1. Summary of Main Issues

| Subject | Comments | RAG |
|---|---|---|
| **Project Parameters** | | |
| Project description | The project parameters are clearly defined | |
| NE position on Worst Case Scenario (WCS) | The rationale behind the WCS is mostly clear. However, the rationale behind some of the associated calculations and conclusions are not clear (see detailed comments). Furthermore, the impacts of the scenario whereby SEP and DEP may be constructed sequentially are not clearly defined. It would be useful to highlight the implications of a sequential construction scenario on the impact assessment. | |
| **Baseline Characterisation** | | |
| Data suitability and baseline characterisation | The baseline characterisation is generally good, although characterisation of sandbanks, sandwaves and significant morphological features across the project area is inadequate. Please see our detailed comments and advice regarding baseline characterisation of sandbanks, sandwaves and seabed morphological features.<br><br>The survey methodology and sampling are both adequate, with the exception of site-specific Suspended Sediment Concentrations (SSC)s across the study area for a range of tidal and wave conditions. It would be helpful if more site-specific SSC measurements could be provided.<br><br>The spatial extent of sediment deposition footprint and deposition thickness due to construction activities are described, but insufficient quantitative evidence and/or maps have been provided to support the conclusions drawn. We advise that the predicted deposition footprints from discharge of dredged materials at the arrays are provided, particularly for SEP which is close to the SAC.<br><br>Modelled deposition footprints and thickness should also be provided for representative locations along the ECC between the HDD exit location and seaward boundary of the MCZ. | |
| Data gaps | We would advise that further evidence is required to support the predictions of elevated SSCs due to export cable installation and foundation installation, along with deposition footprints and thickness.<br><br>In addition, there does not appear to be:<br>• an offshore cable crossing schedule<br>• a map showing the spring tidal ellipses across the study area<br>• a map showing sediment transport potential across the study area<br>• DOW geophysical survey data to support conclusions that construction-related effects were minor and localised and that the seabed topography has not changed greatly | |

| | | |
|---|---|---|
| | • any relevant evidence on the success of cable burial on sandbanks from either DOW or SOW.<br><br>We advise that it would be helpful to provide quantitative evidence to support the predictions of elevated SSCs due to export cable installation and foundation installation, along with deposition footprints and thickness.<br><br>We advise that the following be provided:<br>• an offshore cable crossing schedule showing locations and depths<br>• a map showing the spring tidal ellipses across the study area<br>• a map showing sediment transport potential across the study area<br>• DOW geophysical survey data to support conclusions that construction-related effects were minor and localised, and that the seabed topography has not changed greatly<br>• Any relevant evidence on the success of cable burial on sandbanks from either DOW or SOW. | |
| **Environmental Impact Assessment** | | |
| Identified impacts | Natural England notes that the approach to the EIA assessment is proposed to align with other OWF NSIPs. This matrix approach has been used throughout ESs to date to support the assessment of the magnitude and significance of impacts. Natural England notes numerous instances where significance has been presented as a range (i.e., slight, or moderate, or large) and it is nearly always the lower value that has been taken forward. In the absence of evidence to support the use of the lower value in a range, Natural England's view is that the higher value should always be assessed in order to ensure that impacts on features are not incorrectly screened out of further assessment. This is in line with the principles of the Rochdale envelope approach<br><br>The definitions used for magnitude and sensitivity seem appropriate however, we do not agree with all the assessments of magnitude and sensitivity.<br><br>Mostly, apart from scour and secondary scour assessments. We advise that a scour assessment should be carried out, and secondary scour considered. | |
| Methodology Assessment | Sandbanks<br><br>We advise that sandbanks, sandwaves and other significant morphological features have not been adequately characterised or assessed in the ES. Potential changes to these features through activities such sandwave levelling or operation of the OWF could indirectly influence the MCZ and/or East Anglia Coast. We advise that further consideration should be given to the characterisation of sandbanks, sandwaves and other significant morphological features, | |

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| | their migration rates, and recoverability over the lifetime of the project.<br><br>Marine Protected Areas<br>Marine Protected Areas (MPAs) within the ZoI have not been identified as receptors in Chapter 6, with the exception of CSCB MCZ. Whilst we acknowledge that impacts to MPAs are considered in other chapters, because they could be affected indirectly by changes to marine geology, oceanography and physical processes, then they should be identified in this chapter. All Marine Protected Areas within the ZoI should be identified in Chapter 6 and shown on relevant maps. | |
| Cumulative Effect Assessment (CEA) | The list of projects screened into the Cumulative Effect Assessment are appropriate, however, there are three projects which we would advise be considered:<br><br>Waveney Gas Platform<br>Elgood Wellhead<br>Outer Dowsing OWF<br><br>We advise that Waveney Gas Platform, Elgood Wellhead, and Outer Dowsing OWF should be considered in the CEA. NB: Outer Dowsing PEIR is expected to be available in February 2023<br><br>With the exception of the three projects listed above, the impacts have been assessed adequately in the CEA. | |
| Assessment conclusion | Natural England agrees with some of the conclusions reached. Please see our advice on the conclusions with which we are unable to agree at present. | |
| **Habitats Regulations Assessment** | | |
| Screening | Only the CSCB MCZ has been identified as a receptor, no other MPAs have been included. All MPAs within the ZoI should be identified, even if they are assessed in other chapters. For the reasons stated in our detailed comments, at present we are unable to agree with the LSE conclusions for Inner Dowsing, Race Bank and North Ridge SAC and The Wash and North Norfolk SAC. We advise that further evidence be provided to support the LSE conclusions, as requested in our detailed comments. | |
| Methodology | No further comment | |
| Assessment | No further comment | |

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| | | |
| Assessment: In combination | No further comment | |
| Assessment conclusion | No further comment | |
| **Mitigation Summary** | | |
| • Monitoring of sandwave recovery/sandwave migration<br>• Monitoring of sandbank recovery/sandbank migration<br>• No sandwave levelling in a SEP in isolation scenario. | | |

**Detailed Comments**

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| Document used: [APP-090] 6.1.4 Chapter 4 Project Description | | | |
| 1. | 4.4.7.5.4 | Natural England advises that the maximum trench width needs to be clarified in an updated document. Trench sizes quoted use a burial depth of 1.5m and a trench width of 5.2m (assuming a 30-degree trench side slope). However, in Chapter 6 Marine Geology, Oceanography and Physical Processes, it is stated that infield and interlink cables would be buried up to 1.5m below the seabed, width an indicative sediment displacement width of 1m for jetting. Similarly, it is stated that offshore export cables would be buried up to 1m below the seabed, with an indicative sediment displacement width of 1m. This is also contradictory to 5.1.2 [APP-182] relating to sediment process in the MCZ. | |
| 2. | 4.4.7.7.5 | 3rd Bullet Point. It is noted that the export cables for the existing DOW also makes landfall at Weybourne, and that the proposed SEP and DEP offshore export cables cross and then route to landfall to the east of these cables. We also note that there will be a SEP/DEP cable crossing in the nearshore with the Stratos telecom cable and HP3 export cables, but the water depths and distances offshore are not clear. Natural England would welcome the provision of a subtidal crossing schedule. f It would also be useful to provide information such as water depth at the cable crossings and their distance offshore. This is particularly important for those cable crossings in the nearshore part of the ECC in order to understand potential impacts on sediment transport processes. | |
| 3. | 4.4.7.7.5 | Point 196. The maximum dimensions of cable protection for crossings are given as 21m and 100m. The maximum height of cable crossings will be 1.7m. However, in Chapter 6, Point 371, it states that the height of the protrusion will be up to 0.5m in most cases which is also confirmed in Appendix 6.3 APP-182 for the Cromer Shoal MCZ. The maximum height of cable crossings should be clarified and consistent throughout. Furthermore, there are no cross-section or plan schematics of cable crossing layout, it would be helpful if these were provided in an updated document. | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| | | | |
| | Document used: [APP-118] 6.2.5 Chapter 5 EIA Methodology | | |
| 4. | 5.8 | Point 88 states that only projects which are well described and sufficiently advanced, with sufficient detail available will be included in the CIA. Is there also a cut-off date for assessing whether or not to include a project? Please clarify, noting that several PEIrs (Section 42 consultations) are expected in February 2023. Natural England refer to our latest Best Practice Guidance 2022 of recommended tiers for scoping plans and projects for the CEA | |
| | Document used: [APP-181] 6.3.6.2 Volume 3: Appendix 6.2: Wave Climate Assessment | | |
| 5. | 6.2 | Figure 6-2 shows the dimensions of the GBS simulated by DIFFRACT for input to the wave model. This shows WCS turbine foundations for DEP and SEP. The maximum diameter at water level is 13m and the shaft at the seabed is 36m. However, in Section 4.4.3.3 (Chapter 4), it states that the WCS for 18+ MW WTG foundations is a maximum diameter at water level of 14m and shaft diameter at the seabed of 40m. Therefore, the WCS GBS foundations modelled have narrower dimensions at water level and at seabed than the WCS presented in Chapter 4 which would lead to slightly greater impact on the wave climate. Natural England advises that the assessment currently doesn't reflect the worst case scenario and advises that this needs addressing in an updated document before a >36m shaft diameter can be agreed with certainty. | |
| 6. | 7.3 | Point 59. States that the GBS have diameters of 13m and 30m wide bases. This differs from the base diameter presented in Figure 6-2. Please provide further clarity as set out above. | |
| | Document used: [APP-102] 6.1.16 Chapter 16 Petroleum Industry and Other Marine Users | | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| 7. | Table 16-10 | There are potential cumulative impacts due to overlapping O&M activities at Waveney, Blythe Hub and Elgood Wellhead. We note that Blythe Hub has been considered in Chapter 6, but not Waveney or Elgood. We advise that Waveney and Elgood should be included in the CIA. | |
| Document used: [APP-289] 9.5 Offshore In Principle Monitoring Plan (IPMP) | | | |
| 8. | Table 3 | We note that whilst sandwave recovery/migration has been included for post-construction in the In Principle Monitoring Proposal, sandbanks have not. We advise that sandbank recovery/migration should also be included in the In Principle Monitoring Proposal. | |
| Document used: [APP-092] 6.1.6 Chapter 6 Marine Geology, Oceanography and Physical Processes | | | |
| 9. | 6.5.1.1 | The text describes a sandbank in NW of DEP N array area and also a sandbank in the NW of DEP S array area. The bathymetry shows the presence of significant sandbanks, which are probably Cromer Knoll and Inner Cromer Knoll, but no information has been provided regarding their form, spatial extent, elevation, depth, rate of migration and stability. We would advise that in order to understand impacts of the development on these sandbank features, it is important to first characterise their form, extent, elevation, rate of migration and stability. Please can the Applicant provide this information in an updated chapter. | |
| 10. | 6.5.2.4 | Natural England queries if there is an equivalent shallow geology schematic for the Interlink Cable Corridor to help inform advice on significance of impacts? | |
| 11. | 6.5.4 | Natural England notes that the neap and spring tidal excursions have not been provided. The spring tidal excursion is useful for estimating the potential extent of direct changes to flows as well as the anticipated maximum zone of influence for sediment plumes. We advise that the Neap/spring tidal excursions should be quantified in an updated chapter. It would also be useful to provide a map showing the spring tidal ellipses across the study area. | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| 12. | 6.5.8.1 | Point 137. It is noted that owing to the mobility of Holocene sand along the SEP and DEP cable corridor, there is the potential for movement of this sediment and exposure or burial of the underlying geological units. Natural England queries what is the potential seabed mobility here and sediment transport potential? Has this been quantified? It would be helpful if the sediment transport potential could be provided in an updated chapter in order to assess cable burial success. | |
| 13. | 6.5.9 | The HR Wallingford (2002) suspended sediment concentration data are very old. Whilst the Cefas (2016) data are newer, they are not site-specific, instead referring to '*the seas around the UK'*. We would advise that SSC measurements are important in order to establish naturally occurring levels of SSCs across the study area, and to inform baseline characterisation so that change can be assessed. These should ideally be collected throughout the water column over a range of representative tidal, seasonal, and wave conditions. Maybe this has been completed for DOW and/or SOW? | |
| 14. | 6.5.10 | Point 145. The regional net sediment transport rates are now very old (2002). Natural England's best practice (2021) advises that data older than five years should be used with care. Furthermore, it is not clear which geographical area these sediment transport rates relate to, and it would be useful to clarify this. More recent data should also be used, if possible. We advise that more recent regional net sediment transport data should be used and more context provided within an updated chapter on the regional net sediment transport rates. | |
| 15. | 6.6.1 | We welcome the inclusion of sandbanks in the list of impact receptors. However, we believe it is important that the Applicant includes in this list, all marine protected areas that could be affected by changes to physical processes due to the proposed development (even if they are considered and assessed in other chapters). This should also include supporting habitats. Furthermore, all relevant marine protected areas should be identified on the appropriate figures or maps within this chapter. | |

| Point | Section | Natural England's Comment | Risk |
|---|---|---|---|
| 16. | Table 6-13 | Natural England notes that the '*Sand banks (and associated sandwaves*)' Receptor Group does not include any mention of Sheringham Shoal, Pollard Bank, Cromer Knoll, Inner Cromer Knoll, sandwaves in SEP, sandbanks situated at the NW of DEP N array and in DEP S, and in the north of the cable corridor between DEP N array and SEP. We advise that all sandbanks within the OLs for the project, should be included and named, where possible in an updated chapter. | |
| 17. | 6.6.1.2 | Point 153. Cliff erosion rate at landfall is given as between 10-50m over the next 100 years, however, the source of this information has not been stated. Furthermore, in Chapter 3 (Site Selection and Assessment of Alternatives), it is stated that the onshore infrastructure will be sited approximately 150m back from the shoreline, taking into account shoreline erosion. However, it has not been shown how shoreline erosion has been taken into account. We advise that it is important to consider recent cliff and beach profile survey data, alongside longer-term records (i.e. years), in order to establish the baseline. It is also vital to consider climate change impacts on cliff retreat and beach downwearing. This information should be included in an updated chapter. | |
| 18. | 6.6.3.3.1 | The number of turbines installed at DOW is given as 90 in total. Should this be 97? Please clarify. | |
| 19. | 6.6.3.3.1 | Point 172. It is stated that for 'both SOW and DOW, the footprint of mud deposition was found to extend over a wide area, but at an unmeasurable rate. Even under slack water conditions, the maximum rate of deposition was less than 0.5mm in the areas of greatest deposition.' The spatial extents (i.e. footprints) of mud deposition for DOW and SOW have not been provided, but they would be useful to inform understanding of the equivalent footprint for, particularly, SEP. Can the spatial extent of the mud deposition footprint be provided, along with deposition thickness, particularly for SOW? | |
| 20. | 6.6.4.1.1 | Natural England queries if multiple coincident dredging operations likely and what would the worst case scenario would be? If so, this would lead to more spatially extensive and/or higher concentration sediment plumes which should be quantified in terms of suspended | |

| Point | Section | Natural England's Comment | Risk |
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| | | sediment concentration, plume extent, persistence and sediment deposition thickness. Natural England advises that further clarity is required within an updated chapter. | |
| 21. | 6.6.4.1.1 | Point 180. The WCS for changes in SSCs due to seabed preparations for foundation installations would be associated with Gravity Base Structures (GBS). The discharge of dredged sediments during the preparation of GBS foundations will lead to elevated SSCs, and sediment plumes. There is a chance that sediments disturbed during construction of the SEP array, will enter the Inner Dowsing, Race Bank and North Ridge SAC (within 10km tidal excursion). The predicted deposition footprint has not, however, been provided for discharge of dredged material at the sea surface and near the seabed. Natural England advises that predicted deposition footprints from the sea surface and near seabed discharges of dredged material at the SEP array is provided within an updated chapter. This would provide further information on the potential effects due to discharged dredged material at the development site. | |
| 22. | 6.6.4.2.1 | Point 188. It is estimated that the maximum number of foundations that would require drilling would be 5% (4 WTGs). However, 5% of 53 WTGs is 2.65 (3 WTGs if rounded up). Please can this be clarified? | |
| 23. | 6.6.4.4.1 | Point 215. It is noted that the coarser sediment sand/gravel would be deposited near to the point of release up to thicknesses of approximately 3cm. It is not clear how this sediment thickness has been calculated. Within an updated chapter can it be shown how this estimate deposition thickness has been estimated? | |
| 24. | 6.6.4.5.1 | We note that no sandwave levelling is expected for a SEP in isolation scenario because there are no sandwaves present along the ECC. Will this be secured by a condition within the dML/DCO? | |
| 25. | 6.6.4.5.1 | Points 239-241. The SOW and DOW-based model simulation quantification of magnitude of change are useful analogues for the SEPDEP export cable for sediment disturbed by export cable installation. However, it is not clear if/how the SOW/DOW max temporary disturbance widths for export cable installation and burial, or amount of sediment disturbed compare with | |

| Point | Section | Natural England's Comment | Risk |
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| | | those for SEP/DEP. This should be clarified. Furthermore, in Point 239, it is stated that although SSCs will be elevated they are likely to be lower than concentrations during storm conditions (including the Dec 2013 storm surge), which are likely to drive greater changes to the seabed than those due to the OWF infrastructure. Natural England advises that within an updated chapter it should be shown how the SOW/DOW trench size and amount of disturbed sediment compare with those for SEP/DEP. Quantitative evidence should be provided to support the predictions regarding SSCs | |
| 26. | 6.6.4.5.1 | Point 245. It is noted that elevated SSCs above prevailing conditions are anticipated at the HDD exit point, but that they are also likely to remain within the range of background nearshore levels. This conclusion should be supported with quantitative estimates. Please see comment above. | |
| 27. | 6.6.4.6 | Points 255 & 256. Results from the sediment dispersion modelling for the SOW and DOW export cables (Points 170 & 171 in Chapter 6), suggest that suspended load for disturbed mud would extend as a plume over <2km for SOW, and <1km for silt in either direction. However, as noted above, there is no information on the max disturbance width or amount of sediment disturbed due to cable installation at DOW/SOW, compared with those at DEP/SEP. Please provide further clarification within an updated chapter. | |
| 28. | 6.6.4.6.1 | Point 255. Given that the ECC traverses the CSCB MCZ, it would be very helpful if the plume model data for SOW/DOW could also be provided as predicted deposition footprints for representative locations between the HDD exit location and seaward boundary of the MCZ. These should be representative of the different sedimentary zones along the ECC within the MCZ and also include the HDD exit location. Furthermore, it is not stated what the estimated deposited sediment thickness may be for the different sediment fractions (i.e. fine/medium/coarse) due to export cable installation. Modelled deposition footprints and thickness should be provided for locations representative of the different sedimentary zones along the ECC within the MCZ and include the HDD exit location. Can estimated deposited sediment thickness be provided for the different sediment fractions? | |

| Point | Section | Natural England's Comment | Risk |
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| 29. | 6.6.4.6.2 & Table 6-23 | In the Stage 1 CSCB MCZA (Doc Ref 5.6), the pressure *'Smothering and siltation rate changes (light)'* has been used for the sensitivity assessment where 'light' deposition is defined as 'of up to 5cm of fine material added to the habitat in a single, discrete event', and 'heavy' deposition is up to 30cm of fine material. In Section 8.1.2.3 (Stage 1 CSCB MCZA), it states that deposits would be up to 3cm depth, but in 6.6.4.6, there is no similar estimate of deposited sediment thickness stated. Consequently, it is not evident whether the smothering and siltation rate changes (light) pressure is the most appropriate, or whether the sensitivity of the CSCB MCZ is 'negligible' as stated in Table 6-23 (Chapter 6), or the impact 'negligible adverse', given the predicted two year recovery time Points 259 & 262 (Chapter 6). It would be helpful if the rationale for the 3cm sediment deposition thickness could be provided and also the rationale for the negligible sensitivity assessment for the CSCB MCZ. | |
| 30. | 6.6.4.7.3 | We note that no sandwave levelling is anticipated for SEP in isolation. However, it may be required in a DEP alone or SEP and DEP scenarios. This could lead to impacts on nearby subtidal geomorphological features (e.g. the Cromer Knolls, Sheringham Shoal) through sandwave levelling. We advise a precautionary approach is adopted with regards to direct impacts to sandbanks and morphological features across the DEP/SEP arrays and adjacent cable corridors due to sandwave levelling, and potential indirect effects on other receptors (e.g. CSCB MCZ and/or the East Anglia Coast). Impacts to subtidal geomorphological features due to sandwave levelling should be adequately assessed, and indirect effects on other receptors be considered in an updated chapter.An assessment should be carried out to provide reassurance that there will not be any long-term morphological effects. | |
| 31. | 6.6.4.9 | Points 292 & 293. The evidence from Race Bank OWF provides some useful insight to the potential impact of sandwave levelling at DEP N-DEP S. However, in order to understand whether the sandwaves are likely to regenerate after levelling, or be adversely impacted along with any adjacent bank system, it is first necessary to assess the seabed morphology at the locations requiring sandwave levelling using bathymetric survey data. In turn, the anticipated ranges of natural seabed change, sandwave migration rates and expected sediment variability should be assessed. This would inform the baseline upon which morphological change and variability can be assessed throughout the project development and lifetime. Furthermore, this should enable forecasting of site-specific sandwave | |

| Point | Section | Natural England's Comment | Risk |
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| | | regeneration timescale. We would advise that anticipated ranges of natural seabed change, sandwave migration rates and anticipated sediment variability should be further assessed in an updated chapter using bathymetric survey data, for those locations likely to require levelling (pre-sweeping). | |
| 32. | 6.6.4.9.2 | Table 6-26. We are unable to agree with the magnitude of effects on bedload sediment transport for sandwave levelling within offshore cable corridors owing to the uncertainty regarding sandwave recovery at SEPDEP and potential impacts on adjacent bank systems. We advise that the assessment described above should be carried out in order to gain more certainty regarding the likely regeneration of sandwaves following levelling. | |
| 33. | 6.6.5.1 | Points 313-317. We understand that the assessment of tidal currents at the adjacent SOW and DOW, which have conservative designs compared to SEP and DEP designs, concluded no significant changes to the broadscale flow regime, with a reduction in the overall flow within SOW of 1-2%. However, the equivalent overall flow reduction for DOW, or combined DOW/DEP and SOW/SEP scenarios have not been provided. It would be helpful if the predicted flow reduction at DOW and for a combined SEP/SOW and DEP N/DEP S/DOW scenario could be provided (based on the WCS foundation structures). | |
| 34. | 6.6.5.1 | Given the greater spatial extent of the combined SEP/SOW and DEP/DOW arrays and complex seabed topography, there is the potential for more spatial variability in tidal behaviour across the arrays. Yet, in Point 314, it is stated that changes to seabed distribution due to turbine foundations at DOW were minimal, implying that changes to tidal currents (and waves) are local and do not have a significant effect on sediment transport further afield. However, there is no quantitative evidence to support this and it would be useful if this could be provided. | |
| 35. | 6.6.5.1.2 | Point 316. The maximum zone of potential influence (ZoPI) on the tidal regime is presented in Figure 6.11, which we welcome. However, marine protected areas have not been identified on this map. It would be useful to identify marine protected areas on Figure 6.11 to show where they overlap with the ZoPI. | |

| Point | Section | Natural England's Comment | Risk |
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| 36. | 6.6.5.1.3 & 6.6.5.1.4 | Point 319. No significant impact on the tidal current regime is anticipated for SEP/DEP and therefore the impact on sandbanks is anticipated to be negligible adverse. However, we advise that a precautionary approach should be adopted, and that the potential impacts on a nearby sandbank systems should be considered and assessed in an updated chapter, given the greater spatial extent of the combined SEP/SOW and DEP/DOW scenarios, complex seabed topography, and potential for more spatial variability in tidal behaviour across the arrays. | |
| 37. | Table 6-31 | We are not able to agree with the assessment of 'Frequency' as 'Medium'. We would advise that the 'Frequency' of the effect to the wave regime is 'High' rather than 'Medium' because the effect is permanent and occurring with a high frequency. | |
| 38. | 6.6.5.3.1 | Point 334. It is stated that changes to marine geology, oceanography and physical processes would be low in magnitude and largely confined to local wake or wave shadow effects attributable to individual WTG foundations. However, there is no evidence or analysis provided to support these conclusions. Evidence should be provided to support these conclusions. | |
| 39. | 6.6.5.3.1 | Point 334 also refers to '*the evidence from theoretical studies….*', however, there does not appear to be any evidence from theoretical studies, nor is it clear which theoretical studies are being referred to. The predicted effects on sediment transport processes due to the operation and maintenance (O&M) of SEPDEP should be provided. For example, changes to the predicted frequency exceedance of the critical shear stress could be assessed. This could inform changes to the percentage of time that the spatially-varying typical seabed sediment across the development is predicted to be mobilised by tidal and wave processes. Predicted effects on sediment transport processes due to the O&M of the development should be considered over the lifetime of the project | |

| Point | Section | Natural England's Comment | Risk |
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| 40. | 6.6.5.3.1 | Point 337. Geophysical survey data from the existing OWFs are useful. However, it is stated that the DOW geophysical survey shows that only minor and localised effects remain from the wind farm construction, and that the 'overall topography of the seabed within DOW has not greatly changed'. However, it does not state when this survey was undertaken, nor what the minor and localised effects might be that remain, nor how the seabed is not greatly changed and since when. This should be made clearer as it is too vague to provide any useful comparison with SEPDEP. Furthermore, does the post-construction survey show any evidence of change to sandbank morphology or migration rate across DOW? | |
| 41. | 6.6.5.3.2 | Point 339. Predicted effects on sediment transport processes due to the O&M of the development have not been evaluated, neither have the sandbanks in the array(s) been sufficiently characterised to enable us to agree with the sensitivity and value assessment (Table 6-34). We advise that further evidence should be provided in an updated chapter to support this assessment. | |
| 42. | 6.6.5.4 | It is not clear whether a scour assessment has been carried out, yet the WCS (Point 345) is for scour protection to be provided for all foundations. Scour assessments are particularly important to those foundation structures in relatively shallow water where scour volumes are likely to be greatest. We advise that a scour assessment should be carried out and the impact of scoured material from around foundation structures in terms of elevated SSCs and resulting deposition should be considered. | |
| 43. | 6.6.5.4.2 | Point 347. It is stated that it is likely that any secondary scour effects would be confined to within a few metres of the direct footprint of the scour protection material. Natural England queries if there is any evidence to support this estimate, or predictive assessment? We advise that secondary scour should be assessed. | |
| 44. | 6.6.5.6.2 | Point 378. In Chapter 9 (Petroleum Industry and other Marine Users), a crossing is shown between the offshore ECC and the disused Stratos telecom cable in the CSCB MCZ. It is not | |

| Point | Section | Natural England's Comment | Risk |
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| | | stated what the depth of this crossing would be, however, if it is sited inshore of the closure depth, then this could have an affect on sediment transport in the nearshore. We advise that if this crossing is located inshore of the closure depth, then the potential effect on sediment transport processes will need to be considered. | |
| 45. | 6.6.5.7.1 | Point 388. We advise that there are alternatives to jack-up vessels which may avoid impacts to the seabed within the MCZ. Please consider alternatives to jack-up vessels in the MCZ as part of mitigation package. | |
| 46. | 6.6.5.7.4 | Point 395. It is stated that it is not known whether cable repair and reburial will directly impact on sandbanks and sandwaves in the area during the operation phase. Natural England queries if there is any relevant evidence available from DOW/SOW that could be drawn upon here? | |
| 47. | 6.7.5 | Point 416. The cumulative effect on sediment transport processes at sandbank systems is not discussed here but should be considered in an updated chapter. | |
| 48. | Table 6-46 | We advise that Table 6-46 may need revision following our earlier comments on sandbanks, the East Anglia Coast and the MCZ. Please refer to our advice in these detailed comments. | |

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES

2010

**Appendix F to the Relevant Representations of Natural England**

**All Other marine Matters**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

**Appendix F – All Other Marine Matters including Marine Water and Sediment Quality, Benthic Ecology, Fish and Shellfish**

**In compiling this response the following documents have been considered:**

- [APP-093] 6.1.7 Chapter 7 Marine Water and Sediment Quality
- [APP-098] 6.1.8 Chapter 8 Benthic Ecology
- [APP-095] 6.1.9 Chapter 9 Fish and Shellfish Ecology
- [APP-120] 6.2.7 Chapter 7 Marine Water and Sediment Quality (Figures)
- [APP-121] 6.2.8 Chapter 8 Benthic Ecology (Figures)
- [APP-122] 6.2.9 Chapter 9 Fish and Shellfish Ecology (Figures)
- [APP-184] 6.3.8.1 DEP Benthic Characterisation Report
- [APP-185] 6.3.8.2 SEP Benthic Characterisation Report
- [APP-186] 6.3.8.3 DEP Benthic Habitat Report
- [APP-187] 6.3.8.4 SEP Benthic Habitat Report
- [APP-188] 6.3.8.5 SEP and DEP Benthic Habitat Mapping
- [APP-189] 6.3.8.6 MarESA Biotope Sensitivities
- [APP-190] 6.3.9.1 Fish and Shellfish Ecology Baseline Technical Report
- [APP-192] 6.3.10.2 Underwater Noise Modelling Report
- [APP-283] 8.1 Cable Statement.pdf
- [APP-296] 9.9 Outline Offshore Operation and Maintenance Plan.pdf
- [APP-300] 9.13 Disposal Site Characterisation Report.pdf

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| BAC | Background Assessment Criteria |
| CEA | Cumulative Effect Assessment |
| CEFAS | Centre for Environment, Fisheries and Aquaculture Science |
| CEMP | Coordinated Environmental Monitoring Programme |
| CSCB MCZ | Cromer Shoal Chalk Beds Marine Conservation Zone |
| CSQG | Canadian Sediment Quality Guidelines |
| DML | Deemed Marine Licence |
| DCO | Development Consent Order |
| DEP | Dudgeon Extensions Project |
| DEPN | Dudgeon Extension Project North |
| DEPS | Dudgeon Extension Project South |
| DOW | Dudgeon Offshore Wind Farm |
| EC | Export Cable |
| ECC | Export Cable Corridor |
| EIA | Environmental Impact Assessment |
| ERL | Effects Range Low |
| FOCI | Feature of Conservation Importance |
| GES | Good Environmental Status |
| HDD | Horizontal Directional Drilling |
| IPMP | In-Principle Monitoring Plan |
| MarESA | (Marlin) Marine Evidence based Sensitivity Assessment |
| MCZ | Marine Conservation Zone |
| MMO | Marine Management Organisation |
| MPA | Marine Protected Areas |
| NE | Natural England |
| NERC Act | Natural Environment and Rural Communities Act |
| NSIP | Nationally Significant Infrastructure Project |
| OSPAR | Oslo and Paris Conventions |
| OWF | Offshore Wind Farm |
| PEIR | Preliminary Environmental Information Report |
| PEMP | Pollution Environmental management Plan |
| SNCB | Statutory Nature Conservation Body |
| SOW | Sheringham Shoal Offshore Wind Farm |
| SQGL | Sediment Quality Guidelines |
| TEL | Threshold Effect Level |
| UK BAP | United Kingdom Biodiversity Action Plan |
| WCS | Worst Case Scenario |

**Summary of Main Issues**

**Please note:** This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations

| Subject | Comments | RAG |
|---|---|---|
| **Project Parameters** | | |
| Project description | The project parameters are clearly defined, although there are six defined development scenarios listed in the introductory chapters, for water and sediment quality and benthic ecology, the Worse Case Scenario (WCS) is split into four. And whilst these are straight forward to understand it has added a degree of complexity to the overall assessment of impact significance alone and/cumulatively | |
| NE position on Worst Case Scenario (WCS) | The Worst Case Scenario calculations generally translate with the information presented in Chapter 4 Project Description..<br><br>However, there are a couple of calculations that would benefit from expanded information: The calculations for Displaced Sediment during infield and interlink cable installation are not transparent within Tables 7-2 and 8-2 and we are unable to locate the information in [APP-090] Chapter 4 Project Description.<br><br>There appears to be contradictory information regarding the description of the 'V' shaped trench and the subsequent calculation for export cable. We advise that this could be expanded further and cite the reasons for the burial depth varying from 1m for export cable and 1.5m for interlink / Infield cables, noting that in **Section 5.1.2 of APP-182** the cable burial depth is predicted to be between 0.3m and 1.25m within Cromer Shoal Chalk Beds Marine Conservation Zone 'Cromer Shoal MCZ'. Also a cross check with [APP-090] Chapter 4 Project Description suggests that Section 4.4.7.5.4 Trench Sizes, states that "*This assumes a conservative 30-degree trench side slope (based on burial in sand) and 1.5m burial depth for all cables, which could result in an estimated 5.2m wide trench."*. This is contradictory to the information provided within these chapters and those for the Cromer Shoal MCZ. | |
| **Baseline Characterisation** | | |
| Data suitability, and data gaps | The survey methodology is appropriate.<br><br>In areas where sample attempts failed due to the coarse nature of the sediment, sediment samples for chemical analysis were not acquired. As a result there are spatial gaps for the western area of SEP, DEP S and the northern sections of the export cable and interlink corridors.<br><br>Of note in SEP and the northern section of the ECC, there are areas where higher proportions of fines were recorded in samples and it is likely the chemical concentration may be greater as a result. However, we recognise there was no evidence of point source contaminants above threshold values at the other stations sampled and therefore it is likely | |

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| | concentrations would also be within recognised threshold concentrations such as CEFAS AL1.<br><br>But, given the disposal site is effectively the redline DCO boundary, Natural England defers to MMO / CEFAS for their approval of the spatial representation of the chemistry samples in relation to the suitability for sediment disposal across the array, export cable and interlink corridors.<br><br>The analytical methodology for seabed imagery and samples including interpretation is in line with SNCB guidance. However, we recognise there is an outstanding issue of the laboratory accreditation used and this is under discussion with the MMO.<br><br>Moving forward, in pre-construction survey design, we recommend ensuring Natural England's guidance and advice for offshore wind and cable projects is adopted. This is available at: Environmental considerations for offshore wind and cable projects - Home [redacted] | |
| Baseline Characterisation | We request confirmation as to whether the Applicant has classified Transect SS-21A in the western area of SEP as Section 41 NERC, 2006 UK priority habitat 'peat and clay exposures with piddocks'. The Applicant has confirmed the representative biotope A4.231 'Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay' was recorded at this station. Although piddocks were not observed as responsible for the burrows, the summary of available literature presented in the ES suggests the definition of this UK BAP habitat includes peat and clay exposures with no present or past piddock activity. However, within the Impacts Assessment itself, it is stated this priority habitat was not recorded. If this is the case, this is contradictory to the information provided within the habitat characterisation<br><br>We agree with the Applicant that there is insufficient evidence from the baseline survey data acquired to characterise Annex I stony or biogenic (*Sabellaria spinulosa)* reef.<br><br>However, we continue to advise that on the basis of the biotopes identified in Golding (2020) recorded in the baseline survey and the low resemblance to reef observed, there is the potential for Annex I stony reef habitat to occur. Therefore, in the pre-construction surveys, where associated habitats/biotopes occur we advise this potential habitat is assessed as applicable along with the potential for UK BAP / Annex I '*Sabellaria spinulosa* reef' and UK BAP 'peat and clay exposures with piddocks'<br><br>We advise the Applicants commitment to avoid and microsite for Annex I / Section 41 Priority (UK BAP) habitats and species continues to include Annex I stony reef along with *Sabellaria spinulosa* reef'' and peat and clay exposures with piddocks', if found, as a precautionary measure. This mitigation should be secured through condition within the Deemed Marine Licence. | |
| **Environmental Impact Assessment** | | |
| Identified Impacts and Methodology | We are generally satisfied with the EIA assessment for Sediment and Water Quality and Benthic Ecology. | |

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| | However, Natural England notes that the approach to the EIA assessment is proposed to align with other OWF NSIPs. This matrix approach has been used throughout ESs to date to support the assessment of the magnitude and significance of impacts. Natural England notes numerous instances where significance has been presented as a range (i.e., slight, or moderate, or large) and it is nearly always the lower value that has been taken forward. In the absence of evidence to support the use of the lower value in a range, Natural England's view is that the higher value should always be assessed in order to ensure that impacts on features haven't been incorrectly screened out of further assessment. This is in line with the principles of the Rochdale envelope approach<br><br>For Example: We agree with the use of Marine Evidence Based Sensitivity Assessment (MarESA) sensitivities guidance is followed in relation to potential impacts and pressures to the biotopes identified in Chapter 8 Benthic Ecology. In addition, we are satisfied that the appropriate SNCB advice packages have been used, including Natural England's Designated sites Views to identified pressures within protected sites associated with OWF and cable activities.<br><br>Value: We welcome the update since our Section 42 PEIR response that the 'Value' of habitats protected under national law now afford the same protected status as those under international law. Therefore, MCZ and UK Priority habitats are included as being of 'high' value and assessed as part of the WCS.<br><br>And although the definitions for Magnitude and sensitivity seem appropriate, given the size of the wider Southern North Sea and the Marine Protected Areas (MPA), wording such as a 'minority' has a different context in terms of the important of some biotopes and habitats. For this reason therefore there are instances where we disagree with the assessments. | |
| Cumulative Effect Assessment (CEA) | We welcome the increased distance of 10km since Section 42 for screening in projects for CEA | |
| Assessment conclusion | We agree with the assessment conclusion that no Annex I reef (biogenic or geogenic) was identified by the surveys except for the nearshore area of outcropping chalk, with recognition this area will be avoided through the use of HDD at landfall.<br><br>The conclusion does not comment on the presence (or not) of the UK priority habitat 'peat and clay exposures with piddocks'<br><br>**We disagree with the assessment that the worst case will result in minor adverse impacts and consider that several of the impacts, notable those for long term and permanent habitat loss are moderate adverse significant at least.** | |

**Detailed comments**

| Point | Section | Natural England's Comment | Risk |
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| | Document Used: [APP-093] 6.1.7 Chapter 7 Marine Water and Sediment Quality | | |
| 1. | 7.3.2. Realistic Worst Case Scenario<br><br>Para 10 / Table 7-2 | The majority of calculations are transparent through expanded information in the scenarios and/or the notes column.<br><br>However, as set out below Natural England advises that the dimensions used to determine Impact 3 'Displaced Sediment during Export Cable installation' and Impact 4 'Sand wave levelling parameters' are unclear and requests that further information is provided by the Applicant.<br><br>Impact 3 'Displaced Sediment during Export Cable installation'. The notes suggest calculations are based on a V shaped trench which we assume therefore halves the volume of sediment displaced for the 1m depth x 1m wide x 40km, 62km or 102km export cable. However, as with Impact 4 below, a cross check with [APP-090] Chapter 4 Project Description Section 4.4.7.5.4 Trench Sizes, where it is stated that "*This assumes a conservative 30-degree trench side slope (based on burial in sand) and 1.5m burial depth for all cables*", which could result in an estimated 5.2m wide trench. We ask the Applicant to confirm the dimensions of the export cable trench and the resulting displaced sediment volume.<br><br>Impact 4: Sand wave levelling parameters: "Displaced sediment during infield and interlink cable installation". A cross check with [APP-090] Chapter 4 Table 4.22 suggests the 16, 200$m^3$ component is for the DEP North array area.<br><br>In addition, cross checking with Chapter 4 Project Description Table 4.20 and 4.21 it is not transparent the way the interlink and infield cable installation displaced sediment volumes are calculated with understanding from the notes of Table 7-2 of a 1m width and 1.5m max burial based on a V shaped trench. Further, [APP-090] Chapter 4 Project Description Section 4.4.7.5.4 Trench Sizes, states that "*This assumes a conservative 30-degree trench side slope (based on burial in sand) and 1.5m burial depth for all cables, which could result in an estimated 5.2m wide trench. "* | |
| 2. | 7.3.4<br><br>Para 21 | Natural England welcomes the intention for a pollution environmental management plan (PEMP). We defer to the MMO for comment and agreement on the mechanisms of the PEMP | |

| Point | Section | Natural England's Comment | Risk |
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| 3. | 7.5.2<br>Paras 60 and 61 | Following our Section 42 comments, additional information is provided in relation to CEFAS 2016 published data placing suspended sediment concentrations within the range for seas around the UK (5-10mg/l ).Please refer to our comment in Appendix E Marine Processes. | |
| 4. | 7.5.4 Sediment Contaminants<br>Para 63 | We acknowledge failed sampling attempts were likely indicative of coarse sediment type as a result of rocks preventing the grab jaws from closing and agree this provides evidence of a more coarse seabed, which the Applicant considers is less of concern in terms of contaminant release as a result of disturbance.<br>However, Figure 7.5 highlights that the samples acquired were not truly representative of the spatial extent of the development and particularly the absence of contaminant data in the northwest area of SEP, DEP S and northern section of the ECC where grab samples recorded >10% mud. Therefore, we advise that uncertainty remains as to whether or not contaminants fall below acceptable levels.<br>As the regulator for sample disposal licencing, we defer to the MMO with advice from CEFAS on the sufficiency of the samples in terms of spatial representation across the offshore development area. Further as the sample disposal site is effectively the DCO Redline boundary, we defer to the MMO / CEFAS as the regulator for sample disposal licencing (as presented in [APP-300] 9.13 Disposal Site Characterisation Report.pdf) for their approval in relation to their suitability in order to licence the array areas, export cable and interlink corridors for sediment disposal.<br>We advise the In-Principle Monitoring Plan (IPMP) includes pre-construction monitoring for further sampling to ensure the suitability of sediments for disposal across the DCO boundary. | |
| 5. | 7.5.4.3 Comparison with other sediment quality guidelines<br>Paras 74 to 80 | Following the Section 42 Consultation, Natural England welcomes the expanded paragraphs providing context around the potential concerns associated with the analysis of polycyclic aromatic hydrocarbons and additional comparison of contaminant data against OSPAR CEMP data (ERL and BAC).<br>Natural England has no further concerns on the analytical methodology, analysis and interpretation of results. However, we defer to MMO/ CEFAS to determine the sufficiency of the chemical analysis in terms of laboratory accreditation. | |
| 6. | 7.11 Potential Monitoring Requirements<br>Para 176 | We welcome the intention for monitoring to be outlined within an IPMP. Although we stated in our Section 42 response, that Natural England consider sediment and water quality monitoring is not required, further consideration in light of sediment disposal potentially across the construction area including Cromer Shoal MCZ, we consider pre-construction sediment | |

| Point | Section | Natural England's Comment | Risk |
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| | | contaminant monitoring will be required for the purposes of suitability for sediment disposal. We advise this must be agreed with the MMO/CEFAS and secured within the DCO/DML. | |
| | Document Used: [APP-094] 6.1.8 Chapter 8 Benthic Ecology | | |
| 7. | 8.3.2.1 Worst Case Scenario<br><br>Para 12 Table 8-2 | Construction Impact 1 Seabed Preparation<br>For clarity it would be useful to confirm the Total Disturbance for each scenario is the sum of the two values in the final cell, eg Total Disturbance Footprint for DEP in Isolation it is 5.12km$^2$ + 0.17km$^2$ = 5.17km$^2$<br>Operation Impact 1 – Temporary habitat loss / physical disturbance.<br>It is not possible to compare the cable repair, replacement and reburial footprint to Chapter 4. Table 8-2 as they are expressed in m$^2$ per year, whereas Chapter 4 Table 4.30 expresses figures m$^2$/ 10 years in. We would welcome further explanation of the calculation SEP and DEP in Isolation to understand each WCS for this impact. | |
| 8. | 8.3.2.1 Worst Case Scenario<br>Para 12 Table 8-2 | Whilst Natural England welcomes the Applicant's commitment to decommission cable protection within the MCZ it would be helpful if an Outline Decommissioning Plan could be provided at the consenting phase to secure and assess decommissioning activities in one location.<br>However, regarding the decision to decommission scour protection, surface laid cables and external cable and crossing protection *in-situ* outside the Cromer MCZ, we continue to advise that regardless of legislation, decommissioning should aim to remove infrastructure to avoid irreversible (permanent) habitat loss, thus returning the seabed habitat to its pre-developed baseline status as required by OSPAR. | |
| 9. | 8.3.3.1<br>Mitigation Embedded in the Design<br>Para 21 Table 8-3 | We welcome the intention for sediment disposal to return material within the CSCB MCZ at or close to the source, to ensure that it remains within the site.<br>Further, we welcome the intention that sediment will be deposited within an area of similar sediment type, site to ensure any sensitive habitats are avoided. This should be secured within a named DML disposal plan to be updated pre-construction. | |
| 10. | 8.3.3.2 Other Mitigation Measures | Natural England welcomes the commitment to microsite sensitive benthic features and habitats if identified by pre-construction surveys, such as those protected under Annex 1 and UK priority | |

| Point | Section | Natural England's Comment | Risk |
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| | Table 8-4 | habitats identified under Section 41 of the NERC, 2006 Act However, Natural England notes this commitment needs to be secured through condition within the DCO/DML.<br><br>Natural England agrees any Annex I habitat such as *Sabellaria spinulosa* reef habitat identified would be outside any SAC. However, with regard to footnote 6, we advise if Annex I habitat is identified the Applicant recognises their value to be equivalent to if they were within an MPA. This forms part of the UK government strategy of achieving the UK Marine Strategy of achieving Good Environmental Status (GES) of the UK wider seas regardless of whether sensitive species and habitats are located within an MPA network.<br><br>We advise the Applicant to be fully committed to the protected status of protected sensitive habitats and species, regardless of whether they are located within a MPA. | |
| 11. | 8.4.1.2 Policy, Legislation and Guidance -Other<br><br>Paras 29 and 30 | Natural England welcomes the Applicants consideration of the guidance documents outlined. In addition, we suggest the Applicant also uses guidance developed by Natural England for "Environmental Considerations for Offshore Wind and Cable Projects". This includes "Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards" for baseline characterisation, pre-application, data and evidence expectations at examination and post-consent monitoring. In addition, advice is also provided on "Nature considerations and environmental best practice for subsea cables in English inshore and UK offshore waters".<br><br>Moving Forward we recommend review of Natural England's guidance and advice. This is available at: Environmental considerations for offshore wind and cable projects - Home [redacted] | |
| 12. | 8.5.2 Existing Environment – Sediment Chemistry<br><br>Paras 72 and 73 | Natural England welcomes the inclusion of information from Whalley *et al* 1999 to provide regional context to the concentrations recorded in the baseline survey, which exceeded the Canadian Sediment Quality Guidelines (CSQG) Sediment Threshold Effect Level (TEL). We agree with the Applicant's conclusions, that comparison with this data suggests the concentrations recorded are not considered atypical to the wider region. | |
| 13. | 8.5.4.4.1 Geogenic and Biogenic Reef<br><br>Paras 115 to 117 | Natural England welcomes the characterisation of the out-cropping chalk feature observed from seabed video imagery at Station EC-26 adjacent to landfall using guidance within NERR080 Natural England Marine Chalk characterisation Project.pdf.<br><br>However, Natural England continues to advise that across much of Cromer Shoal MCZ there are areas of subtidal chalk lying underneath a thin veneer of sand/sediment which we also consider | |

| Point | Section | Natural England's Comment | Risk |
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| | | should be protected as outcropping chalk/subtidal Chalk Feature of Conservation Importance (FOCI). This is in accordance with our advice on fishing activities. | |
| 14. | 8.5.4.4.1 Geogenic and Biogenic Reef<br><br>Paras 118 to 120 | We acknowledge the assessments for stony reef at Stations EC-03 and EC-24 were classed as 'low 'resemblance to stony reef according to Irving (2009 and Golding (2020) and therefore at these locations where seabed imagery was acquired there was insufficient evidence to classify as Annex I Reef Habitat.<br><br>However we advise that the habitat classification for StationEC_03 of sublittoral coarse sediment (SS.SCS) and Station EC_24 of circalittoral mixed sediment (SS.SMx.CMx) are among the biotopes listed in Golding (2020) Refining the criteria for defining areas with a 'low resemblance' to Annex I stony reef (JNCC Report No. 656) as biotopes where reef may be found. As such we continue to advise that the potential for stony reef Annex I habitat, as with the potential for Annex I *Sabellaria spinulosa* (described in Para 120 not to constitute reef) is not entirely ruled out from pre-construction survey assessment..<br><br>We advise the Applicants commitment to avoid and microsite for Annex1 habitats continues to include Annex I stony reef as a precautionary measure. | |
| 15. | 8.5.4.4.4 Peat and Clay Exposures<br><br>Para 123 | It is stated *'A section of transect SS_21A in the SEP wind farm site represented the biotope A4.231 'Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay', which is classed as an illustrative biotope of the UK BAP priority habitat 'peat and clay exposures with piddocks''.* It is unclear from the description and interpretation which followed in this paragraph, whether based on observed imagery, this transect was classified as the UK BAP priority habitat 'peat and clay exposures with piddocks'.<br><br>We request that the Applicant provides clarification on the classification of this habitat. In point 18 below, we query the statement in Paras 156 and 165 *'However as there are no Annex I/ BAP priority habitats present…..'*.<br><br>Natural England advises that all outcropping and sub-cropping peat should be avoided. | |
| 16. | 8.5.4.4.5<br><br>Other Potentially Sensitive Habitats and Species<br><br>Para 124 | It is stated that *Sabellaria was* found as single tubes, veneer, or very small clumps and therefore did not constitute Annex I reef habitat as defined in Gubbay (2007).<br><br>Please be advised that, *Sabellaria spinulosa* reef of all quality is protected under Section 40 and 41 of the Natural Environmental and Rural Communities (NERC) Act 2006. Therefore, due regard must be given to the conservation of this habitat. | |

| Point | Section | Natural England's Comment | Risk |
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| 17. | 8.6.2.1.3.1<br>SEP in Isolation Sensitivity<br>Para 164 | Natural England welcomes the intention to avoid the creation of persistent trenches, and use the techniques previously undertaken during the construction of the DOW.<br>Please see our comments in Appendix G Cromer Shoal MCZ to the [APP-291] Outline CSCB MCZ CSIMP (document reference 9.7) and its [APP-292] Appendix 1 Interim Cable Burial Study (document reference 9.7.1). | |
| 18. | 8.6.2.1.2 Construction Impact 1: Temporary habitat loss / physical disturbance<br>DEP in Isolation Sensitivity Para 156 and SEP in Isolation Sensitivity Para 160 / 8.6.2.1.3.1<br>Para 165 and 169 | We disagree with re-assigning the biotope A4.231 Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay from high (as classified by MarSEA) to medium sensitivity. Regardless of their protected status (value), we consider the sensitivity should remain as classified.<br>As point 15 above we query the Applicant's statement in Paras 156 and 165 that '*As there are no Annex I/ BAP priority habitats present….*' As stated in Para 123 '*The definition of the UK BAP priority habitat also encompasses occurrences of peat and clay exposures with no evidence of either past or present piddock activity, but which have the potential for this community to develop on the basis of environmental conditions and presence of similar beds locally (UK BAP, 2008c).'* This implies the presence of this priority habitat, but as point 15 above we request clarification.<br>Natural England however welcomes that that the impact significance for both Annex I / UK BAP *S. spinulosa* reef associated with biotope A5.611 and UK BAP peat and clay exposures with piddocks' that can be associated with biotope A4.231 are assigned a high sensitivity and considered within this assessment.<br>As above Natural England seeks clarification as to status of the UK BAP 'Peat and clay exposures with piddocks' at Transect SS-21A. | |
| 19. | 8.6.2.1.5 Construction Impact 1: Temporary Habitat Loss / Physical Disturbance<br>Sensitivity Para 175 , Magnitude 176 & 177 and Impact Significance 178. | In the context of the conservation objectives for the features /habitats within the Cromer MCZ, Natural England considers the sensitivity of these habitats within the site should be considered <u>high</u> in recognition of their 'value' and not <u>medium</u> as classified by MarESA, due to the fact that these habitats are also found outside the MCZ in the Southern North Sea. This applies through the assessment. | |
| 20. | 8.6.3.1.1.1 Operation Impact 1: | Natural England agrees with the Applicant's statement that "The introduction of stable artificial substrate in the form of external cable protection and turbine foundations may encourage reef formation but would not be considered Annex I habitat as it would not naturally occur at the | |

| Point | Section | Natural England's Comment | Risk |
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| | Temporary habitat loss / physical disturbance<br>Para 246 | location". However we advise that during any Operation and Maintenance activities, the Applicant makes every effort to ensure that any impacts to Annex I / UK BAP habitats if naturally present on the surrounding seabed are microsited for where possible. | |
| 21. | 8.6.3.2.1.1 Operation Impact 2 Permanent Habitat Loss:<br>Sensitivity Paras 254 to 256 | As above, Natural England is not in agreement with amendment of MarSEA sensitivity adjustments to medium where there is no protected status. However, we welcome the sensitivity for 'Annex I / UK BAP priority habitat *S. spinulosa* reefs that can be associated with biotope A5.611 and the UK BAP priority habitat 'peat and clay exposures with piddocks' which can be associated with biotope A4.231' remaining as 'high' sensitivity for this MarESA pressure.<br>We consider the Impact Significance for permanent habitat loss is moderate adverse for both the biotopes and Annex I / UK BAP priority habitats. | |
| 22. | 8.6.3.3.1 Operation Impact 3: Long term habitat Loss - Cromer Shoal Chalk Beds MCZ<br>Para 269 | Impact 3: Long Term Habitat Loss. As stated in our Section 42 response, Natural England welcomes the commitment, as also outlined in the Outline CSCB MCZ CSIMP, to the use of removable rock bags as cable protection, thus minimising permanent habitat loss within the MCZ. However, every effort should be made to minimise cable protection within the MCZ. | |
| 23. | 8.6.3.3.1.1<br>Operation Impact 3: Long term Habitat Loss – Cromer Shoal Chalk Beds MCZ<br>Para 272 | As point 19 above, in the context of the conservation objectives for the features /habitats within the Cromer MCZ, Natural England considers the sensitivity of these habitats within the site should remain high.<br>We consider therefore the impact significance of 'moderate adverse' is applied to both the assessment of the habitats and biotopes within the MCZ and the WCS for Annex I / UK BAP priority habitat S. spinulosa reefs and the UK BAP priority habitat 'peat and clay exposures with piddocks'. | |
| Document Used: [APP-188] Appendix 6.3.8.5 – Benthic Habitat Mapping | | | |
| 24. | Figures 22 and 23 | Figure 22 and 23 provides best available evidence of sediment most likely to support spawning and sandeel habitats. We advise that this highlights the importance of DEP N to sandeels and thereby Annex I Sandwich terns. We advise further consideration is given to removal of turbines from DEP N | |

| Point | Section | Natural England's Comment | Risk |
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| Document Used: [APP-190] Appendix 6.3.9.1 – Fish and Shellfish Ecology Baseline Technical Report | | | |
| 25. | 9.1.2.4.1 Otter Trawl Surveys | Natural England note that data from otter trawl surveys in 2005 and 2008 showed that herring was the most abundant species caught. And this supports herring being a key prey resource for Annex I Sandwich terns in the second part of the breeding season.<br>However, Natural England acknowledges the age of the data and defers to CEFAS for recommendations of further data sources to complement this data and potential requirement for pre-construction surveys. We also note that any additional surveys data could have wider ecosystem benefits in terms of management measures for Annex I birds. | |
| 26. | 9.1.2.4.5 Herring spawning surveys | Similar to the above, there was a pre-construction survey in 2009 and a post-construction herring spawning survey in 2010.<br>Natural England acknowledges the age of the data and defers to CEFAS for recommendations of further data sources to complement this data and potential requirement for pre-construction surveys. We also note that any additional surveys data could have wider ecosystem benefits in terms of management measures for Annex I birds. | |
| Document: [APP-192] Appendix 6.3.10.2 – Underwater Noise Modelling Report | | | |
| 27. | General | Natural England previously recommended that underwater noise modelling from concurrent piling between SEP and DEP to be undertaken and included in the assessment. Behavioural contours to also be included. Both simultaneous piling (i.e. one piling operation occurring in the SEP wind farm site at the same time (i.e. simultaneously) as a piling operation in the DEP wind farm site) and sequential piling within a 24 hour period have been considered within the updated underwater noise modelling. Natural England advise further underwater noise assessment is undertaken which includes concurrent piling from SEP and DEP. Natural England defer to CEFAS for more further detailed comments in relation to potential subsea noise impacts to fish species . | |
| Document: [APP-296] 9.9 Offshore Operation and Maintenance Plan (OOMP) | | | |
| 28. | General | Natural England notes there is much emphasis on the post consent detailed design and therefore it is not clear if the O&M activities permitted under Section 7 have been fully assessed as part of the HRA/MCZ assessment or will be subject to another HRA/MCZ process post consent by the MMO. | |

| Point | Section | Natural England's Comment | Risk |
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| 29. | | Natural England advises that because O&M activities are only mentioned and not clearly defined we do not believe that they have been assessed and therefore further information is required to undertake any HRA/MCZ assessment. | |
| 30. | | Natural England advises more information is required on what is considered to be 'corrective work' and if that is permitted on the DML | |
| 31. | | Natural England notes that this is a live document but advises that a true assessment of potential impacts can't be undertaken from the information included | |
| 32. | | 5. Natural England advises that the following information is required to assess the impacts from O&M activities:<br>• Number of vessel transits per activity per day/month<br>• Timing of planned maintenance work<br>• Agree what are emergency works<br>• Separate out inside MCZ with outside MCZ and other designated sites<br>• Monitoring to be undertaken to inform 5 yearly review<br>• How often will a sub-bottom profiler be used and how will the noise be taken account of<br>• Volume of additional scour prevention around the turbines over the project lifetime<br>• If scour/cable protection in new location – where, how much etc.<br>• Confirm bird scarers are not noisy scarers which can disturb Annex I birds<br>• More detail on the use of drones for offshore inspections | |

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix G to the Relevant Representations of Natural England**

**Cromer Shoal Chalk Beds Marine Conservation Zone**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

**Appendix G – Cromer Shoal Chalk Beds ('Cromer Shoal') Marine Conservation Zone**

In compiling this response, the following documents have been considered:

- [APP-076] 5.5.5 Appendix 5 Derogation Funding Statement (Habitats Regulations and Marine and Coastal Access Act)
- [APP-077] 5.6 Stage 1 Cromer Shoal Chalk Beds Marine Conservation Zone Assessment.
- [APP-078] 5.6.1 Appendix 1 Screening Report.
- [APP-079] 5.6.2 Appendix 2 Biotope Sensitivity Ranges
- [APP-080] 5.6.3 Appendix 3 Assessment of Sea Bed Disturbance Impacts from UXO Clearance.
- [APP-081] 5.6.4 Appendix 4 Assessment of Potential Impacts on Cromer Shoal Chalk Beds Marine Conservation Zone Features from Planting of Native Oyster Beds.
- [APP-083] 5.7.1 Appendix 1 In-Principle Cromer Shoal Chalk Beds (CSCB) Marine Conservation Zone (MCZ) Measures of Equivalent Environmental Benefit (MEEB) Plan.
- [APP-084] 5.8 Strategic and Collaborative Approaches to Compensation and Measures of Equivalent Environmental Benefit.
- [APP-089] 6.1.3 Chapter 3 Site Selection and Assessment of Alternatives.
- [APP-090] 6.1.4 Chapter 4 Project Description.
- [APP-091] 6.1.5 Chapter 5 EIA Methodology
- [APP-117] 6.2.4 Chapter 4 Project Description (Figures).
- [APP-121] 6.2.8 Chapter 8 Benthic Ecology (Figures).
- [APP-182] 6.3.6.3 Sedimentary Processes in the Cromer Shoal Chalk Beds MCZ
- [APP-183] 6.3.6.4 Sheringham Shoal Nearshore Cable Route - BGS Shallow Geological Assessment.
- [APP-188] 6.3.8.5 SEP and DEP Benthic Habitat Mapping.
- [APP-189] 6.3.8.6 MarESA Biotope Sensitivities.
- [APP-283] 8.1 Cable Statement.
- [APP-291] 9.7 Outline CSCB MCZ Cable Specification, Installation and Monitoring Plan.
- [APP-292] 9.7.1 Interim Cable Burial Study.
- [APP-293] 9.7.2 Export Cable Burial Risk Assessment.
- [APP-294] 9.7.3 Cable Protection Decommissioning Feasibility.
- [APP-296] 9.9 Outline Offshore Operation and Maintenance Plan.

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| AA | Appropriate Assessment |
| CEA | Cumulative Effect Assessment |
| CSCB MCZ | Cromer Shoal Chalk Beds Marine Conservation Zone |
| DML | Deemed Marine Licence |
| DCO | Development Consent Order |
| DEP | Dudgeon Extensions Project |
| DEPN | Dudgeon Extension Project North |
| DEPS | Dudgeon Extension Project South |
| DOW | Dudgeon Offshore Wind Farm |
| DOWF | Dudgeon Offshore Wind Farm |
| EC | Export Cable |
| ECC | Export Cable Corridor |
| EcIA | Ecological Impact Assessment |
| ECR | Export Cable Route |
| EIA | Environmental Impact Assessment |
| ES | Environmental Statement |
| ExA | Examining Authority |
| FOCI | Features of Conservation Interest |
| GW SPA | Greater Wash Special Protection Area |
| HOCI | Habitat of Conservation Interest |
| HP3 | Hornsea Project Three |
| HRA | Habitats Regulations Assessment |
| IPMP | In-principle Monitoring Plan |
| MCZ | Marine Conservation Zone |
| MCZA | Marine Conservation Zone Assessment |
| MEEB | Measures of Equivalent Environmental Benefit |
| NE | Natural England |
| O&M | Operation & Maintenance |
| OWF | Offshore Wind Farm |
| RWCS | Realistic Worst-Case Scenario |
| SAC | Special Area of Conservation |
| SEP | Sheringham Extensions Project |
| SNCB | Statutory Nature Conservation Body |
| SOWF | Sheringham Shoal Offshore Wind Farm |
| SPA | Special Protection Area |
| SS | Sheringham Shoal |
| UXO | Unexploded Ordnance |
| WCS | Worst Case Scenario |

## Main Concerns

Please note that in compiling this response, for the purposes of brevity with so many documents to review, we have only included main concerns (not detailed comments). Therefore, many of the issues we raise are likely to be relevant across multiple documents. And we have only raised new points on documents if they haven't already been covered in advice on other documents or generic sections of our advice

### 1) Small Scale losses

1. Natural England doesn't agree with the Applicant's Stage One MCZ assessment in relation to the defining the magnitude of impacts (3.2.1.1). This is because the assessment has been approached from an EIA perspective rather one considering whether or not the conservation objectives for the site will be hindered. Please see **Annex 1** for further details on Natural England's standard position.

2. Whilst we acknowledge that the MCZ consists of broadscale habitat types rather than features akin to Annex I there are areas that are FOCI or have sub features that provide a defined function with differing sensitivity in which impacts should be avoided.

3. Natural England advises that impacts considered as a percentage of the whole MCZ is misleading given the size of the site. The impacts from SEP and DEP combined are still 0.19ha from cable protection.

### 2) Lasting habitat change/loss

4. Natural England welcomes consideration of removal of cable protection at the time of decommissioning. If removal could be achieved, then whilst the impacts would no longer be permanent, they would still last for the lifetime of the infrastructure (40 years) and potentially longer as a residual impact. Therefore, because this impact is lasting/long term and site recovery wouldn't be assured, Natural England's view is that reasonable scientific doubt would likely remain regarding the impact of the proposals on the conservation objectives for the site. Accordingly, we advise that a more precautionary approach is required when considering the generational impacts to the designated site features both alone and cumulatively.

## 3) Significance of impact

i. Alone:

5. Whilst we acknowledge that the predicted impact from DEP and SEP combined poses a lower risk to the site features than Hornsea Project Three; Natural England doesn't agree with the Applicant's conclusion that there will be no significant risk of the activity hindering the achievement of the conservation objectives for Cromer Shoal MCZ.

6. Of particular concern is the area of mixed sediment within the cable corridor, which has a more diverse community. Should cable protection be placed in this location then the conservation objectives to restore/maintain features will not be achieved.

ii. In-combination/cumulative: (including TIERS)

7. Whilst, the Marine and Coastal Access Act (2009) does not provide any legislative requirement for explicit consideration of in-combination or cumulative impact assessment to be undertaken when assessing the impacts of licensable activities upon an MCZ; we agree with the MMO in considering that in order to fully discharge regulatory duties under section 69 (1) of the MCAA, in combination and cumulative effects must be considered.

8. We acknowledge at Para. 31 of the Stage 1 MCZ Assessment [APP-077] the Applicant has considered TIERs to inform such an assessment. However, we advise that the 2013 guidance on TIERs has been updated in Natural England's best practice guidance available at: Environmental considerations for offshore wind and cable projects - Home [redacted]: Phase III: Expectations for data analysis and presentation at examination for offshore wind applications.

9. Natural England advises that Cromer Shoal MCZ assessments undertaken by previous competent authorities concluded: significant adverse impact on the designated features of the MCZ from the placement of cable/pipeline protection could be ruled out. However, Natural England advises that as with cable/pipeline protection within SACs the lasting habitat change/loss over the lifetime of the projects and beyond is hindering the conservation objectives of the site and is in the process of updating our condition assessment for Cromer Shoal MCZ accordingly. Thereby, Natural England considers the O&M phase activities for DEP (and or) SEP combined with DOW, SOW, Hornsea

Project Three and on-going Oil and Gas impacts will result in lasting habitat change / physical disturbance which will further hinder the conservation objectives of the CSCB MCZ.

10. The risk of, and observed, reduction in designated habitat extent which has occurred and/or is predicted to arise from the above developments has meant that the MCZ is highly likely to be taken further away from its required conservation state in the future. Unless these unanticipated significant impacts on the MCZ are addressed, Natural England advises that the overall coherence of the national site network as designated is at risk from a lasting habitat change/loss over the lifetime of the consented/built projects.

11. This is important context for future licensing and condition discharge decisions, as it substantially increases the risk that subsequent licence applications (including this Application) could result in further significant impacts on the MCZ. Accordingly, we strongly advise that Applicant's potentially affecting the MCZ will need to intensify their use of the mitigation hierarchy to avoid, reduce and mitigate their impacts to a level where such effects cannot arise.

12. Natural England wishes to highlight that the outcome the review of our conservation advice and condition assessment for the Cromer Shoal Chalk Beds MCZ will be available in the New Year (2023).

## 4) Impacts to Chalk

13. Natural England does not agree with the Applicant's assessment that Cromer Shoal Chalk Beds MCZ Subtidal Chalk FOCI is restricted to the areas identified by the geophysical survey. We agree that areas of current outcropping chalk have been identified. However, across much of the site there are areas of subtidal chalk lying underneath a thin veneer of sand/sediment i.e. subcropping chalk. We advise that chalk with sediment veneer should be considered as subtidal chalk feature (HOCI 20) when assessing impacts. This is in accordance with our advice on fishing activities.

14. We note that the Applicant's sensitivity biotope mapping (5.6.2 Appendix 2) is based on the veneer within the glacial channel rather than the subcropping chalk, which does not align with our advice. Thereby whilst we may be able to agree with an assessment that indicates that if cables are installed as described within the veneer, chalk will not be physically impacted, this position would change should cable protection be proposed in these areas no matter the current stability of the sediments within the glacial channel.

15. Natural England therefore advises against the HDD exits pits being located in an area of subcropping chalk.

### 5) Mitigation

16. In **Table 1**: Natural England lists out the standard benthic mitigation and considers how SEP and DEP have adopted the mitigation measures

**Table 1 Benthic Mitigation**

| Standard Best Practice Mitigation | SEP and DEP Mitigation |
|---|---|
| Avoid MCZ | Due to physical constraints and grid connection Natural England notes that impacts to a designated site are unavoidable. But alternative routes through the MCZ to landfall at Bacon have been considered and discounted. |
| Reduce number of export cables though use of HV/DC system or coordinated approach with other projects – Norfolk Projects | Section 5.1 (Para 47) MCZ Stage 1 Assessment Natural England notes the potential for progressing a single ops serving both windfarms. Natural England is most supportive of this option due to the ecological benefits both for marine and terrestrial receptors. Otherwise, we would strongly encourage an integrated transmission system being progressed with HDD ducts for both SEP and DEP being installed when the first project constructs. |
| Reduce the number of cable crossing within a designed site to avoid the requirement for cable protection – Hornsea Project Three | Natural England notes that all cable crossings are proposed to be outside of designed sites. Therefore, we consider the mitigation measure adopted |
| Cutting and removing sections of disused cables to avoid cable crossings | Natural England notes on page 28 Table 4 of 5.6 [APP-077] that it is proposed that this will be applied to 'Stratos telecommunications' cable. This is welcomed. |
| Micro siting cables around reef and other features of ecological importance – All projects post Lincs OWF consent 2008 | Natural England notes that this is referred to in the various SEP and DEP documents for the MCZ, but equally this is not secured as a condition on the face of the DCO/dML. Natural England would welcome this being secured as a condition. |

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| Sandwave levelling to reduce risk of free spanning cables and requirement for external cable protection – though this has own issues in relation to ensuring sediment remains in the system, disposal in like for like habitat/sediment, demonstrating full recoverability etc. – All projects since 2016 have included an element of this | Natural England notes that this is no requirement for this mitigation measure within the MCZ. And has not commented further in this document. |
| Adoption of the reburial hierarchy with external cable protection being last resort – all protects | Whilst reburial is mentioned in various documents the reburial hierarchy is not. An outline of the process for reburial should be included with the MCZ Cable Specification, Installation Plan and Monitoring Plan [APP-291]. |
| Pre consent undertake a cable burial risk assessment using geotech. data to focus cable protection requirements to areas where cables are likely to be sub-optimally buried e.g. mixed sediment - to apply for a realistic worse-case scenario – All projects since Vanguard | Whilst, the Applicant has undertaken a cable burial study 9.7.1 and 9.7.2 [APP-292 and 293] these are only interim and are reliant on being updated post consent. Therefore, there is no indication of the areas most likely to require cable protection. We advise that more information is required at the consenting stage. |
| Use of guard vessels and/or advance mapping to avoid sub-optimally buried/surface laid cables negating the need for physical cable protection e.g. Lincs cable in the Wash | Natural England notes that sub-optimally cables of >0.3m are acceptable to the Applicant due to the stiffness of the sediment providing the necessary protection from anchor damage without the need for external cable protection. Natural England welcomes this position. |
| Requirement to install cable protection with the minimal footprint e.g. pinning – TWT cable corridors | Natural England notes that concrete/glass reinforced plastic protection covers have been included as an option to reduce the footprint of any cable protection. But this still has similar impacts to concrete mattresses. Therefore, given the Applicant's requirement to bury the cables options to secure surface laid cables have not been considered. |
| Requirement to install cable protection with the greatest likely of removal e.g. rock bags. See decommissioning paper. Example Norfolk Projects | Natural England welcomes the inclusion of 9.7.3 [APP-294] cable protection decommissioning plan and notes that only options that have been identified as having the greatest likelihood of successful removal have been included as part of the plan. Therefore, we advise this mitigation measure has been implemented to be refined post consent. |

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|---|---|
| No use of jack up barges along export cable routes through benthic SACs – Norfolk OWF projects | Natural England advises further consideration of this mitigation measure in the operation and maintenance plan 9.9 [APP-296] |
| No cable protection in fisheries byelaw areas to avoid hindering reef recovery, noting that cable may still go through the outskirts of these areas - Norfolk Projects | Natural England notes that there has been no consideration of the potential fisheries bye law areas and potential to hinder the positive environmental outcomes with Cromer Shoal MCZ that they are designed to achieve. We would welcome further consideration of this. |
| Designing rock armouring to mirror the structure and function of geogenic reef – advised for Viking Link interconnector | Due to the requirement to remove the cable protection at the time of decommission this is not considered a viable mitigation option for these projects. |

**6) Sediment deposition**

17. Natural England would welcome more information on how if required (based on the installation technique) sediment will be removed at the exit pit/s, stored and redistributed. And how impacts to surrounding features can be avoided/reduced. We advise that Section 8 of the MCZ Stage I assessment requires more detail and consideration.

**7) Secondary scouring**

18. Natural England notes that secondary scouring needs further consideration in the Stage I MCZ assessment (para. 192, 197 and 209) in relation to impacts to sediment transportation

**8) 5.6.3 Unexploded Ordnance Clearance (UXO) [APP-080]**

19. Natural England welcomes the consideration of ORDTER (2018) when considering the potential size of UXO detonation craters. However, we advise that further information is required in relation to the depth of any crater and the impacts this may have on any subcropping chalk, peat and clay. In particular if chalk, peat/clay or mixed sediment is impacted features are likely to destroyed as part of any explosion. Limited evidence is presented to demonstrate that the structure and function will fully recover. In addition,

we advise that impacts from UXO detonations are considered in-combination with Hornsea Project 3.

## 9) 5.6.4 Planting of Native Oysters as MEEB [APP-081]

20. Whilst Natural England is seeking further specialist input to help provide further advice to help the successful delivery of Oyster restoration at Examination **Deadline 1**, we advise that we currently have fundamental issues with the chosen location for restoration as shown by the red square in **Figure 2.1 [APP-081]**.

21. Natural England advises that it is difficult to recreate mixed sediment, but the idea behind the MEEB option is sound i.e. the recreation of mixed sediment/reef epifauna communities in a new location.

22. Natural England highlights the importance of the existing mixed sediment within the Cromer Shoal MCZ. The Cromer Shoal MCZ mixed sediment in this location has several sub features to that of the generic habitat type and there is no current requirement to restore/enhance these habitats. Natural England therefore advises against the placement of clutch and restoration of an Oyster bed in the middle of a mixed sediment area. For this to be considered as additionality we advise that it would be better to extend/enhance the area of the mixed sediment on the boundary with impoverished coarse sediment e.g. in the centre of the ‘c’ shaped mixed sediment area or north/south of the blue rectangle.

23. In relation to the potential loss of coarse sediment within Cromer Shoal MCZ Natural England advises for this designated site only that an Oyster bed in the interface between the two habitat types will not detrimentally impact on the wide-ranging coarse sediment within the Cromer Shoal MCZ.

## 10) 5.7.1 Appendix 1 In principle CSCB MCZ MEEB Plan [APP-83]

24. Natural England advises that regardless of the potential project progression scenarios the size/scale of Oyster Bed is dependent on ecological functionally and therefore will not change.

25. Natural England recognises the time required for ecological functionally to occur and therefore would advise the implementation of Oyster restoration prior to the cable installation but reflecting that it may not be fully delivering. (Para. 93)

26. Natural England advises that removal of anthropogenic marine debris will not provide the necessary compensation measure alone, but could form part of a package with something much more substantive or a positive Net Gain option. As with our advice to the Secretary of State (dated 20 January 2022) on Hornsea Project Three it is challenging to demonstrate that this option will offset habitat loss.
27. Natural England welcomes the consideration/inclusion of strategic benthic compensation options as a fallback plan/adaptive management (para 60 and **APP-084].**

28. Natural England recommends working with local fishermen to source the clutch as has been done on previous projects (8.4.3.1).

29. Natural England remains supportive of removing redundant surface laid infrastructure where there is currently no mechanism for removal.

**11) 6.3.6.3 Sediment Processes Cromer Shoal MCZ [APP-182] and 6.3.6.4 BGS Shallow Geology Assessment [APP-183]**

30. Natural England notes the age of the data presented in this document and advises that consideration of more recent data included within other documents gives a more holistic characterisation of the site. Including the stable nature of the sediment along the glacial channel.

31. Natural England notes that, in some places, sediment veneer is likely to be less than 1m, with 0.3 -1.25m stated at 5.1.2. Natural England advises that impacts to chalk should be avoided either through installation or further external cable protection.

32. Natural England advises that impacts to peat and clay should also be avoided from cable installation and potential cable protection.

**12) 8.1 Cable statement [APP-283]**

33. Natural England would welcome the adoption of an integrated system and therefore concurrent development. If the projects are taken forward separately then we would

strongly advise the Applicant to commit to installing the cable ducts for both projects when the first project is installed as per East Anglia ONE North and Two, East Anglia ONE and East Anglia Three, and the Norfolk Projects (Vanguard and Boreas). Should this approach be adopted then many of the transmission asset impacts will be significantly reduced.

## 13) 9.7 MCZ Cable Specification and monitoring plan [APP-291]

34. Natural England advises that prior to construction, sign off of this document should be required in consultation with the relevant SNCB

35. Natural England advises that where there is shallow veneer this should be monitored and managed accordingly.

36. Natural England notes that the information included in Figure 2 and supporting text (1.3.1 para.12) doesn't reflect the more detailed information in 6.3.8.5 Figure 14 which we advise is amended given the purpose of this document.

37. Natural England highlights that the cable installation plan will need to take into consideration potential impacts to other designated sites. For example, potential disturbance/displacement impacts to Annex I Red Throated Diver and possible implications of mitigating impacts to the Greater Wash SPA

38. Natural England highlights the need for the implementation of adaptive management measures should monitoring demonstrate the impacts are greater than predicted or unforeseen.

39. Natural England advises that monitoring will be required to inform the as yet to be agreed 5 yearly review of the Operations and Maintenance plan.

40. Natural England advises that any increase in the footprint of cable protection within the MCZ during the operational phase of the project will require a separate marine licence due to the potential impacts to designated site features which may have changed over time.

## 14) 9.7.2 Export Cable Burial Risk Assessment [APP-293]

41. Natural England advises that standard best practice to inform the cable burial risk assessment is to undertake geotechnical investigations prior to submission, However, for these projects we advise that the geotechnical and cable installation data from Dudgeon OWF is the best available evidence and we would expect geotechnical data to be collected prior to cable installation to inform the necessary regulatory sign off in consultation with NE

42. Natural England would support not using mechanical trenchers/thybrid trenchers from a ecological perspective to reduce impacts

**Annex 1 – Natural England's Standard Advice on Impacts within Designated Sites**

1) Natural England advice on the placement of cable scour protection and cable protection within designated site

1. Natural England advises that the placement of scour prevention/cable protection with designated sites constitutes a lasting generation impact over the lifetime of the project, which is potentially irreversible. Unless it can be demonstrated otherwise, the scale of impacts are likely to hinder the maintain habitat feature conservation objectives of the site which can't be 'restored' whilst the protection is in situ, and potentially beyond due to removal implications.

2. All options should be explored by the Applicant to avoid, reduce and mitigate the impacts from the placement of cable protection including (but not exclusively), reducing the number of cables, reducing cable crossings within designated sites, minimising the cable protection requirement along the cable length within the designated site, modifying cable installation, avoiding placing cable in fisheries byelaw areas, adoption of the reburial hierarchy and using cable protection which has the greatest likelihood of successful removal.

3. However, experience from projects to date is demonstrating that mitigation measures are unlikely to completely remove the need for cable protection over the lifetime of the project. Presently, the post installation evidence is not sufficient to remove all reasonable scientific doubt as to the absence of significant adverse effects as a result of the installation of cable protection over the lifetime of the project. The Secretary of State decision for Hornsea Project Three, Norfolk Boreas and Norfolk Vanguard supports this position with a requirement to provide compensation measures.

4. As set out in DEFRA's draft 'Best practice guidance for developing compensatory measures in relation to Marine Protected Areas' there should be no difference in the consideration of benthic impacts between Special Areas of Conservation (SACs) and Marine Conservation Zones (MCZs).

2) Small Scale Losses

5. Natural England will usually consider permanent, long-lasting and irreversible loss to be an adverse effect unless it can be clearly demonstrated otherwise.

6. The following points should be considered (but not exclusively) when providing evidence to underpin an assessment of whether an impact is likely to be an adverse effect:

- Location of the predicted loss in terms of whether it sits on a designated or supporting feature of the site;
- Duration of the loss – for loss to be considered temporary it must be clearly time-limited to the point where the impact is predicted to return to the same pre-impact condition and must include a detailed remediation plan using proven techniques as part of the licence;

- Scale of the loss in relation to the feature / sub feature of the site including consideration of the quality and rarity of the affected area;
- Impact on structure, functioning or supporting processes of the habitat;
- Feature condition; and
- Existing habitat loss within the same site/ feature/ sub feature.

7. Whilst there are no hard and fast rules or thresholds, in order for Natural England to advise that there is no likelihood of an adverse effect the project would need to demonstrate the following:

   *i. That the loss is not on the priority habitat/feature/ sub feature/ supporting habitat and/or*
   *ii. That the loss is temporarily and reversible (within guidelines above) and/or*
   *iii. That the scale of loss is so small as to be de minimus alone and/ or*
   *iv. That the scale of loss is inconsequential including other impacts on the site/ feature/ sub feature*

8. It is noted that Applicant's will argue that they have provided the above information and provided the necessary assessment and evidence. However, as set out in (C-294/17 Cooperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Others) and other case law relating to People over Wind (2018) for a plan/project to be consented within a designated site there needs to be sufficient certainty in the evidence presented and the recoverability of the features and/or absolute certainty that any proposed mitigation measures will ensure that conservation objectives for the site will not be hindered

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix H to the Relevant Representations of Natural England**

# Seascape and Landscape Visualisation Impact Assessment

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix H – Seascape and Landscape Visualisation Assessment

Natural England's advice relates only to landscape, seascape, and visual effects associated with the statutory purpose of the Norfolk Coast Area of Outstanding Natural Beauty (NCAONB) and its seascape setting. Within the NCAONB, the presence and special character of the North Norfolk Heritage Coast (NNHC) indicates where significant adverse effects from SEP and DEP are likely to be concentrated.

Natural England's following advice should be read in conjunction with our Section 42 PEIR response and is offered without prejudice; this is presented for reference in **Annex 1.** Natural England's advice provided during the evidence plan process has been furthered by recent site visits conducted between 5th and 8th September 2022. We would like to make clear that our comments may change if further evidence or information arises through the decision-making process.

We recommend that any conclusions on the landscape, seascape and visual impacts of SEP and DEP should closely regard commentary and advice provided by the relevant Local Planning Authorities, and the NCAONB Partnership. The Partnership's knowledge of the NCAONB's special qualities and management needs, as well as how the land and sea interact to support the NCAONB's statutory purpose, is more detailed than can be provided by Natural England.

**In compiling this response the following documents have been considered:**

- [APP-090] 6.1.4 Project Description
- [APP-091] 6.1.5 EIA Methodology
- [APP-111] 6.1.25 Seascape and Visual Impact Assessment
- [APP-135 to APP-152] 6.2.25 Seascape and Visual Impact Assessment (Figures)
- [APP-274] 6.3.25.1 Seascape and Visual Impact Assessment Annexes
- [APP-112] 6.1.26 Seascape and Visual Impact Assessment
- [APP-153 to APP-172] 6.2.26 Seascape and Visual Impact Assessment (Figures)
- [APP-275] 6.3.26.1 Landscape and Visual Impact Assessment Annexes
- [APP-311] 9.25 Impacts on the Qualities of Natural Beauty of Norfolk Coast Area of Outstanding Natural Beauty
- [APP-312] 9.26 Offshore Design Statement

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| AOD | Above Ordnance Datum |
| AONB | Area of Outstanding Natural Beauty |
| ASL | Astronomical Sea Level |
| C | Clearances (bade) |
| DCO | Development Consent Order |
| DEP | Dudgeon Extensions Project |
| DEPN | Dudgeon Extension Project North |
| DEPS | Dudgeon Extension Project South |
| DOW | Dudgeon Offshore Wind Farm |
| DOWF | Dudgeon Offshore Wind Farm |
| EIA | Environmental Impact Assessment |
| ExA | Examining Authority |
| GLIVIA | Guidelines for Landscape and Visual Impact Assessment |
| HAT | Highest Astronomical Tide |
| HFoV | Horizontal Field of View |
| LAT | Lowest Astronomical Tide |
| LCT | Landscape Character Type |
| LMW | Low Water Mark |
| LNR | Local Nature Reserve |
| LPA | Local Planning Authority |
| LVIA | Landscape and Visual Impact Assessment |
| MW | Mega Watts |
| NCAONB | Norfolk Coast Area of Outstanding Natural Beauty |
| NNHC | North Norfolk Heritage Coast |
| NSIP | Nationally Significant Infrastructure Project |
| MW | Mega Watt |
| NE | Natural England |
| NNHC | North Norfolk Heritage Coast |
| NPS EN-3 | National Policy Statement for Renewable Energy Infrastructure |
| OWF | Offshore Wind Farm |
| OVA | Offshore Visibility Appendix |
| PEIR | Preliminary Environmental Information Report |
| SEP | Sheringham Extensions Project |
| SLVIA | Seascape, Landscape and Visual Impact Assessment |
| SNH | Scottish Natural Heritage |
| ZTV | Zone of Theoretical Visibility |

**Summary of Main Issues**

**The following points summarise the key areas of disagreement between the Applicant's assessment of landscape, seascape and visual impacts, and Natural England's assessment.**

1. **Natural England consider that the effects of SEP and DEP on the statutory purpose of the Norfolk Coast Area of Outstanding Natural Beauty (NCAONB) is a Likely Significant Adverse effect.**

2. The NCAONB's *ca.* 65km coastline is one of the longest stretches of '*remote and wild*' coastline in England (QNB 6). Extensive views of SEP and DEP will be available from much of this coastline, which has the highest level of statutory protection. There is also no single approach to assess effects from OWFs on the statutory purpose of designated landscapes. In the absence of this, we find that the SVIA conclusion '*'SEP and DEP would not be visible from many areas of the AONB*' although factually correct misses the point that the turbines will be highly visible from the coastal portions of the designation.

3. Natural England agrees that the existing OWFs form a part of the seascape and visual baseline. However Natural England seeks to determine the additional harm that SEP and DEP will present to the statutory purpose of the NCAONB. We advise that a Cumulative Impact Assessment (CIA) should be undertaken to inform the EIA to ensure that the impact of SEP and DEP on the statutory purpose of the NCAONB, in the context of the existing OWFs, can be made. We advise that this is a requirement pursuant of Regulation 14 of the EIA Regulations.

4. The overarching National Policy Statement (NPS) for Energy (EN-1) (paragraph 5.9.9) confirms that decisions to consent SEP and DEP should have regard to the '*specific statutory purposes*' of nationally designated landscapes. Natural England advises that SEP and DEP will adversely affect Special Quality 6 of the NCAONB: '*sense of remoteness, tranquillity, and wildness'* (QNB 6). People's experience of wilderness within the AONB will be strongly influenced by the presence of the turbines of SEP and DEP in the seascape setting of the NCAONB.

5. NPS EN-1, paragraph 5.9.9, confirms that the conservation of natural beauty should be given substantial weight in the consenting process. Natural England advises that the NCAONBs Qualities of Natural Beauty (QNBs) 2, 3 and 6 (as described within the NCAONB Management Plan) will not be conserved and enhanced by SEP and DEP and that it will be possible to secure sufficient mitigation to counter this affect.

6. Natural England supports in principle the Design Objective 11, which commits SEP and DEP to '*Respond to the distinctive and unique character of the local landscape / seascape, including the Norfolk Coast AONB and views out to sea*', although we are uncertain as to how the design of SEP and DEP meets this objective.

7. Visualisations showing how 53 x 265m high turbines may appear in views from the NCAONB should be used to inform the EIA process.

8. Natural England's advice on the sensitivity of the Landscape Character Types within the coastal areas of the NCAONB is in agreement with the North Norfolk Landscape Sensitivity Assessment 2021, but is in disagreement with the judgements made within the ES.

9. **Natural England remains in disagreement with the Applicant on the scale of effects from SEP and DEP on the statutory purpose of the NCAONB from the agreed representative viewpoints.**

10. **We draw the examiners attention to our experience from recent Offshore windfarm NSIP examinations, namely East Anglia ONE North and East Anglia TWO, and highlight that due to professional judgements it is unlikely that agreement between Natural England and the Applicant on the significance of the impacts will be reached during the examination process, thereby we are likely to 'agree to differ' in our views.**

**Detailed Comments**

**1) Natural England considers that the effects of SEP and DEP on the statutory purpose of the NCAONB is a Likely Significant Adverse effect.**

11. Natural England agrees with the conclusion of the SVIA (paragraph 591) that effects on the statutory purpose of the NCAONB will be adverse. Natural England also agrees that the effects of DEP on the statutory purpose of the NCAONB will be of a lesser extent compared to those from SEP. However Natural England disagrees with the impact significance concluded within the SVIA and maintains that the effects are significant and adverse.

12. The difference between the Applicant's judgement of impact significance on the NCAONB (medium-low magnitude, moderate-slight significance) and Natural England's judgement of impact significance (medium magnitude and major-moderate significance) has increased since the assessment within the Preliminary Environmental Information Report (PEIR), without any obvious justification from the Applicant to the change in the assessment. The SVIA now

concludes a moderate-slight significance of effect on the NCAONB, instead of a moderate effect as reported within the PEIR.

13. Natural England welcomes the adjustments made by the Applicant to the indicative layouts of the SEP and DEP array: in particular, the relocation of 1 turbine from the most southerly extend of DEP; and the relocation of 2 turbines from the most southerly extend of SEP. However, we have not seen an appraisal of these changes within the SVIA, and do not agree that this design change is enough to mitigate the impacts to sufficiently decrease the impact significance of SEP and DEP on the NCAONB.

14. **We maintain that the overall potential impact from SEP and DEP on the statutory purpose of the NCAONB will be major-moderate, adverse, unacceptable, and significant in EIA terms. Consequently, Natural England believes that SEP and DEP will harm the natural beauty of the NCAONB.**

15. This is because:

    a. The heights of the proposed turbines when viewed from the NCAONB (see Table 3) will be highly apparent and will significantly and adversely degrade the wildness special quality (QNB 6) for which the NCAONB was designated.

    b. The closest coastlines to the proposed locations of SEP and DEP are within the NCAONB. And the closest coastline to SEP is both within the NCAONB and the North Norfolk Heritage Coast (NNHC); a nationally defined landscape. This area is particularly sensitive to wind energy infrastructure, and the area's special qualities which specifically relate to the coast and seascape.

    c. The marked contrast in apparent height between the proposed turbines of SEP and DEP and the existing Offshore Wind Farms (OWFs) (Sheringham Shoal, Race Bank and Dudgeon) will further, significantly and adversely degrade the quality of views out to sea from the NCAONB. Specifically, the marked contrasts in turbine heights will create a visually cluttered, confusing and incoherent seascape when viewed from many coastal locations within the NCAONB and NNHC.

    d. The visualisations provided show a clear 'curtaining' effect when SEP and DEP are viewed from the NCAONB. This effect is created by the apparent joining together of SEP and DEP with existing OWFs and is particularly apparent from the westernmost viewpoints along the NCAONB coastline.

e. The contrast in turbine heights between the proposed and existing arrays, combined with the apparent 'curtaining' effect will degrade the perception of wildness, remoteness, and tranquillity (QNB 6) that users of the NCAONB experience.

f. As set out in our S42 response, Natural England's advice is that the Sheringham Shoal array has already compromised the statutory purpose of the NCAONB, with the Race Bank and Dudgeon arrays compounding the visual impact of Sheringham Shoal. The ES should provide a sufficient evidence to assist the ExA is determining whether or not SEP and DEP will further compromise the statutory purpose of the NCAONB. Natural England does not find a clear narrative for this within the SVIA.

g. Natural England also advises that the SEP and DEP project will further erode the sense of wilderness that is characteristic of the coastal areas of the NCAONB (QNB 6) and recommends that it is the responsibility of the Applicant to clearly inform on the additional impact that SEP and DEP will have on the statutory purpose of the NCAONB.

h. The NCAONB Management Plan 2014-2019 states that '*The wilderness character of seascapes on a large proportion of the undeveloped coast, principally the North Norfolk Heritage Coast, has been adversely affected by the development of offshore wind farms*'. We advise that it would be impossible for SEP and DEP to not present a further and significant impact on the special qualities of the NCAONB yet the SVIA conclusions does not reflect this.

**2) The NCAONB's *ca.* 65km coastline is one of the longest stretches of '*remote and wild*' coastline in England (QNB 6). Extensive views of SEP and DEP will be available from much of this coastline, which has the highest level of statutory protection. There is also no single approach to assess effects from OWFs on the statutory purpose of designated landscapes. In the absence of this, we find that the SVIA conclusion '*SEP and DEP would not be visible from many areas of the AONB*' although factually correct misses the point that the turbines will be highly visible from the coastal portions of the designation.**

16. We advise this because:

a. Paragraph 76 of the SLVIA implies that the Landscape Institute's core guidance (GLVIA3, paragraph 3.35) provides a threshold of impact significance in EIA terms; and that this threshold sits above 'moderate significance'. However, as stated in paragraph

3.32 of the GLVIA3 this significance rating has no meaning in relation to the EIA Regulations.

b. There is no single approach to assessing the effects of OWFs on the statutory purpose of designated landscapes, and the GLIVIA3 does not provide a lead on this subject.

c. While we agree with paragraph 125 of the SEP and DEP SLVIA, which confirms that the visibility of SEP and DEP '*on-the-ground would be primarily contained within the broad area of landscape that arises… between Old Hunstanton…and Cromer… and a narrower strip of land along coastline between Cromer and Winterton-On-Sea';* and with paragraph 129 of the SVIA which confirms that *'Exceptions to this are small areas…*'. We would like to emphasise that the stretch of coastline belonging to the NCAONB is ca. 65km long and contains many of the features and special qualities which merited the area's designation as an AONB.

d. While the conclusion made in paragraph 591 that '*SEP and DEP would not be visible from many areas of the AONB*' is correct, it is also correct that extensive views of SEP and DEP will be available from the majority of the NCAONB coastline.

e. Further to point (b), the conclusion of the SVIA, a conclusion of only five sentences that '*SEP and DEP would not be visible from many areas of the AONB*' could suggest that the impacts on seascape, landscape and visual resources will be minimal, and could be misleading to a non-landscape specialist trying to understand the assessment.

f. As written in Point 1) of this response, the Applicant's professional judgement of impact significance on the NCAONB has decreased since the assessment within the PEIR without any obvious justification from the Applicant.

**3) Natural England agrees that the existing OWFs form a part of the seascape and visual baseline. However Natural England seeks to determine the additional harm that SEP and DEP will present to the statutory purpose of the NCAONB. We advise that a Cumulative Impact Assessment (CIA) should be undertaken to inform the EIA to ensure that the impact of SEP and DEP on the statutory purpose of the NCAONB, in the context of the existing OWFs, can be made. We advise that this is a requirement pursuant of Regulation 14 of the EIA Regulations.**

17. We advise that the statutory purpose of the NCAONB is already compromised (see Natural England's S42 comments) and SEP and DEP will comprise it further. It is critical that the additional impact that SEP and DEP may have on the statutory purpose of the NCAONB is understood. It is also critical that this impact is assessed independently of impacts from SEP and DEP to the wider landscape, seascape and visual resource. We advise that by doing this, the policy contained in paragraph 5.9.12 of NPS EN-1 which seeks to '*avoid compromising the purposes of designation*' can be better considered.

18. We advise this because:

    a. PINS Advice note seven, paragraph 9.6, states that '*Regulation 14 of the EIA Regulations 2017 also identifies that the ES must include the information reasonably required for reaching a reasoned conclusion on the significant environmental effects*'. We advise that the full impact of SEP and DEP on the NCAONB cannot be understood without conducting a CIA. We advise that the Applicant should inform the EIA process with an answer to the question '*what is the additional harm to the AONB from the turbines proposed by SEP and DEP?*' in the format of a CIA. This is a separate assessment to the in-combination assessment of the SEP and DEP projects alone and together, already contained within the SVIA.

    b. A CIA is essential part of assessing the impact of SEP and DEP on the statutory purpose of the NCAONB as it will a combination of arrays is what people are going to see when looking out from the NCAONB if the turbines of SEP and DEP are erected. NPS EN-1, paragraph 4.2.5, states that '*When considering cumulative effects, the ES should provide information on how the effects of the Applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence)*'.

    c. In the Expert Topic Group (ETG) meeting held by the Applicant on 01 July 2021, Natural England raised the issue of the height discernibility between SEP and DEP and the existing arrays and noted that a CIA is required to fully consider impacts from SEP and DEP on the statutory purpose of the NCAONB.

    d. Currently, the SVIA states that a CIA is not required (paragraph 90) but it does not provide a reason for this. Consequently, the current SVIA uses the existing and significant harm to the NCAONB (from the existing arrays) to rationalise the scale of effect from SEP and DEP on the NCAONB to a moderate impact significance for SEP

and moderate-slight impact significance for DEP. Natural England fundamentally disagrees with this approach and the resulting conclusion.

e. Despite a CIA not being undertaken for the SVIA, paragraph 85 of the SVIA confuses matters by indicating that the CIA is a live document, which only considers whether the '*residual impacts assessed for DEP and/or SEP on their own have the potential to contribute to a cumulative assessment*'. As described in Point 3 (a) and (b), this is not the type of assessment that is required. We note that paragraph 92 of the EIA Methodology states that '*The list of plans or projects included in the CIA is specific to each topic and is detailed in each technical chapter (Chapters 6 – 29), having been developed through ongoing consultation with stakeholders.*' As indicated in point (c) Natural England have already raised the need for a CIA to accompany the SVIA in Chapter 25.

f. The visualisations appended to ES Chapter 25 represent SEP and DEP in the context of the existing arrays. These visualisations should be used to develop conclusions as to how the compounding of visual impacts effects of these multiple arrays will affect the statutory purpose of the NCAONB. We advise that the key policy test is the <u>further harm</u> to the seascape setting of the NCAONB and the consequences that this has on the already compromised statutory purpose of the NCAONB.

g. The Applicant agreed to supply text at the ETG meeting on 2nd February 2022 detailing a comparison between SEP and DEP and other consented arrays visible from the NCAONB. We note that this document is not part of ES, yet as our S42 response advises, such a document should be included as part of the determination process to assist the ExA and the decision maker.

**4) The overarching National Policy Statement (NPS) for Energy (EN-1) (paragraph 5.9.9) confirms that decisions to consent SEP and DEP should have regard to the '*specific statutory purposes*' of nationally designated landscapes. Natural England advises that SEP and DEP will adversely affect special quality 6 of the NCAONB: '*sense of remoteness, tranquillity, and wildness'* (QNB 6). People's experience of wilderness within the AONB will be strongly influenced by the presence of the turbines of SEP and DEP in the seascape setting of the NCAONB**.

19. We advise this because:

a. Natural England considers that QNB 6, sense of remoteness, tranquillity, and wildness, is the key landscape characteristic and a key quality of the coastal landscapes of the NCAONB. Natural England remains in agreement that special qualities QNBs 2, 3 and 6 (as described in the NCAONB Management Plan 2014-2019) are of most relevance to the SVIA.

b. Natural England disagrees with the assessment of QNB 6 in paragraph 509 of the SLVIA.
    i. Adverse effects of the existing OWFs on the wildness character of the NCAONB, and specifically within the North Norfolk Heritage Coast is already reported within the NCAONB Management Plan.
    ii. SEP and DEP will add larger turbines into the seascape setting of the NCAONB, which will cause a further, and significant loss to QNB 6.
    iii. The visual receptors of SEP and DEP are people within the NCAONB that will experience a significant loss of sense of remoteness, tranquillity, and wildness. The assessment of QNB 6 does not specify the user groups impacted, who are usually experiencing QNB 6 when conducting recreational activities in the NCAONB. Natural England's S42 response details the visual receptor groups of most importance to consider within an SVIA.
    iv. As the receptors of visual effects from SEP and DEP are the people using the NCAONB, they would be directly affected by any loss in remoteness, tranquillity, and wildness.

c. The statement in paragraph 522, 531 (and other instances) of the SLVIA that '*Offshore wind farms are, however, already visible from the AONB…*' does not justify the further loss of a sense of remoteness, tranquillity, and wildness from SEP and DEP.

d. Natural England are unclear about what '*Dark skies would be affected to a degree*' means (paragraph 529 of the SVIA). Second, it is not certain how much 'skyglow' SEP and DEP will create. We note that there are already considerable night-time lighting effects arising from with the Sheringham Shoal array and that SEP and DEP will only add to this.
    i. Document 9.25 states that SEP and DEP will '*would not create any additional skyglow'* but paragraph 529 of the SVIA states that '*Dark skies would be affected to a degree*'.

ii. We note that the Light Pollution Planning Practice Guidance, paragraph 003, states that '*Lighting near or above the horizontal is usually to be avoided to reduce glare and sky glow (the brightening of the night sky)*', and we note that the SEP and DEP site is on the horizon when viewed from the NCAONB.

e. Natural England is concerned that the three night-time visualisations indicate a wide expanse of light across the horizon with no clear breaks. For instance as seen in the photomontages for Wells-next-to-the-Sea (in Figure 25.21); Trimingham (Figure 25.26); and at Incleborough Hill (Figure 25.24) where the pattern of lights appears particularly cluttered. We agree with some parts of paragraph 251 of the SVIA: that the spread and increased height of lighting '*would be more noticeable*'; and that the spread of lighting across the view would be a visual issue.

f. Natural England does not understand the meaning of paragraph 252 of the SVIA, which states that '*only where it has been judged that there would be a difference between day-time and night-time views has this been noted within the assessment'*. We advise that day and night views are fundamentally different, not least because visual perception at night is dictated by lights and illuminations rather than distance, with the perception of latter being radically altered at night.

**5) NPS EN-1, paragraph 5.9.9, confirms that the conservation of natural beauty should be given substantial weight in the consenting process. Natural England advises that the NCAONBs Qualities of Natural Beauty (QNBs) 2, 3 and 6 (as described within the NCAONB Management Plan) <u>will not be conserved and enhanced</u> by SEP and DEP and that it will be possible to secure sufficient mitigation to counter this affect.**

20. Please find our advice on impacts to special qualities 2, 3, and 6 within Table 1 below.

**Table 1: Natural England's specific comments on Document 9.25 Impacts on the Qualities of Natural Beauty of Norfolk Coast Area of Outstanding Natural Beauty.**

| QNB | Applicant's predicted RAG rating | Natural England's predicted RAG rating | Justification for Natural England's predicted RAG rating |
|---|---|---|---|
| 2. Strong and distinctive links between land and sea | | | Within the SVIA and Document 9.25, too much emphasis has been placed on the wording within section 3.2 of the NCAONB Management Plan that reports an impact from wind farms on the wilderness quality of QNB 2. Please note that the NCAONB Management Plan is '*primarily for use by the members of the Norfolk Coast Partnership to inform, guide and influence their activities within the area'*. Natural England's advice is that SEP and DEP should be judged on the additional impact it would have upon the statutory purpose of the NCAONB. As stated in our S42 response, Natural England believes that the Sheringham Shoal array has already compromised the statutory purpose of the NCAONB. The addition of SEP and DEP into the seascape of the NCAONB can only further degrade the quality of the setting and by extension the NCAONB.<br><br>It is stated (pages 14 and 15 of Document 9.25) that '*additional wind turbines into seascape views which would be discernibly larger and more widely spaced compared to the existing offshore wind turbines, increase the spread of wind turbines across views, and introduce additional lighting at night'*. Natural England queries how the addition of much larger turbines, with a greater spread across the seascape, and with additional lighting would allow the assessment of QNB 2 to remain Amber i.e., '*some grounds for concern that the quality is not being conserved and enhanced'*. Particularly since the 2012 assessment of special qualities undertaken by the Norfolk Coast Partnership, upon completion of the Sheringham Shoal, array already determined an Amber status of QNB 2. |
| 3 Diversity and integrity of landscape, seascape and settlement character | | | See section 8 of this response for detailed comments on Landscape Character. Since the PEIR there has only been one minor change in the judgement of impact significance on landscape character type, which Natural England remains in disagreement with (Table 4). |
| 6 Sense of remoteness, tranquillity and wildness | | | See section 4 of this response for detailed comments on the direct impact of SEP and DEP on QNB 6. People's experience of wilderness within the AONB will be significantly influenced by views out to SEP and DEP in the seascape setting of the NCAONB. |

6) **Natural England supports in principle the Design Objective 11, which commits SEP and DEP to '*Respond to the distinctive and unique character of the local landscape / seascape, including the Norfolk Coast AONB and views out to sea*', although we are uncertain as to how the design of SEP and DEP meets this objective**.

21. We advise this because:

a. Natural England acknowledges the changes made to the layout of the indicative turbine locations since the consultation on the PEIR. Whist we welcome these changes we still advise that significant adverse effects persist.

b. Natural England disagrees with section 3.3.5 of the Design Statement (Document 9.26), which reports that the NCAONB '*will not be directly impacted by the proposed offshore arrays*' as no evidence has been provided to support this statement. We would also like to clarify that SEP and DEP would be visible to the human eye between the shoreline (low water mark) and 1km from the shoreline as the montages for the inland viewpoints located within the NCAONB (well beyond 1km from the shoreland) clearly show the turbines of SEP and DEP.

c. In section 5.3 of the Design Statement, states that '*The Sheringham Shoal OWF Visual Impact Assessment showed that the wind farm is potentially visible from the North Norfolk coast between Brancaster in the west and Walcott in the east*'. This statement is now redundant as the Sheringham Shoal OWF is visible from multiple locations on the North Norfolk coast, and its visibility is highly apparent in the SVIA visualisations. We fail therefore to see the relevance of this statement and for its inclusion in the SEP and DEP ES.

d. We note that '*a minimum spacing of 1 nautical mile* [blade] *tip to tip will be maintained between the turbines of the nearest operational wind farm and the turbines of SEP and DEP*". Natural England advise that clear separation distance should be maintained between SEP and DEP and existing arrays when viewed from the NCAONB to help conserve QNB 2, '*panoramic coastal views and seascapes*'. We welcome paragraph 32 of the SVIA which states that the design will maximise the gap between SEP and the Race Bank OWF. We are however confused by paragraph 129 of the SVIA, which makes it clear that there are only a few small areas inland where Race Bank could theoretically be visible on its own and fail to see the relevance of this statement.

e. We note that the turbines '*will be arranged in straight lines along the perimeter where practically possible*'. It would be helpful to understand whether this layout has been used in the photomontages.

f. Natural England supports, in principle, the layout objectives described in section 6.3.4 of the Design Statement (Document 9.26). Table 2 details our further comments on the layout of SEP and DEP.

**Table 2: Natural England's comments on SEP and DEPs layout objectives**

| Layout objective | Natural England Comment |
|---|---|
| Produce visually balanced and coherent layout of turbines when seen from key viewpoints, demonstrating a good rhythm, spacing | We support this objective. While we understand (paragraph 33 of the SVIA) that it is not possible for the Applicant to confirm the actual layout at this stage it would be useful for the Applicant to provide a commentary on why the indicative turbine locations have changed, and whether these changes can be formalised within the design at this stage. |
| Achieve an appropriate scale in terms of distribution of turbines in relation to the coastal topography | We support this objective, although note that the difference in height between the existing arrays (to blade tip height; 132m for Sheringham Shoal, 187m for Dudgeon and 265-330m for SEP and DEP) will in practice make this very difficult to achieve. Therefore, Natural England is unclear as to how this objective will achieved. |
| Achieve simple visual relationship with skyline, avoiding variable spacing and overlapping of turbines within an array or significant outliers | We support this objective, although note that this will be a difficult objective to achieve due to the extensive length of coastline from which the SEP and DEP will be visible (upwards of 65km). Natural England is unclear where the SVIA reports on this objective with respect to the visualisations provided within the ES, or whether the Applicant considers this objective met, and if so, how? |
| Achieve satisfactory visual relationship (balanced, ordered, coherent and clearly legible) with existing arrays. | We support this objective, although note that the difference in height between the existing arrays and those of SEP and DEP will in practice make this very difficult to achieve. Natural England is unclear where the SVIA reports on this objective with respect to the visualisations provided within the ES, or whether the Applicant considers this objective met, and if so, how? |

**7) Visualisations showing how 53 265m high turbines may appear in views from the NCAONB should be used to inform the EIA process.**

22. Worst Case Scenario 2 (30 x 330m turbines) is considered by the Applicant to constitute the most harm to the NCAONB, compared with Worst Case Scenario 1 (53 x 265m turbines). We agree with this conclusion.

23. Natural England's advises that the impact to the statutory purpose of the NCAONB, should 53 turbines be constructed, needs to be understood and its likely effect on the NCAONB assessed. The 265m turbines would still be significantly taller than the surrounding OWFs, and the extra 23 turbines would likely create a highly perceptible increased in horizonal spread of the combined arrays from sensitive viewpoints within the NCAONB. Consequently, the impact of Worst Case Scenario 1 has the potential to be as harmful to the NCAONB's statutory purpose as the impact of Worst Case Scenario 2. Further, a scenario with turbines of heights between 256 to 330m, and of a number between 30 and 53, may also constitute a further Worst Case Scenario. However, we advise that visualisations of Worst Case Scenario 2 should inform the decision making process.

24. We advise this because:

    a. We note that the Project Description (Chapter 4, section 4.1) states that '*Chapters 6 to 29 should be referred to for details of the worst-case scenarios that apply to each assessment topic*'. We also note that paragraph 21 of Chapter 25 indicates that the project parameters that define Worst Case Scenario 2 were used to draw the ZTV and visuals appended to the SVIA. We agree with the Applicant that Worst Case Scenario 2 is the most realistic worst-case scenario due to the technology likely to be available at the proposed time of construction. However, we advise that a greater number of smaller turbines, up to 53 turbines of 265m, would still result in a significant adverse effect on the statutory purpose of the NCAONB.

        (i) There remains a significant height difference between the minimum turbine height of 265m, and the current blade to tip heights of the Sheringham Shoal array (134m) and the Dudgeon array (187m).

        (ii) There remains significant scope within the project parameters to vary the number of turbines within the final design between 30 to 53. The SVIA is

written as if the overall design will sit in agreement with Worst Case Scenario 2. However, since the EIA is being developed using the Rochdale Envelope approach, any number of turbines *between* 30 and 53 may be consented. Consequently, visuals showing what 53 265m high turbines look like should also be used to inform the EIA process. Viewpoints where the turbines of SEP and DEP may be viewed with apparent heights of above 0.4 degrees should be included within this exercise

(iii) Table 3 indicates the apparent heights in degrees of 265m height turbines from the SVIA viewpoints located within the NCAONB.

b. We note from paragraph 11 of the SVIA that the study area was determined based on hub height. While we remain in agreement with the viewpoints selected, it is important to note that our comments are based on visibility to blade to tip height which at the proposed distances from the coast of SEP and DEP will be readily apparent.

c. We note that the proposed substation(s) will be constructed to a height of 50m above Highest Astronomical Tide, at an unspecified distance from the coast. Paragraph 4 of the Project Description states that the Offshore substation platform/s are '*key offshore components*'. Natural England advise that the minimum distance from the coast is provided within the project's core information so that its likely effects on the NCAONB can be appropriately screened within the EIA. Further, it is unclear to Natural England whether the substation within the SEP project area would be larger or higher (than 50m) in the development scenario where it is the only substation to serve both the SEP and DEP offshore wind array areas.

**Table 3:** Apparent Heights in degrees for the consented Sheringham Shoal (SS) and Dudgeon (D) wind farms, as well as the SEP and DEP proposed wind farms. Grey cells indicate viewpoints where the apparent height exceeds 0.4 degrees. The SEP and DEP S42 calculations follow the methodology as outlined within Natural England's S42 statutory response and are based on the information contained within Chapter 25 of the ES (using the worst-case scenario turbine heights of 330m). These figures are indicative only and provided in order than a comparison of the apparent heights of the various arrays can be made.

| ID | Viewpoint | SS | SEP S42 Scenario 2 | SEP ES Scenario 2 | SEP ES Scenario 1 | D | DEP S42 Scenario 2 | DEP ES Scenario 2 | DEP ES Scenario 1 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Wells next-the-Sea, beach near car park. (within NNHC) | 0.289 | 0.671 | 0.633 | 0.502 | 0.160 | 0.332 | 0.333 | 0.250 |
| 2 | Morston Quay (within NNHC) | 0.354 | 0.8 | 0.775 | 0.616 | 0.189 | 0.423 | 0.418 | 0.319 |
| 4 | Incleborough Hill | 0.4 | 1.106 | 1.099 | 0.883 | 0.328 | 0.668 | 0.668 | 0.537 |
| 6 | Trimingham | 0.303 | 0.837 | 0.837 | 0.672 | 0.313 | 0.65 | 0.652 | 0.524 |
| 8 | Brancaster Beach (within NNHC) | 0.164 | 0.479 | 0.428 | 0.328 | 0.073 | 0.232 | 0.210 | 0.141 |
| 9 | Gramborough Hill (within NNHC) | 0.446 | 1.038 | 1.030 | 0.825 | 0.251 | 0.537 | 0.535 | 0.420 |
| 11 | Peddars Way NT, Brancaster | 0.195 | 0.486 | 0.460 | 0.367 | 0.133 | 0.28 | 0.278 | 0.212 |
| 12 | Burnham Harbour (Gun Hill) PROW (within NNHC) | 0.239 | 0.606 | 0.560 | 0.440 | 0.122 | 0.289 | 0.281 | 0.204 |
| 13 | Gallow Hill (south of Wells) | 0.286 | 0.624 | 0.591 | 0.474 | 0.196 | 0.373 | 0.372 | 0.292 |
| 14 | Blakeney car park (within NNHC) | 0.377 | 0.849 | 0.830 | 0.660 | 0.193 | 0.445 | 0.437 | 0.335 |
| 15 | ECP Path, Blakeney (within NNHC) | 0.413 | 0.919 | 0.894 | 0.713 | 0.208 | 0.471 | 0.464 | 0.357 |
| 16 | Bard Hill (Salt House Heath) | 0.416 | 0.965 | 0.960 | 0.771 | 0.285 | 0.555 | 0.556 | 0.446 |
| 17 | Oak Wood, Sheringham Hall | 0.416 | 1.056 | 1.050 | 0.844 | 0.306 | 0.607 | 0.606 | 0.487 |
| 18 | Coastal Path (Cromer-Overstrand) | 0.369 | 1.006 | 1.006 | 0.808 | 0.304 | 0.688 | 0.693 | 0.556 |

**8) Natural England's advice on the sensitivity of the Landscape Character Types within the coastal areas of the NCAONB sits in agreement with the North Norfolk Landscape Sensitivity Assessment 2021, and in disagreement with the judgements made within the ES.**

25. We advise this because:

a. Within our S42 response, Natural England offered advice on the impact significance of SEP and DEP on the following landscape character types that are characteristic of the coastal regions of the NCAONB as this is where the impacts of SEP and DEP will be concentrated. These landscape character types are:

i. Drained Coastal Marshes;
ii. Coastal Shelf; and,
iii. Open Coastal Marsh.

**Natural England's advice on the impact significance of SEP and DEP on these landscape types has not changed (Table 4) and remain Major-Moderate, significant in EIA terms and adverse.**

b. In addition to the advice given by Natural England at S42, we have the following advice regarding the SVIA's assessment of landscape character types within the NCAONB:

i. **Regarding the judgement of susceptibility of landscape receptors.** Paragraph 5.40 of the GLVIA3 states that the susceptibility of a landscape receptor i.e., the character of Drained Coastal Marshes, Coastal Shelf, and Open Coastal Marsh is its ability to accommodate change '*without undue consequences*'. As shown in Table 25-7, for landscapes with national/international value, landscape susceptibility is high in cases where undue consequences are '*likely to arise'*. Natural England advises that the susceptibility of the character of Drained Coastal Marshes, Coastal Shelf, and Open Coastal Marsh is high for the reasons outlined within **Table 5** of this response.

ii. **Regarding the judgements on magnitude of landscape effects.** We remain in disagreement with the SVIA judgements regarding the magnitude of effects from SEP and DEP on Drained Coastal Marshes, Coastal Shelf, and Open Coastal Marsh, please refer to our S42 response for our detailed comments.

iii. **Regarding the judgements on the sensitivity of landscape receptors.** Regarding the sensitivity of Drained Coastal Marshes, Coastal Shelf, and Open Coastal Marsh to SEP and DEP. Natural England is in agreement with the landscape sensitivity judgements within Table 5.1 of the North Norfolk Landscape Sensitivity Assessment 2021 (where '*large scale wind*' is defined as turbines of heights 130m to tip). Note, that the minimum turbine heights of SEP and DEP (265m) is over twice the turbine height used to inform the judgements contained within the North Norfolk Landscape Sensitivity Assessment 2021.

iv. **Regarding judgements on the scale of effects.** We note inconsistencies in judgements on the scales of effect from SEP and DEP on landscape character. Paragraph 303 of the SVIA states that effects on landscape character along the Norfolk coastline, from where SEP and DEP will be visible, would be '*at most, small scale effects*'. This statement contradicts analyses within the SVIA, such as those shown within Table 25-16, which report up to medium scales of effect; a judgement which Natural England also disagrees with.

**Table 4**: The scale of effect from SEP and DEP on the NCAONB coastal landscape character types. The grey box indicates the only change in the judgement of impact significance on landscape character type since the PEIR.

| ID | Viewpoints affected | PEIR Impact Significance | NE comment | PEIR Significance judgement (EIA) | NE judgement | ES Impact Significance | NE comment | ES Significance judgement (EIA) | NE judgement |
|---|---|---|---|---|---|---|---|---|---|
| DCM 2* | Drained Coastal Marshes (2) VPs: 10, 14, 15 *(within NNHC)* | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** |
| CS 1* | Coastal Shelf VPs: 4, 6, 18 | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** |
| OCM 1* | Open Coastal Marsh VPs: 1, 2, 14, 15 *(within NNHC)* | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** |
| A | Open Coastal Marshes * VP: 8, 12 *(within NNHC)* | Minimal neutral | **Disagree Major-moderate Adverse** | Not Significant | **Disagree Significant Adverse** | Slight-minimal Adverse | **Disagree Major-moderate Adverse** | Not Significant | **Disagree Significant Adverse** |

**Table 5**: The susceptibility of Drained Coastal Marshes, Coastal Shelf, and Open Coastal Marsh to SEP and DEP.

| Landscape Character Type | Natural England's judgement on susceptibility | Natural England's rationale |
|---|---|---|
| Drained Coastal Marshes | High* | The 'potential consequences' from SEP and DEP on DCM2 as referred to in paragraph 334 of the SLVIA will affect the special qualities of the NCAONB. See Table 1. |
| Coastal Shelf | High* | The 'potential consequences' from SEP and DEP on CS1 as referred to in paragraph 356 of the SLVIA will affect the special qualities of the NCAONB. See Table 1. |
| Open Coastal Marsh | High* | The 'potential consequences' from SEP and DEP on OCM1 as referred to in paragraph 315 of the SLVIA will affect the special qualities of the NCAONB. See Table 1. |
| Landscape Character Type A Open Coastal Marsh | High* | The 'potential consequences' from SEP and DEP on LCTA as referred to in paragraph 370 of the SLVIA will affect the special qualities of the NCAONB. See Table 1. |

*The landscape value is national/international and High, and the landscape sensitivity is also High.

**9) Natural England remains in disagreement with the Applicant on the scale of effects from SEP and DEP on the statutory purpose of the NCAONB from the agreed representative viewpoints.**

26. We advise this because:

a. The scale of visual effect <u>at only one viewpoint</u> (Viewpoint 1 Wells-next-to-the-Sea) has been changed since the PEIR (from Small to Medium-Small for SEP in isolation), a judgement Natural England remains in disagreement with.

b. Natural England's S42 advice on the scale of visual effects from representative viewpoints remains our current opinion, therefore this response does not attempt to repeat our previous advice provided to the applicant at the pre Application phase.

**10) LVIA - Landscape Baseline and Assessment**

27. Natural England agrees with the Applicant that direct adverse effects will occur on the NCAONB during the construction phase of the **onshore** cables works and that during the operational phase no landscape effects will occur from Operation and Maintenance Activities.

28. However, to achieve this a vital mitigation measure during the construction phase, should both projects be approved, is for the onshore cabling to be installed for both simultaneously and not sequentially. If sequential is progressed then the first project must install the infrastructure for both projects as agreed for the recently consented East Anglia ONE North and East Anglia TWO OWFs, which cable through the Suffolk Coast and Heaths AONB. The former will restrict construction phase impacts to the short term, but the latter would produce medium term impacts on the AONB. The importance of the AONB (a nationally designated landscape with the highest level of planning policy protection) justifies the most effective mitigation being applied i.e. both onshore cabling stages to be completed together and the landscape fully restored as soon as possible.

29. Natural England advises that close attention is made to the advice of the NCAONB Partnership and relevant local authorities. These local partners have knowledge and understanding of the immediate landscape through which the cable corridor will pass.

## Annex 1 SLVIA SEP and DEP PEIR Review Comments June 2021

**Abbreviations - Seascape**

AOD - above ordnance datum

'AONB' – Norfolk Coast Area of Outstanding Natural Beauty

ASL - Astronomical Sea Level

C - Clearances (blade)

DCO - Development Consent Order

DEP – Dudgeon Extension Project

EIA - Environmental Impact Assessment

ExA - Examining Authority

GLVIA3 - General Landscape and Visual Impact Assessment edition 3

HAT - Highest Astronomical Tide

LAT - Lowest Astronomical Tide

LCT - Landscape Character Type

LPA - Local Planning Authorities

LWM - Low Water Mark

MW - Mega Watts

NCAONB - Norfolk Coast Area of Outstanding Natural Beauty

NE - Natural England

NNHC - North Norfolk Heritage Coast

NPPF - National Planning Policy Framework

NPS - National Policy Statement

OVA - Offshore Visibility Appendix

OWF - Offshore Wind Farm

PEIR - Pre-Examination Impact Report

SCT - Seascape Character type

SEP – Sheringham Extension Project

SLVIA - Seascape and Landscape Visual Impact Assessment

SNH - Scottish Natural Heritage

ZTV - Zone of Theoretical Visibility

## Context

Natural England (NE) welcomes this opportunity to comment on the landscape, seascape, visual assessments, and related chapters of the Preliminary Environmental Information Report (PEIR) as they relate to the offshore and onshore aspects of these schemes. Our comments are limited to those effects associated with the statutory purpose of the Norfolk Coast Area of Outstanding Natural Beauty (NCAONB) and it's seascape setting.

The presence and special character of the North Norfolk Heritage Coast (NNHC) within the NCAONB helps to define that part of the designated area which is most likely to experience significant adverse effects arising from the DEP and SEP schemes. Although a defined rather than a designated landscape the NNHC covers a geographical area, not including the offshore portion, which lies wholly within the NCAONB. To understand the likely extent of the indirect onshore influence of the SEP and DEP schemes it will therefore help the ExA to refer to the boundary of the NNHC.

For landscape and seascape effects both within and outside of the NCAONB we advise that close attention is paid to the comments and advice provided by the relevant Local Planning Authorities. To ensure that the ExA can reach a fully informed recommendation of these schemes, as they pertain to the statutory purpose of the NCAONB, we also recommend that close attention is paid to the advice of the NCAONB Partnership. Their detailed local knowledge of the designated landscape, it's special qualities, its management needs and the relationship between land and sea in supporting the area's statutory purpose will provide greater depth and detail than can be provided by Natural England.

Natural England offers its comments and advice without prejudice. Our comments and advice on the landscape, seascape, and visual effects of the offshore and onshore elements of the schemes may change as further evidence and information emerges as a part of the EIA process. We may also receive other relevant information from the local authorities, the AONB Partnership or other sources. NE will also be collecting its own evidence to inform our advice and may continue to do so.

Our comments are based solely on the documents provided by the Applicant (including hardcopies of the photomontages and Figures 27.1 to 27.19, 28.1 and 28.8 the provision of which we thank the Applicant for), site visits to selected viewpoints undertaken in June 2019 and September 2020, combined with our experience of advising on other major offshore renewable energy schemes located within the seascape setting of nationally designated landscapes.

**Please note the advice provided within this response is focused solely on SLIVA, but we do acknowledge that there may be conflict between mitigation measures sought for SLVIA concerns with those for another thematic issue.**

## Introduction

In preparing this response the following PEIR documents have been reviewed:

Dudgeon Extension Project and Sheringham Shoal Extension Project Non-Technical Summary

Volume 1

- Chapter 27 Seascape and Visual Impact Assessment
- Chapter 28 Landscape and Visual Impact Assessment

Volume 2

- Chapter 27 Seascape and visual Impact Assessment
- Chapter 28 Landscape and Visual Impact Assessment

Volume 3

- Appendix 27.1 Seascape and Visual Impact Assessment Annexes
- Appendix 28.1 Landscape and Visual Impact Assessment Annexes

### 1) Summary of Natural England Comments

1.1 Existing adverse effect on the statutory purpose of the AONB

Views out to sea from the coastal portions NCAONB are characterised by the complex visual interaction between the Race Bank, Sheringham Shoal and Dudgeon offshore arrays. As stated in the NCAONB 2014 Management Plan (Section 3.2 p.20) the seascape setting of the AONB is already adversely affected by the constructed offshore wind farms, the predominate being the Sheringham Shoal Array (the closest of these 3 to the designation). In Natural England's opinion the Sheringham Shoal array has compromised the statutory purpose of the NCAONB. Although clear gaps between these 3 arrays are apparent from most locations within the AONB, and thereby allow for a degree of visual coherence, ultimately the Race Bank and Dudgeon arrays compound the adverse effect of the Sheringham Shoal Array.

1.2 Additionality of the DEP and SEP

As currently configured the addition of further, taller, turbines of the DEP and SEP schemes into existing views will only serve to degrade the seascape setting of the NCAONB further. Whilst, we judge the number of additional turbines which are the cause the predicated adverse effects are relatively modest their size and proximity to the existing arrays will emphasise the significant difference in height between these schemes and existing arrays. As the separation distance between the SEP and the coastline of the NCAONB is small this difference in height will be clearly visible. However, due to the greater separation distance and the taller turbines used for the Dudgeon array the difference in height will be less apparent for the DEP scheme, but still discernible. The consequence of this will mean further distracting, and in combination, visually incoherent features will be added to the seascape setting of the NCAONB resulting in a further degradation of views out to sea from the designation, and a further loss of a sense of wildness which greatly contributes to the character of the coastal portion of the designation.

1.3 Lateral Spread

The additional lateral spread of DEP is considerable and will effectively more than double the horizontal extent of the combined Dudgeon / DEP array. However, the greater separation distance from the NCAONB coastline and location of the Sheringham Shoal / SEP arrays in the intervening seascape will help to negate some of the potential for significant effects from this project. The lateral spread of the SEP scheme is more modest. As a clear separation gap between the Race Bank array and western portion of SEP has been maintained the absolute worst-case scenario, the merging together of these arrays has been avoided and is welcomed. However, it is clear from the photomontages provided in Chapter 27 Volume 2 that the combined visual effect of the 4 arrays[1] when viewed together (which will be the case for the majority of viewpoints within the NCAONB) will be incoherent and present a confusing vista to those seeking to enjoy the visual amenity offered by views of the sea.

1.4 Apparent Turbine Height

If built the maximum apparent height of the SEP turbines will be the largest in the setting of an English designated landscape by a factor of nearly 2. From viewpoint 10 Grambrough Hill they will appear to be over twice the height of the turbines of the Sheringham Shoal array (1.038 compared to 0.438). At viewpoint 18 the DEP turbines will also appear to be over twice the height 0.688 compared to 0.304).

1.5 Comparison with existing windfarms

EN-1 (5.9.19) invites comparisons with other consented/built offshore wind arrays. Natural England has significant revisions about the usefulness of such comparisons and the robustness of the conclusions drawn. Previously we have advised that comparisons between different offshore arrays located of the coast of different designated landscapes should only be undertaken when all the parameters of the compared schemes and their specific impacts upon the receiving designated landscapes are included in the comparison exercise. As there is no agreed method for such an exercise the potential for further complication of the issue is highly probable. However, in the case of the DEP and SEP schemes the making of comparisons with existing consented arrays off the coastline of the NCAONB cannot be avoided and should be incorporated into the determination process.

1.6 Conclusions

After reviewing the available information, we conclude that most of the harm originates from 8 of the SEP turbines and 7 of DEP (see extract of diagram 27.12, below). We conclude that the adverse effect on the statutory purpose of the NCAONB will be significant and the natural beauty of the designation will be harmed through further degradation to the '*sense of remoteness, tranquillity and wildness'* which is a key quality of the NCAONB. Whether the addition of these 15 turbines further compromises the statutory purpose of the NCAONB (as set out at EN-1 paragraph 5.9.12) is not a decision for Natural England make. We note the need for the scheme to be '*designed sensitivity given the various sitting operational and other constraints'* and wish to be assured that the scheme will be designed as sensitivity as possible given these constraints.

We concluded therefore that the key policy test is the acceptability of further harm to the seascape

[1] To be clear by 4 we mean: Sheringham Shoal, Dudgeon, SEP, and DEP. However, as per NE;'s comments for other thematic areas it is noted that DEP array is made up of two separately distinct areas (North and South)

setting of the NCAONB and consequences this has for the already comprised statutory purpose of the designation.

## 2 Detailed Comments

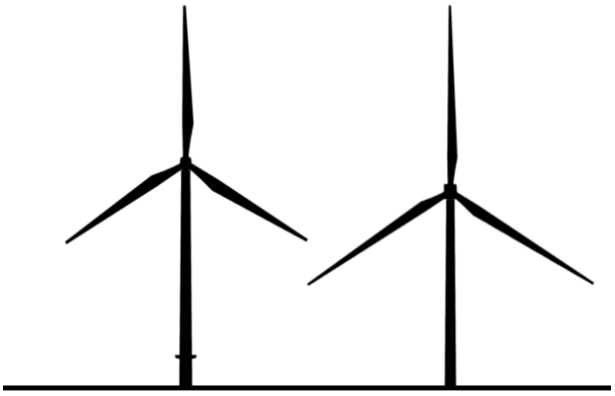
### 2.1 Note about Turbine height and proximity to the coastline of a designated landscape

1. The last 16 years has witnessed a significant upscaling of the technology used by the offshore wind energy industry. Over this period turbines have increased both in output capacity and size. For coastlines of designated landscapes this upscaling has seen an increase from the 132m high 3.6MW machines (Sheringham Shoal, Norfolk Coast AONB, closest point 17km) to the 181m high 6.3MW machines (Galloper, Suffolk Coast and Heaths AONB; closest point 29.3km). The emerging industry 'standard' for the 2020s is 15MW to 20MW machines potentially reaching heights more than 300m as proposed for SEP and DEP (325m and 17.1km from the Norfolk Coast AONB).
2. When viewed from any given location, the bigger the structure the greater it's visual prominence. Similarly, the bigger the structure the greater the distance (and geographic area) from which it can be seen from and the greater the likelihood that individual structures or a collection of them will be prominent within the view. This is especially the case for offshore wind energy turbines and arrays because there is no means to screen them. These basic principles have guided our appraisal of these two schemes and the formulating of our comments and advice. We have also used our experience of, and drawn visual comparisons with, other previously consented offshore wind energy schemes located in the seascape setting NCAONB specifically Sheringham Shoal and Dudgeon. We have used these two schemes to draw comparisons with the predicted effects of DEP and SEP to illustrate the likely influence of the upscaling in technology on the seascape setting of the NCAONB.

### 2.2 Note about the apparent height of offshore wind turbines

3. Understanding the comparative apparent heights of offshore structures is a critical component in the assessment of the scale of effect that they have on the receiving landscape resource and associated visual amenity. Figure 1 below illustrates this point.

**Figure 1. Comparative Height of Turbines**



| 2MW | 7MW |
|---|---|
| Height: 99m | Height: 190m |
| Distance: 15km | Distance: 26km |

Here the smaller structure on the left appears to be same height as the taller structure on the

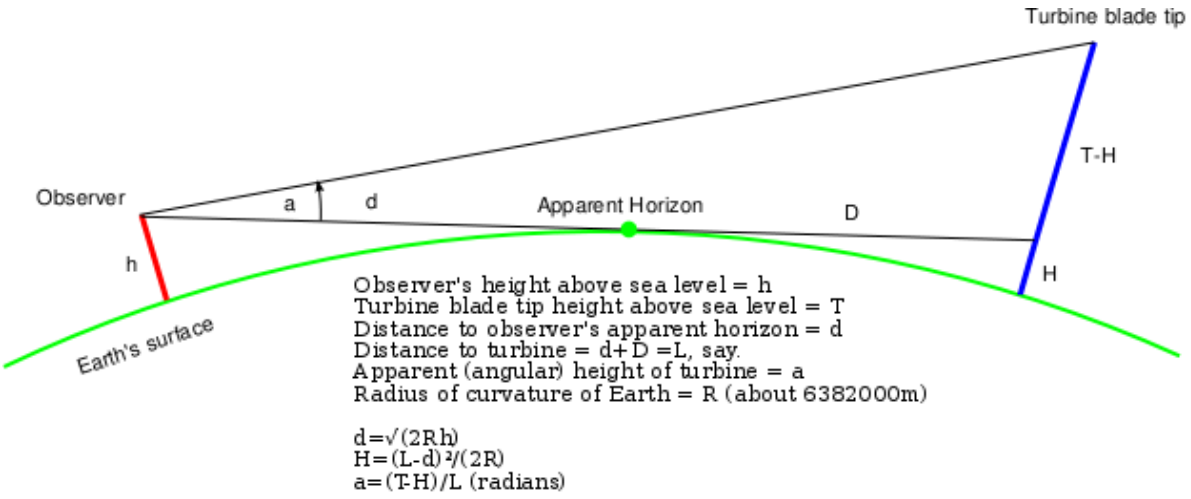
right, which is located a further 11km away. The apparent heights of these differing structures are very nearly the same.

4. A number of parameters need to be incorporated into the measurement of apparent height; the distance to the structure, the height of the structure, the effect of Earth's curvature on the visible heights and the height from which the turbines are viewed. Calculating the apparent heights of offshore structures is however relatively straightforward. Our analysis is based upon the established method for calculating the visible height of structures offshore. This method is set out in the Scottish Natural Heritage in their 2017[2] publication '*Visual Representation of Wind Farms Guidance 2.2'*. A diagrammatic representation is shown below at Figure 2 for the simplified case when atmospheric refraction is ignored[3].

5. We note SNH's emphasis on the presence of the Earth's atmosphere as a critical factor i.e. the influence of the refraction of light in defining the apparent height of structures when seen from a distance. The formula used by NE also incorporates this emphasis on light refraction, using a refraction correct value (0.075) which is universally applied. If effects of light refraction on apparent height are exclude from the formula this value is switched to 0. However, for comparative purposes the important point is that the correction is applied universally. All of the apparent height values provided by NE in our advice have the light refraction value set at 0.075.

6. We note at paragraph 18 (p.23) the Applicant states that '*Due to the distance offshore of the wind farm sites, the ability of the viewer to judge height and distance is reduced……*'. The use of apparent height calculation removes need for a judgement and provides a means to measure these factors.

**Figure 2**




7. The NE method provides a result in the apparent, or angular (a), height of a turbine as seen by an observer expressed as degrees. Therefore, it is possible to compare the apparent height of a 99m turbine located at 15km away to that of a 190m turbine located at 26km. In this instance (when view from a height of 5m AOD) the values are 0.368 and 0.375 respectively. The 2020 BEIS '*Review and update of Seascape and visual Buffer study for Offshore Wind Farms'* does essentially the same thing. See the diagrams the pages located between (p. 140 to 141). See

[2] [redacted]
See Annex D p.49.
[3] [redacted]

also diagram on the previous page.

8. The calculation can also be used to predict the apparent height of (the not yet built) 325m turbines as used in DEP and SEP worst case scenario 2. These values can then be compared to the apparent heights of the Sheringham Shoal and Dudgeon arrays. As the visual effects of the latter are known and can be readily experienced, their visual influence can be used to judge the likely effect of the DEP and SEP worst case scenario 2 turbines when viewed from the same location. This information can also be used to inform the scale of effect judgement and hence the magnitude of change judgement. This is what NE has done.

9. Using the information provided by the Applicant in Chapter 27 Volume 1 (Table 27-17 p94). NE presents the following information. The Sheringham Shoal Environmental Statement Appendix 13.2a and 13.2 b (Scria Offshore Energy Ltd., May 2006) has also been reviewed for information.

**Table 1: Apparent height comparisons between arrays**

| | **Apparent Height** | | **Apparent Height** |
|---|---|---|---|
| SEP | 1.106 | DEP | 0.688 |
| Sheringham Shoal (SS) | 0.446 | Dudgeon (D) | 0.306 |

10. Natural England uses values greater than 0.400 as a trigger for closer examination of the scale of effect judgements for all offshore wind farm applications. In addition, a series of values greater than 0.375 will also warrant our attention.

**Table 2**: **Apparent height comparison between arrays from coastal viewpoints**

| **ID** | **Viewpoint** | | **Apparent Height** | | **Apparent Height** |
|---|---|---|---|---|---|
| 1 | Wells next-the-Sea, beach near car park. *(within NNHC)* | SEP | **0.671** | DEP | 0.332 |
| | | SS | 0.289 | D | 0.160 |
| 2 | Morston Quay *(within NNHC)* | SEP | **0.800** | DEP | **0.423** |
| | | SS | 0.354 | D | 0.189 |
| 4 | Inckleborough Hill | SEP | **1.106** | DEP | **0.668** |
| | | SS | **0.400** | D | 0.328 |
| 6 | Trimingham | SEP | **0.837** | DEP | **0.650** |
| | | SS | 0.303 | D | 0.313 |
| 8 | Brancaster Beach *(within NNHC)* | SEP | **0.479** | DEP | 0.232 |
| | | SS | 0.164 | D | 0.073 |
| 9 | Gramborough Hill *(within NNHC)* | SEP | **1.038** | DEP | **0.537** |
| | | SS | **0.446** | D | 0.251 |
| 11 | Peddars Way NT, Brancaster | SEP | **0.486** | DEP | 0.280 |
| | | SS | 0.195 | D | 0.133 |
| 12 | Burnham Harbour (Gun Hill) PROW *(within NNHC)* | SEP | **0.606** | DEP | 0.289 |
| | | SS | 0.239 | D | 0.122 |
| 13 | Gallow Hill (south of Wells) | SEP | **0.624** | DEP | 0.373 |
| | | SS | 0.286 | D | 0.196 |
| 14 | Blakeney car park *(within NNHC)* | SEP | **0.849** | DEP | **0.445** |
| | | SS | 0.377 | D | 0.193 |

| ID | Viewpoint | | Apparent Height | | Apparent Height |
|---|---|---|---|---|---|
| 15 | ECP Path, Blakeney *(within NNHC)* | SEP | **0.919** | DEP | **0.471** |
| | | SS | **0.413** | D | 0.208 |
| 16 | Bard Hill (Salt House Heath) | SEP | **0.965** | DEP | **0.555** |
| | | SS | **0.416** | D | 0.285 |
| 17 | Oak Wood, Sheringham Hall | SEP | **1.056** | DEP | **0.607** |
| | | SS | **0.416** | D | 0.306 |
| 18 | Coastal Path (Cromer-Overstrand) | SEP | **1.006** | DEP | **0.688** |
| | | SS | 0.369 | D | 0.304 |

**NB: the figures highlighted in yellow are the maximum apparent heights values for each array when viewed from the NCAONB where apparent heights of the 4 arrays exceed 0.400**

## 2.3 Realistic Worst-Case Scenario

11. We agree with the Applicant that scenario 2 is the realistic worst-case scenario.

12. We note (from Figure 27.39) that the blade tip height of the 14MW machines used to inform worst case scenario 1 is 246m. We agree with the Applicant (paragraph 20) that the smaller turbines have greater potential to 'blend' in with the existing machines of Sheringham Shoal and Dudgeon arrays. However, we note the significant differences in height between the 246m machines of DEP / SEP and the 132m / 187m machines of the Sheringham Shoal and Dudgeon arrays and consider that that the amount of 'blending in' with the turbines of the former will not be that apparent, especially for the turbines of the SEP scheme.

## 2.4 Good Design

13. We note that the Applicant considers that embedded mitigation has already been incorporated into the design of the scheme through not taking forward the area to the south of the Sheringham Shoal array (paragraph 33, p.26). Noting that this location would have potentially compromised the efficiency of the Sheringham Shoal array NE, nevertheless, welcomes this.

14. If built the maximum apparent height of the SEP turbines will be the largest in the setting of a designated landscape by a factor of nearly 2. From viewpoint 10 Grambrough Hill they will appear to be over twice the height of the turbines of the Sheringham Shoal array (1.038 compared to 0.446). At viewpoint 18 the DEP turbines will also appear to be over twice the height (0.688 compared to 0.304).

15. Currently there are just four[4] other structures in England which are taller than 325m. All of these are isolated, static, slender telecommunication structures.

16. The additional lateral spread of DEP is considerable and will effectively more than double the horizontal extent of the combined Dudgeon / DEP array. However, the greater separation distance from the NCAONB coastline and location of the Sheringham Shoal / SEP arrays in the intervening seascape will help to negate some of the potential for significant effects from this. The lateral spread of the SEP scheme is more modest and as a clear separation gap between the Race Bank array and western portion of SEP has been maintained the absolute worst-case

4 [redacted]

scenario, the merging together of these arrays, has been avoided and is welcomed. However, it is clear from the photomontages provided in Chapter 27 Volume 2 that the combined visual effect of the 4 arrays[5] when viewed together (which will be case for the majority of the viewpoints in the NCAONB) will be incoherent and confused.

17. For reference the largest apparent height for the Race Bank turbines when viewed from Holkham Beach, within the NCAONB (turbine height 177m, viewing height AOD 6.5m, 25.6km separation distance) is 0.359. When viewed from the western end of the designation the lateral spread of Bank Race is relatively confined and this results in the array presenting a coherent object within the seascape. NE judges that the effect on the statutory purpose of the NCAONB is not significant (although the presence of Race Bank does compound the adverse effect of Sheringham Shoal) and as a result the natural beauty of the designation has not been harmed by the presence of this array in its seascape setting.

18. Whilst NE accepts the need to maximise the wind energy potential of these locations using the best available turbine technology, and for a design which is commercially viable, due to the significant difference in height between the existing arrays and the DEP / SEP schemes We would like to see further changes to the design of both DEP and SEP scheme in order that a high standard of Good Design, as required by EN-3 at paragraph 2.4.2, is achieved.

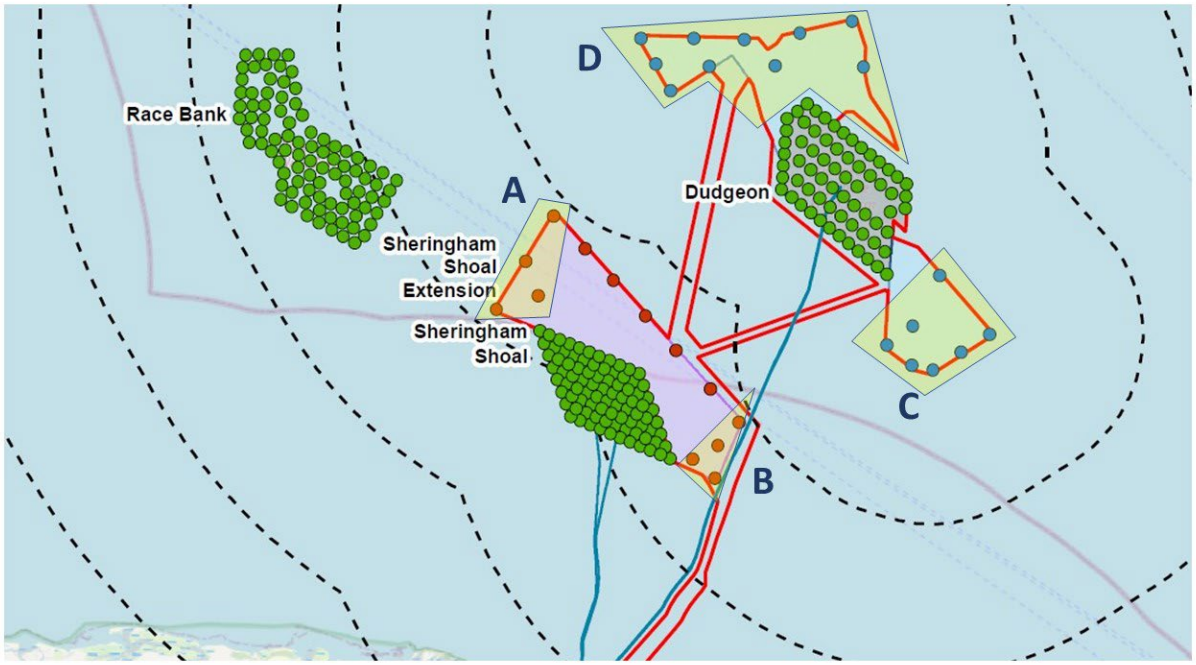



**Figure 3:** *Amended extract of Figure 27.12.*

19. Following our review of the PEIR we offer the following observation on the design of the DEP and SEP arrays as set out in the PEIR.

- Natural England judges that the turbines enclosed by boxes A, B and C are the prime cause of the adverse effects identified in the PEIR (Table 27-20, p.130). However, NE judges that these adverse effects are significant (in EIA terms) and will occur on multiple landscape and visual receptors located on the coastal edge of the NCAONB. As a result, **the statutory purpose of the NCAONB, and the special character of the NNHC, will be harmed.**

[5] To be clear by 4 we mean: Sheringham Shoal, Dudgeon, SEP and DEP.

20. Paragraph 34 p.26 indicates that the Applicant will consider further embedded mitigation measures post PEIR. We advise that the turbines highlighted in the figure above should be the subject of further embedded mitigation measures. In considering changes to the design NE would like the following objectives to be incorporated[6]:

    i. That the turbines enclosed by boxes A and B are located as far away from the coastline of the NCAONB as is operationally feasible. Ideally, we would like to see turbines excluded completely from the area highlighted by these boxes.

    ii. That the turbines enclosed by boxes A and B are relocated to the north east of the Sheringham Shoal array in order that they are 'hidden' as far is operational possible in views from the NCAONB.

    iii. That the turbines are excluded from the area defined by box C or are located as far away from the coastline of the NCAONB as is operational feasible.

    iv. That the full extent of the red line boundary area highlighted within box D is utilised for the location of turbines.

21. The aim of these objectives is to reduce as far as is possible the visual effects arising from the difference in height of DEP and SEP turbines worst case scenario 2 and the turbines of the Sheringham Shoal and Dudgeon arrays. This will lessen the visual incoherence and clutter that is currently an aspect of the worst-case scenario 2 which NE judges to be prime cause of the significant adverse effects we have identified.

## 2.5 SLIVA Methodology

22. Natural England is satisfied that the SLVIA methodology is suitable for assessing effect on landscape and visual receptors located within the NCAONB and NNHC. Our only comment is;
    - There is not a defined/agreed approach to assessing the effects of development schemes on the statutory purpose of designated landscapes. The Landscape Institute in its guidance (GLIVIA3) provides no lead on this subject. Within GLIVIA3 the only section which deals with nationally designated landscapes is that on landscape value. No mention is made of the importance of natural beauty nor is mention made of 'special qualities' and the role they play in defining natural beauty locally. Therefore, there is no one approach endorsed by Natural England to assessing effects of development schemes on the statutory purpose of designated landscapes and instead leaves the design of such assessments to the expertise and professional judgement of landscape architects; although in practice any component person could attempt such an assessment. In this instance we are content that the approach taken by the Applicant is adequate. Natural England prefers for a significance of effect judgement for each special quality assessed (in this case 3) rather that a summated judgement as is the case here (Table 27-20 p.131). However, in this instance we are content that the approach taken by the Applicant represents a sufficiently rigorous method.

23. In addition, we offer the following specific comments on some of the narrative provided.

    i. Paragraph 78 p.43. Public opinion on offshore wind energy infrastructure: Acceptance of landscape, and by extension seascape, change by the public, particularly change resulting

[6] Please note there may be conflict between mitigation measures sought for SLVIA concerns with those for another thematic issue

from built development which by its nature is quick and highly transformative, is in many instances unforthcoming. In order to bypass this lack of acceptance developers regularly seek to obscure and under-represent the scale and nature of change which their schemes will bring about. The information contained in the Plymouth Marine Laboratory data, that a substantial minority of the UK population (47%) do not think that offshore wind farms '*spoil the view'* is too be welcomed as the nation seeks to transform its energy production infrastructure in response to the Climate Crisis.

We also note that 42% of the UK public do think that offshore wind farms '*spoil the view*' whilst 40.6% consider offshore winds farms '*negatively affect the wilderness image of the sea'* whereas 35% of respondents do not. Natural England concludes from this data that public opinion is more or less split on these topics and so using the 'precautionary principle' to treat the effects from these machines as adverse in all instances is correct.

However, this evidence is not relevant in determining the acceptability of the DEP and SEP schemes in respect of their impact upon the statutory purpose of the NCAONB. The natural beauty as set out in the designation order is not dependant on the findings of public opinion surveys, as it is a matter of statute. The importance of designated landscapes to the nation is emphasised in national planning policy where they are afforded significant levels of protection. Public opinion, as expressed through the democratic processes, has deemed that these places are of national importance and should be protected as far as possible from the intrusive and harmful development which compromises their natural beauty.

ii. Section 27.4.6.1.5 offshore visibility: We note the commentary on offshore visibility and the data presented in Table 27-13 (p.48) and offer the following advice on this subject. Offshore visibility is 'very good' (20km to 39km) or 'excellent' (distances beyond 40km) for at least 60% and up to 76% of the time during the peak holiday season months of May to October. Therefore, the turbines of the SEP will be visible for most of the time when views out to sea are valued the most. Generally, people don't value the views out to sea when visibility is limited due to coastal fog, mist, or haze. But does value views out to sea on clear days when views to the far horizon are possible. As the commentary offered by the Applicant makes no reference to when visual receptors value views out to sea the most, we advise that this is in the months of May through to October.

Due the substantial height of the machines it is likely that whilst the bases and lower portions of the turbine towers may be shrouded the upper portions and blades will be visible above the upper limit of the off-shore haze, sea fog, mist etc. When visibility out to sea is less than 15km, should the blades be rotating the resulting spectacle would be both noticeable and attract attention due to the strange vista presented. Natural England advises the Applicant to further consider the likelihood and probable frequency of such an occurrence, using the visibility data in Table 27-13 p.48. And if necessary, amend judgements on the significance of effect in the Environmental Statement.

iii. Paragraph 107 (p.49). University of Newcastle study: This document dates from 2002. Whilst commentary on lighting conditions, contrast, direction of views etc. is still valid all references to distant should be discounted. The length of a blade fitted to a 325m machine, the moving portion of the device, is greater the than the total height of the turbines in operation at the time of the study. Blade movement is clearly visible, even to an undefined notional 'casual observer', at distances in excess of 15km on turbines with a maximum blade tip height of 180m (Galloper, Suffolk Coast and Heaths AONB, 29.3km). Based upon the apparent height values the movement of blades fitted to 325m machines would be readily apparent at distances in excess of 20km.

Current guidance on issue of visibility is contained in the 2020 BEIS '*Review and update of Seascape and visual Buffer study for Offshore Wind Farms'.*

## 2.6 Seascape baseline and assessment

24. Natural England agrees with the baseline and the conclusions of the assessment of seascape effects for the following Seascape Character Areas: -

    SCA 03: Midlands Offshore Gas Fields

    SCA 07: East Midland Coastal Waters

    SCA 09: Norfolk Coastal Waters

    We offer no further comment on this matter.

## 2.7 Landscape Baseline and Assessment - Offshore

25. Natural England confines it comments to the landscape character types (LCTs) listed in the table below, all of which are located within the NCAONB. In some instances, these LCTs or a portion of them are within the NNHC.

26. Having reviewed the Applicant's assessment of the effect on landscape receptors (summarised in Table 27-20 p.128) we offer the following comments. These have been guided by our apparent height calculations for the DEP and SEP turbines and how these related to the apparent height values for the turbines of Sheringham Shoal and Dudgeon arrays. See our listing above. We have also factored in the lateral spread DEP and SEP and how these relate to each and the existing arrays.

Landscape Character Types

27. Natural England confines it comments to the LCT listed in the table below. See North Norfolk Landscape Character Types (Figure 27.3 Landscape and Seascape Character Sheringham Shoal).

Significance of Effect

28. Natural England has updated Table 27-20 p.128 to include our advice

**Table 3: North Norfolk Landscape Character Types**

| ID | Potential impact landscape character | | PEIR Impact Significance | NE comment | PEIR Significant judgement | NE judgement |
|---|---|---|---|---|---|---|
| DCM 2* | Drained Coastal Marshes (2) VPs: 10, 14, 15 *(within NNHC)* | Assessed | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** |
| CS 1* | Coastal Shelf VPs: 4, 6, 18 | Assessed | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** |

| ID | Potential impact landscape character | | PEIR Impact Significance | NE comment | PEIR Significant judgement | NE judgement |
|---|---|---|---|---|---|---|
| | | | | | | |
| OCM 1* | Open Coastal Marsh<br>VPs: 1, 2, 14, 15<br>*(within NNHC)* | Assessed | Slight Adverse | **Disagree Major - Moderate Adverse** | Not Significant | **Disagree Significant Adverse** |
| DCM 1 | Drained Coastal Marshes<br>No viewpoints | Not Assessed<br>Agreed: can be scoped out | | | | |
| RV | River Valleys<br>No viewpoints | Not Assessed<br>Agreed: can be scoped out | | | | |
| ROF | Rolling Open Farmland<br>VP: 13 | Not Assessed<br>Agreed: can be scoped out<br>See below for comment on viewpoint 13 | | | | |
| TF | Tributary Farmland<br>No viewpoints | Not Assessed<br>Agreed: can be scoped out | | | | |
| RHA | Rolling Heath and Arable<br>VP: 16 | Not assessed<br>Agreed: can be scoped out<br>See below for comment on viewpoints | | | | |
| WGR | Wooded Glacial Ridge<br>VP: 17 | Not assessed<br>Agreed: can be scoped out<br>See below for comment on viewpoints | | | | |

**Table 4: Kings Lynn Landscape Character Types**

| ID | Potential impact landscape character | | PEIR Impact Significance | NE comment | PEIR Significant judgement | NE judgement |
|---|---|---|---|---|---|---|
| A | Open Coastal Marshes *<br>VP: 8, 12<br>*(within NNHC)* | Assessed | Minimal neutral | **Disagree Major-moderate Adverse** | Not Significant | **Disagree Significant Adverse** |
| C | Coastal Slopes<br>VP: 11<br>*(within NNHC)* | Not assessed<br>Agreed: can be scoped out | | | | |

29. As set out in the table above we **disagree** with the Applicant's judgment on the significance of the effect for 4 LCTs. For the other 7 LCTs with **agree** with the Applicant's judgement.

30. The PIER has judged the 4 LCT marked * as having a sensitivity of high-medium and a magnitude of effect as either low or negligible. NE disagrees with these judgements and advices the following:

    i. Landscape Sensitivity: The definition for high susceptibility states that '*undue*

*consequences are likely to arise from the proposed development*' (Table 27-6, p.38). NE concludes that undue consequences will arise from the proposed development meaning in that our judgement susceptibility is **high**. As the landscape value is national / international is also **high** we advise that landscape sensitivity is **High.**

We presume that the sensitivity of these LCTs has been lowered due to the presence of the Sheringham Shoal, Race Bank and Dudgeon arrays hence the judgement of **high-medium** in Table 27-20 p.128?

ii. Magnitude of effect: LCTs OCM 1, DCM 2 and CS 1 only. The definition for the **medium** scale of effect states that the development baseline will have been subject to '*partial alternation to key elements, features, qualities or characteristics'* and will be '*noticeably changed'.* We conclude that the seascape setting of these LCTs will be noticeably changed by the proposed schemes. The duration of the effect will be **permanent** as it will last longer than 25 years (Table 27-11), and extent will be either **wide** or **intermediate**. We therefore judge the magnitude of effect to be **Medium** and not **low** as stated in Table 27-20 p.128.

iii. Magnitude of effect: LCT A only. The definition for the **small** scale of effect states that the development baseline will have been subject to '*minor alternations to key elements, features qualities or characteristics such that the post development baseline will be unchanged despite discernible differences.* We conclude that there will be discernible differences in the character of the seascape setting of this LCT and these will be greater than a small-scale effect. The duration of the effect will be **permanent** as it will last longer than 25 years (Table 27-11), and extent will be either **wide** or **intermediate**. We judge the magnitude of effect to be **low** and not **negligible** as stated in Table 27-20 p.128

iv. Significance of effect: combining these two judgements (for all 4 LCTs) results in a judgement **of Major-moderate** which is significant in EIA terms.

v. The diagram below illustrates the difference between the Applicant's judgement and our own for LCTs OCM 1, DCM 2 and CS 1 only.

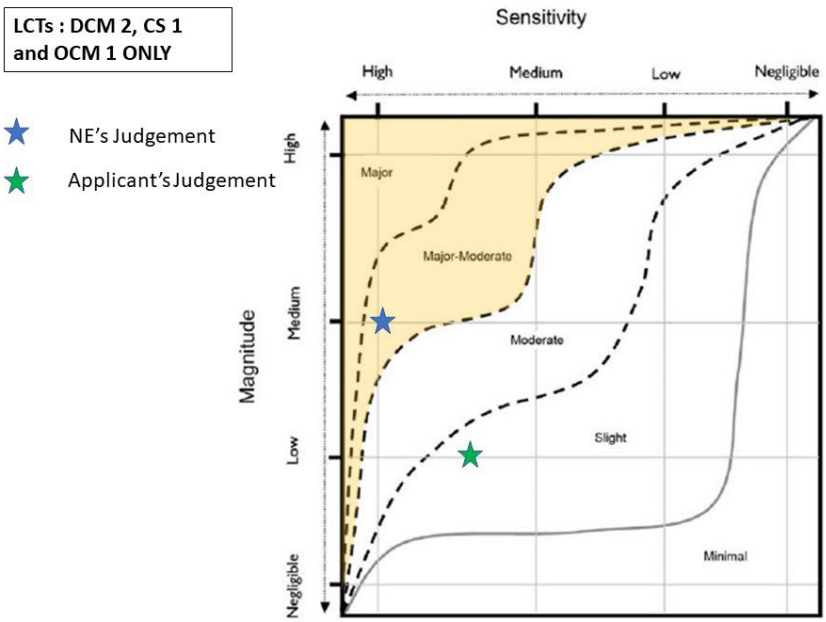



*Figure 4: Light brown area highlights what is significant in EIA terms. See paragraph 73, p.42.*

31. We note the extensive commentary that the Applicant has provided for LCTs OCM 1, DCM 2, CS 1 and A (paragraph 297 p.80 to paragraph 355 p.93) and offer the following comments: -

vi. OCM 1: We disagree with the low magnitude of change judgement because the turbines of SEP and to a lesser extent DEP will result in a noticeable change to the seascape character which forms the setting the this LCT. This noticeable change arises from the size of the of SEP and DEP when compared to the existing arrays of Sheringham and Dudgeon. This is acknowledged by the Applicant in paragraph 310 (p.83) where the report states that 'there would *a discernible difference in turbine size and density (spacing) between the existing and new turbines.* We conclude therefore that the magnitude of change is medium. We agree that the extent of the effect would be concentrate in locations on or close to the shore. However, the interaction with the sea is a key component of the character of this landscape and significantly contributes to the natural beauty of the NCAONB; see paragraph 303 p.81.

vii. DCM 2: We disagree with the low magnitude of change judgement. Our reasoning is the same as that outlined for LCT OCM 1. Please see paragraphs 320 (p.85) and 328 (p.87).

viii. CS 1: We disagree with the low magnitude of change judgement. We judge that SEP and DEP will result in a noticeable change to the seascape character which forms the setting the this LCT. Our reasoning is the same as that outlined for LCT OCM 1. In addition, we disagree with the Applicant's statement that '*effects on landscape character arising from SEP on areas where there are clear views out to sea would be at most of a small scale',* paragraph 343 p.91. The apparent height values for the SEP turbines when seen from viewpoints 4 and 18 are both greater than 1.0; from these locations the SEP turbines will appear to be over 2 and half times the height of the Sheringham Shoal turbines.

In addition, the height of the cliffs located to the east of Cromer (viewpoints 4, 6 and 18) will allow for views out to the DEP scheme (the turbines contained with box C in the diagram above). Despite being a further 7km offshore than the nearest Sheringham Shoal turbine the nearest DEP turbine will appear to be nearly twice the height (0.369 compared to 0.688). As a result, the effect of the DEP scheme turbines will be at its greatest in this LCT. We agree that the extent of the effect would be concentrate in locations on or close to the shore. However, the interaction with the sea is a key component of the character of this landscape and significantly contributes to the natural beauty of the NCAONB; see paragraph 336 p90.

ix. A – Open Coastal Marshes: We agree that the turbines of the DEP scheme can be scoped out of this assessment. We also agree that the '*greatest effects on the LCA would arise on the shoreline and other locations where seaward views are more readily available'* (paragraph 354 p.93).

However, we disagree with the negligible magnitude of change judgement. Although the impact of the SEP will be less than that experienced by the coastal LCTs to the east the effect will nevertheless be adverse and significant. The apparent height of the nearest SEP turbine (0.606) will be greater than that of the nearest Sheringham Shoal turbine (0.239). This will spread the visual envelope for significant adverse effects westwards along the coastline of the NCAONB increasing the portion of the coastline which has already been degraded. The sense of remoteness this landscape possess is heavily dependent on the sea and a lessening of this influence (through the introduction the turbines of SEP) will adversely affect the statutory purpose of the designation. As expressed in paragraph 350 p.93 this LCT possess a '*strong sense of remoteness, tranquillity and wildness*' where '*visible vertical structures are limited'* and which *has 'immense…scenic beauty'.* All of these

characteristics contribute to the natural beauty of this LCT for which the NCAONB was designated.

## 2.8 Landscape Baseline and Assessment - Onshore

32. Natural England agrees with the Applicant that direct adverse effects will occur on the NCAONB during the construction phase of the onshore cables works and that during the operational phase no landscape effects will occur.

33. Natural England offers no detailed comments on the implications of the onshore construction phase affects, but advices that close attention is made to the advice of the NCAONB partnership and relevant local authorities. These local partners have a better understanding of the immediate landscape through which the cable corridor will pass and are therefore better placed than NE to provide advice on the commentary and judgements in the PEIR.

34. Natural England confines it comments to the viewpoints listed in the table below all of which are located within the NCAONB. In some instances, these viewpoints are also located within the NNHC and where this is the case this has been indicated.

35. Due to the separation distance we offer no comment for VP 7 Horsey Gap Beach for either DEP or SEP scheme.

Viewpoints

36. Having reviewed the Applicant's assessment of the scale of effect (scale of visual effects at each viewpoint Table 27-17 p.94) we offer the following comments. These have been guided by our apparent height calculations for the DEP and SEP turbines and how these related to the apparent height values for the turbines of Sheringham Shoal and Dudgeon arrays. See our listing above. We have also factored in the lateral spread DEP and SEP and how these relate to each and the existing arrays from each of the viewpoints listed below.

37. Whilst we **disagree** with the Applicant's judgement in all instances for the SEP scheme, we **agree** for 7 of the 14 viewpoints as they related to the DEP scheme.

**38. Table 5: Natural England has updated Table 27-17 p.94 to include our advice**

| | Name | SEP PEIR | NE Judgement | DEP PEIR | NE Judgement |
|---|---|---|---|---|---|
| 1 | Wells-next-the-Sea *(within NNHC)* | Small | **Disagree Medium** | Negligible | Agree |
| 2 | Morston Quay *(within NNHC)* | Medium-Small | **Disagree Large-Medium** | Negligible | Agree |
| 4 | Inckleborough Hill* | Large-Medium | **Disagree Large** | Medium* | Agree |
| 6 | Trimingham* | Medium | **Disagree Large-Medium** | Medium* | Agree |
| 8 | Brancaster Beach *(within NNHC)* | Small | **Disagree Medium-Small** | Negligible | Agree |

| | Name | SEP PEIR | NE Judgement | DEP PEIR | NE Judgement |
|---|---|---|---|---|---|
| 10 | Gramborough Hill* *(within NNHC)* | Medium | **Disagree Large** | Small* | **Disagree Medium** |
| 11 | Peddars Way NT, Brancaster | Small-Negligible | **Disagree Small** | Negligible | Agree |
| 12 | Burnham Harbour (Gun Hill) *(within NNHC)* | Small | **Disagree Medium** | Negligible | Agree |
| 13 | Gallow Hill (south of Wells) | Small | **Disagree Medium** | Negligible | **Disagree** Small-Negligible |
| 14 | Blakeney car park *(within NNHC)* | Medium-Small | **Disagree Large-Medium** | Negligible | **Disagree Small** |
| 15 | Peddars Way, Norfolk Coast and ECP Path, Blakeney *(within NNHC)* | Medium | **Disagree Large** | Small-Negligible | **Disagree** Small |
| 16 | Bard Hill (Salt House Heath) | Medium | **Disagree Large** | Small-Negligible | **Disagree** Medium - Small |
| 17 | Oak Wood, Sheringham Hall | Medium | **Disagree Large** | Small | **Disagree Medium** |
| 18 | Coastal Path (Cromer-Overstrand)* | Large-Medium | **Disagree Large** | Medium | **Disagree** Large-Medium * |

39. Viewpoints 4, 6, 10 and 18 (marked here with an *) our scale of effect ratings only apply to the DEP turbines enclosed within box C of the diagram above. We advise that the turbines enclosed within box D **do not** contribute to the NE scale of effect ratings listed here.

40. Our comments have been guided by the apparent height of the 'worst case' Sheringham Shoal and Dudgeon values which are in the region of 0.446 and 0.304 respectively. As stated previously we consider that the turbines of the Sheringham Shoal array do have a significant adverse effect on the NCAONB i.e. they do compromise the statutory purpose and have degraded the special qualities of the designation, whereas the turbines within the Dudgeon array do not. As the lateral spread the SEP scheme is relatively modest it is the apparent height of the DEP / SEP turbines and how they relate to the smaller turbines of the Sheringham Shoal and Dudgeon arrays which are the key factors in determining the scale of the effect. The lateral spread of DEP is greater, but as stated previously it is only the turbines enclosed by box C that we judge will have adverse significant effects on the statutory purpose of the NCAONB.

Photomontage Visualisations

41. We note from Figures 27-21 to 27-38 that an indication is provided for the horizontal field of view (HFoV), equal to 50mm focal length single frame image, and thank the Applicant for including this useful piece of information.

42. Due to the wide horizontal spread of the DEP and SEP schemes we understand that the total lateral extent of the arrays cannot be included in single frame image with a HFoV of 39.6 degree. Although useful in providing the wider landscape and seascape setting of offshore arrays 53.6 degree HFoV panoramic images cannot always portray the likely visual influence of the turbines due to the inherent vertical compression of these images. Single frame HFoV of

39.6 degree images encompass what the human eye takes in and lack the inherent vertical compression of 53.6 degree HFoV panoramic images. 39.6 degree HFoV images provide an additional representation of these structures, how conspicuous they will be and therefore the scale of the effect they will have on the seascape setting and of the NCAONB. They will assist the ExA in its task.

43. We request therefore 'single frame' images with a HFoV of 39.6 degrees are included in the Environmental Statement (ES) for the following 7 viewpoints.

**Table 6: Additional 'single frame' images with a HFoV of 39.6 degrees to be included in ES**

| | Name | Focal point of image |
|---|---|---|
| 1 | Wells-next-the-Sea | The SEP turbines enclosed by boxes A and B. This will also capture boxes C and D of DEP |
| 2 | Morston Quay | The SEP turbines enclosed by boxes A and B ignoring the 2 outliers |
| 4 | Inckleborough Hill | The SEP turbines enclosed by boxes A and B. This will also capture box D of DEP. |
| 10 | Gramborough Hill | The SEP turbines enclosed by box B and box C of DEP. |
| 15 | Peddars Way, Norfolk Coast and ECP Path, Blakeney | The SEP turbines enclosed by box B and the turbines located to the rear of the Sheringham Shoal array. |
| 16 | Bard Hill (Salt House Heath) | The SEP turbines enclosed by boxes A and B ignoring the 1 outlier of box A |
| 18 | Coastal Path (Cromer-Overstrand) | The SEP turbines enclosed by box A and DEP box C, ignoring the 3 outliers. |

44. We invite the Applicant through our Discretionary Advice Service to discuss the exact focal points of these images with NE once the PEIR consultation is complete.

Visual Receptor Groups

45. NE limits it comments to the following receptor groups:

- All users of all PRoWs i.e. footpaths, bridleways, byways open to all traffic and restricted byways. Within designated landscape we advise that all PRoW users have a **high** sensitivity. User sensitivity should not be differentiated by the status of the PRoW and nor should the presence of a either a National Trail or as a promoted recreational route within the study area be used to differentiated user sensitivity.
- Users of accessible and recreational landscapes e.g. beaches, areas of Open Access Land. Within designated landscape we advise that all users of these places have a **high** sensitivity.
- Visitors to valued viewpoints which people might visit to experience the 'view'. Within designated landscapes we advise that all visitors to such locations have a **high** sensitivity. We do not differentiate the importance of such locations based on whether or not they happen to be marked on maps.
- Visitors to heritage assets or public parks where views are an important contributor to the

experience. Within designated landscape we advise that such visitors have a **high** sensitivity.

46. We advise that these groups are the ones most likely to be engaged in recreational activity for which the natural beauty of the designation contributes or is the main purpose of that activity.

47. We note at various instances that the Applicant has concluded that the susceptibility of visual receptors has been lowered to **medium** due to the presence of the Sheringham Shoal, Race Bank and Dudgeon arrays (for instance paragraph 429 p.107). This has resulted the judgement of **high-medium** sensitivity as presented in Table 27-20 p.130. We also note the commentary contained within the table at 1.7 p.8 of Appendix 27.1 (Annexes to Chapter 27) and offer the following comments in respect of visual receptors within the NCAONB.

- The statutory purpose of an AONB is the conservation and enhancement of natural beauty and people visit the area in the belief that they will able to experience natural beauty in part through enjoying the high quality of the visual amenity afforded. As the designation has the word 'coast' in its title one would assume that visitors would expect views out to sea to contribute to the area's natural beauty. The Applicant has assumed that <u>all</u> visitors will be aware of the presence of the Sheringham Shoal array in the seascape setting of the NCAONMB and consequently everyone's expectations will have been lowered. Hence the conclusion of medium susceptibility. We disagree with this assumption by the Applicant and advise it should be discounted and that susceptibility of visual receptor groups set out above is **high.**

- We also note that the Applicant has divided the AONB into 3 geographic sections (as set out in the table below) and assessed the users of Peddars Way National Trail (NT), English Coastal Path (ECP) NT and the Norfolk Coastal Path (in effect the same PRoW) as one. Whilst we have significant reservations about the use of this approach as a means of reporting effects on visual receptors, we are satisfied that in this instance such an approach is appropriate.

<u>Significance of Effect Judgement</u>

**48. Table 7: Updated Table 27-20 p.130. to include our advice.**

| **Potential impact visual amenity** | **PEIR Sensitivity** | **NE Judgement** | **PEIR Magnitude** | **NE Judgement** | **PEIR Significance of effect** | **NE Judgement** |
|---|---|---|---|---|---|---|
| Peddars Way NT, Norfolk Coastal Path, ECP NT | High-medium | **Disagree High** | High-medium | Agree | Major-Moderate adverse | **Disagree Major adverse** |
| Old Hunstaton to Wells-next-the-Sea | High-medium | **Disagree High** | Low | **Disagree Medium-Low** | Slight, neutral | **Disagree Major-Moderate adverse** |

| Potential impact visual amenity | PEIR Sensitivity | NE Judgement | PEIR Magnitude | NE Judgement | PEIR Significance of effect | NE Judgement |
|---|---|---|---|---|---|---|
| Wells-next-the-Sea to Blakeney | High-medium | **Disagree High** | Medium-Low | Agree | Moderate, neutral | **Disagree Major-Moderate adverse** |
| Blakeney to Mundesley | High-medium | **Disagree High** | Medium | Agree | Major-Moderate adverse | Agree |
| Mundesley to Winterton-on-Sea | High-medium | Agree | Low | Agree | Slight, neutral | Agree |

i. Visual Receptor Sensitivity: The definition for high susceptibility states that '*undue consequences are likely to arise from the proposed development*' (Table 27-6, p.38). NE concludes that undue consequences will arise from the proposed development meaning in that our judgement susceptibility is **high**. As the landscape value is national / international is also **high** we advise that visual receptor sensitivity is **High.**

*ii.* Magnitude of effect: The definition for the **medium** scale of effect states that the development baseline will have been subject to '*partial alternation to key elements, features, qualities or characteristics'* and will be '*noticeably changed'.* The definition for the **low** scale of effect states that the development baseline will have been subject to '*minor alternation to key elements, features, qualities or characteristics'* and will be '*unchanged despite discernible difference'.* For the Old Hunstaton to Wells-next-the-Sea section (specifically the section within the NCAONB east of Brancaster) we disagree with this point for reasons set out above for LCT A (see also apparent height table (Viewpoints 1, 8 and 12). The duration of the effect will be **permanent** as it will last longer than 25 years (Table 27-11), and extent will be either **wide** or **intermediate**. Whilst we agree with the Applicant for 3 of the 4 geographic sections of the AONB coastline, for the Old Hunstaton to Wells-next-the-Sea section we judge the magnitude of effect to be **Medium-low** and in not **low** as stated in Table 27-20 p.128.

iii. Significance of effect: combining these judgements results in either **Major or Major-moderate** significance of effect judgements both of which are significant in EIA terms.

## 2.9 AONB Baseline and Assessment

49. As far as Natural England can establish the Section 36 letter of 2006 granting permission for the Sheringham Shoal array made no mention of the statutory purpose of the NCAONB. In granting permission for the scheme, we do not know the weight, if any, given to the statutory purpose of the NCAONB in the planning balance by the then Secretary of State. However, we can see the result of that decision. As the AONB Management Plan States:

> *'Panoramic coastal views and seascapes remain distinctive in character, although the wilderness quality of the seascapes of the North Norfolk Heritage Coast has been affected recently by the development of offshore wind farms'* (Section 3.2 p.18)

And,

'*Recent development of wind farms off the north Norfolk coast have had a significant negative impact on the wilderness quality of the undeveloped coast, as noted by local observers.'* (Section 3.2 p.20).

50. Natural England advises that due the apparent height, lateral spread, origination to the coastline, proximity to the coast and the wild, remote, and on calm days, tranquil character of the coastal landscapes of the NCAONB the Sheringham Shoal array has significantly degraded the natural beauty of the designation and thereby compromised the statutory purpose. We therefore consider that the baseline for the assessment of the DEP and SEP is already compromised.

51. Whilst we agree with the Applicant's conclusion that '*existing offshore wind farms therefore already affect the wilderness character of parts of the landscape within the AONB*' (paragraphs 488 p.116, 491 p.139 and other instances) the presence of the Sheringham Shoal array does not justify or make acceptable the introduction of further turbines into the seascape setting of the designation.

52. The statutory purpose of the NCAONB is to conserve and enhance natural beauty; it is not to neglect and make natural beauty worse. Each scheme should be judged on the scale of the predicted impact upon the statutory purpose of the designation and not simply against the existing landscape / seascape baseline, which in this case is already compromised. As currently configured the DEP and SEP schemes will further harm the natural beauty of the designation and further erode the reason why the area was designated in the first place. Our assessment of the effects on the landscape receptors which underpin the key qualities of natural beauty of the NCAONB and the effects on the visual receptors who visit to enjoy these key qualities and the visual amenity afforded by views within and from the designation support this conclusion.

Key Qualities of Natural Beauty

53. Natural England is satisfied that the baseline used to assess effects on the NCAONB is suitable. We agree with the 3 key qualities of natural beauty assessed in the PEIR are the those most likely to impacted by the DEP and SEP schemes. They are:
    i. (2) Strong and distinctive links between land and sea
    ii. (3) Diversity and integrity of landscape, seascape, and settlement character
    iii. (6) Sense of remoteness, tranquillity, and wildness

54. We note that the 2019 – 2024 NCAONB Management Plan provides an updated list of what are now termed special qualities. These can be found on page 13 of the Management Plan. Although the wording of these special qualities differs from key qualities of natural beauty wording the subject and content are the same. We consider the key qualities of natural beauty / special quality to be:

    '*Sense of remoteness, tranquillity and wildness'* (2014-2019) /

    '*The feeling of tranquillity and wildness, and the opportunity for quiet enjoyment of the area'* (2019-2024).

55. Although placed under the label 'Recreation' this special quality is dependant on the underlying landscape character of the NCAONB and its seascape setting which is an integral part of the designation's character. Experiential aspects of landscape / seascape character, as articulated

here, are key qualities of any landscape and contribute to the 'sense of place'. For the NCAONB the '*Sense of remoteness, tranquillity and wildness'* is a defining feature of the coastal zones of the designation particularly in those landscapes where natural, semi-natural features and habitants dominate. Any further degradation of this special quality resulting from the introduction of further turbines into the seascape setting of the designation will always have the strong potential to cause a further loss of this key quality of natural beauty. For this reason, we concentrate our comments on this key quality of natural beauty.

Significance of Effect Judgement

**56. Table 8: Updated Table 27-20 p. 131 to include our advice.**

| Potential impact character and views | PEIR Sensitivity | NE Judgement | PEIR Magnitude | NE Judgement | PEIR Significance of effect | NE Judgement |
|---|---|---|---|---|---|---|
| NCAONB | High | Agree | Medium-low | **Disagree Medium** | Moderate, Adverse (not significant) | **Disagree Major-Moderate Adverse (significant)** |
| NNHC | High | Agree | Negligible | **Disagree Medium** | Minimal neutral (not significant) | **Disagree Major-Moderate (significant) Adverse** |

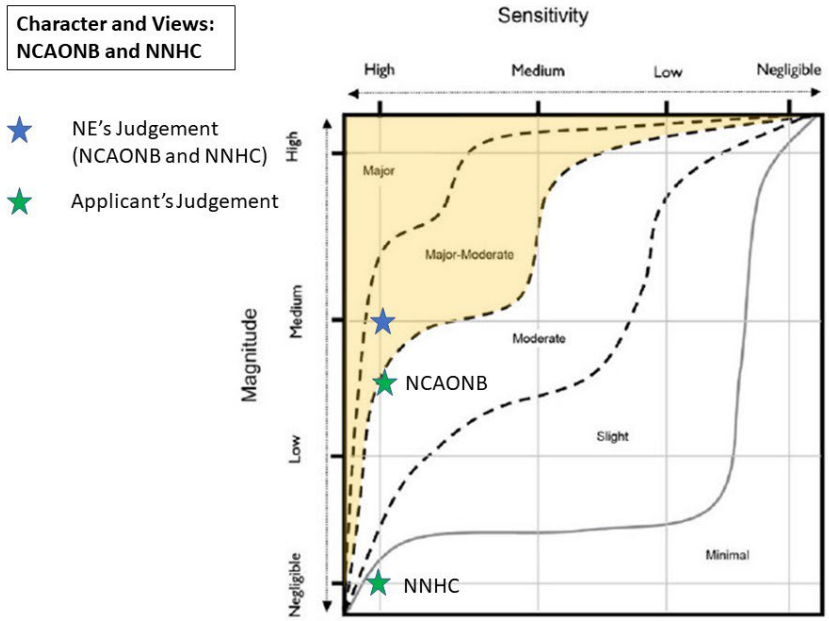



***Figure 5: Light brown area highlights what is significant in EIA terms. See paragraph 73, p.42. As can be seen there is little between the Applicant's judgement and that of our own.***

57. Natural England disagrees with the Applicant's judgement that effects on the Norfolk Coast AONB will not be significant. For the reasons already set out (see our comments for landscape and visual receptors) Natural England advises that the effect of the SEP scheme, and south-east portion of the DEP scheme (box C in the figure above), will have a significant adverse effect on the statutory purpose of the Norfolk Coast AONB. The assessment has also concluded that adverse effects (moderate) will occur on the 'character and views' (Table 27-20 p.131) of the NCAONB. As the diagram above illustrates there is in fact little difference between the Applicant's judgement and our own. We suggest this simply a matter of a difference in professional judgement and interpretation of the evidence.

58. At paragraph 490 p.116 the Applicant states that the '*proposed wind farm sites would not directly affect the sense of remoteness, tranquillity, and wildness but, by affecting views of the seascape from the AONB would indirectly affect these qualities…*'. We disagree with this assumption for the following reasons: an experience of a sense of remoteness, tranquillity and wildness is gained by people whilst they are within the AONB and not the seascape setting of the designation. So, although the physical landscape fabric of the AONB is not directly affected by the schemes the experienced of people seeking to enjoy the natural beauty of the designation will be. Therefore, the effects are direct and not indirect.

## 2.10 North Norfolk Heritage Coast

59. The NNHC is contained wholly within the NCAONB. For the reasons already set out Natural England advises that the effect of the SEP scheme, and south-east portion of the DEP scheme (box C in the figure above), will have a significant adverse effect on the special character of the NNHC. See our comments on LCTs OCM 1, DCM 2 and A (Open Coastal Marshes) and for viewpoints 1, 2, 8, 10, 12, 14 and 15. We disagree therefore with the Applicant's judgement in paragraph 503. We note the commentary Norfolk Coast Management Plan (see paragraph 505 p.118) and note the reference to the '*conservation of their natural beauty*'.

## 2.11 Assessment Summary / NE Conclusion

60. SLVIAs (and LVIAs) tend to be complex, highly interconnected, and multifaceted documents which reflect the nature of their subject matter. Assessment of effects upon the natural beauty of designated landscapes only add to this complexity. Natural England has reviewed many SLVIAs and LVIAs since the introduction GLVIA3 in 2013 and we now have considerable experience in distilling out the aspects of the assessment which pertain to designated landscapes. As SLVIAs / LIVAs address effects in both designated and none designated landscapes separating out those elements which apply to designated landscapes alone can, for some schemes, be a complex task. In this instance the PEIR has successfully achieved this task by concentrating the NNCAONB and NNHC assessments into Chapter 27. We thank the Applicant for this.

61. GLIVA 3 provides a pithy reminder of the pitfalls into which with LVIA / SLVIAs can fall into (paragraph 3.35 p.41). The 3rd bullet point states '*losing sight of the most glaringly obvious significant effects because of the complexity of the assessment'* should be avoided. To assist the ExA NE will offer the following simple clear and accessible explanation of the issue as we understand it.

62. As set in the PEIR the turbines of the SEP worst case scenario 2 are too big and located too close to the coastline of the NCANOB. Their presence in the seascape setting of the NCAONB will further degrade the quality of views out to sea. Their sheer size combined with the marked contrast in height with the existing arrays will be visually incoherent and simply clutter-up the

seascape. This will lead to a further loss of natural beauty for which this landscape was designated. It will increase the industrialisation of the seascape setting of the NCAONB leading to further loss of the sense of wildness and tranquillity which is still, despite the presence of the Sheringham Shoal array, a special quality of this remote coastline.

63. Despite being located further offshore and so ‘behind’ the Sheringham Shoal array, those turbines of the DEP worst case scenario 2 which are located in the southern portion of the DEP development area (box C in the diagram above) will also result in significant adverse effects on the natural beauty of the NCAONB. Here the apparent height of the turbines is the prime cause of significant adverse effects. Although the geographical extent of these effects covers a smaller area than those of the SEP scheme, they will nevertheless be transformative for those portions of the coastline effected.

64. We concluded therefore that the key test issue is the acceptability of further harm to the seascape setting of the NCAONB and consequences this has for the already comprised statutory purpose of the designation.

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix I to the Relevant Representations of Natural England**

**Terrestrial Ecology**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix I – Terrestrial Ecology

**In compiling this response the following documents have been considered:**

- [APP-012] 2.12 Tree Preservation Order and Hedgerow Plan
- [APP-023] 2.18 Water Bodies in a River Basin Management Plan
- [APP-059] 5.4 Report to Inform Appropriate Assessment
- [APP-060] 5.4.1 Appendix 1 Habitats Regulations Assessment Screening Report
- [APP-061] 5.4.2 Appendix 2 Habitats Regulations Assessment Screening Matrices
- [AP-062] 5.4.3 Appendix 3 Habitats Regulations Assessment Integrity Matrices
- [APP-089] 6.1.3 Chapter 3 Site Selection and Assessment of Alternatives
- [APP-103] 6.1.17 Chapter 17 Ground Conditions and Contamination
- [APP-104] 6.1.18 Chapter 18 Water Resources and Flood Risk.pdf
- [APP-105] 6.1.19 Chapter 19 Land Use, Agriculture and Recreation.pdf
- [APP-106] 6.1.20 Chapter 20 Onshore Ecology and Ornithology
- [APP-108] 6.1.22 Chapter 22 Air Quality
- [APP-117] 6.2.4 Chapter 4 Project Description
- [APP-129] 6.2.18 Chapter 18 Water Resources and Flood Risk (Figures)
- [APP-130] 6.2.19 Chapter 19 Land Use, Agriculture and Recreation (Figures)
- [APP-131] 6.2.20 Chapter 20 Onshore Ecology and Ornithology (Figures)
- [APP 132] 6.2.22 Chapter 22 Air Quality (Figures)
- [APP175] 6.3.3.1 Onshore Substation Site Selection Report
- [APP-212] 6.3.18.3 Geomorphological Baseline Survey Technical Report
- [APP-214] 6.3.20.1 Extended Phase 1 Habitat Survey Report
- [APP-215] 6.3.20.2 Great Crested Newt Survey Report
- [APP-216] 6.3.20.3 Bat Activity Survey Report
- [APP-217] 6.3.20.4 Wintering Birds Survey Report
- [APP-218] 6.3.20.5 Breeding Birds Survey Report
- [APP-219] 6.3.20.6 Initial Biodiversity Net Gain Assessment
- [APP-220] 6.3.20.7 Onshore Ecology Desk Study
- [APP-221] 6.3.20.8 Reptile Survey Report
- [APP-222] 6.3.20.9 White Clawed Crayfish Survey Report
- [APP-223] 6.3.20.10 Bat (Roosting) Survey Report
- [APP-224] 6.3.20.11 Invertebrate Survey Report
- [APP-225] 6.3.20.12 National Vegetation Classification (NVC) Survey Report
- [APP-226] 6.3.20.13 Riparian Mammals (Water Vole and Otter) Survey Report
- [APP-227] 6.3.20.14 Badger Confidential Appendix
- [APP-228] 6.3.20.15 Arboricultural Report
- [APP-259] 6.3.22.1 Construction Dust Methodology
- [APP-260] 6.3.22.2 Air Quality Assessment Traffic Data
- [APP-261] 6.3.22.3 Air Quality Background Pollutant Concentrations
- [APP-262] 6.3.22.4 Designated Ecological Sites and Critical Level and Load Values Air Quality Study.
- [APP-263] 6.3.22.5 Air Quality Ecological Assessment Tables
- [APP-264] 6.3.23.1 Baseline Noise Survey
- [APP-287] 9.3 Design and Access Statement (Onshore)
- [APP-297] 9.10 Outline Project Environmental Management Plan
- [APP-302] 9.17 Outline Code of Construction Practice

- [APP-303] 9.18 Outline Landscape Management Plan
- [APP-304] 9.19 Outline Ecological Management Plan
- [APP-305] 9.19.1 OEMP Appendix 9.19.1 Species Legislation and Conservation Status
- [APP-306] 9.19.2 OEMP Appendix 9.19.2 Outline Biodiversity Net Gain Strategy

**Glossary of Acronyms and Abbreviations**

| | |
|---|---|
| CEZ | Construction Exclusion Zone |
| CSZ | Core Sustenance Zones |
| DLL | District Level Licence |
| DML | Deemed Marine Licence |
| DCO | Development Consent Order |
| DEP | Dudgeon Extensions Project |
| EA | Environment Agency |
| ECP | England Coastal Path |
| ECR | Export Cable Route |
| EIA | Environmental Impact Assessment |
| EMP | Environmental Management Plan |
| EPS | European Protected Species |
| ES | Environmental Statement |
| GCN | Great Crested Newt |
| HDD | Horizontal Directional Drilling |
| INNS | Invasive Non-Native Species |
| LMP | Landscape Management Plan |
| LPA | Local Planning Authority |
| MAGIC | Multi-Agency Geographic Information for the Countryside |
| NBIS | Norfolk Biodiversity Information Service |
| NWL | Norwich Western Link |
| OLEMS | Outline Landscape and Ecological Management Strategy |
| PEIR | Preliminary Environmental Information Report |
| PRoW | Public Right of Way |
| RAMS | Reasonable Avoidance Measures |
| SAC | Special Area of Conservation |
| SSSI | Site of Special Scientific Interest |
| TPO | Tree Preservation Order |
| TPP | Tree Protection Plan |
| WCS | Worst Case Scenario |
| ZOI | Zones of Influence |

## 1. Summary of Main Issues

**Please note:** This appendix should be read in conjunction with the Summary of Key Environmental Concerns contained within our Relevant Representations

| Subject | Comments | RAG |
|---|---|---|
| **Project Parameters** | | |
| Project description | There are three broad development scenarios for cable route construction considered in the onshore ecology assessment: build SEP or DEP in Isolation, build SEP and DEP Sequentially or Concurrently. Each scenario has different design parameters and impacts with a number of alternative development options and transmission infrastructure options.<br><br>Natural England acknowledges that the preferred development scenario is for an integrated transmission system serving both offshore wind farms and where both projects are built concurrently, we welcome this approach. If this is not possible, we advise that under the sequential development scenario, when the first project proceeds the cable ducts for the second project are installed at the same time to avoid unnecessary direct and indirect impacts for habitats and species as set out in Scenario 2 of the Scenarios Statement (document reference 9.28 [APP-314]). This will significantly reduce the construction time and significantly reduce ecological and visual impacts for these projects. | |
| | All crossings of the onshore cable route are listed within a Crossing Schedule ([APP-178] Appendix 4.1 to [APP-117] Chapter 4 – Project Description) and the method of crossing identified – either trenchless or open cut. However, the method for some crossings has yet to be confirmed within the Schedule. The project description does not specify when the undecided crossing locations will be determined and on what basis, for example as a result of pre-construction ecological surveys? Natural England would seek to be consulted on, and be provided with all relevant evidence, for all undecided crossing locations prior to construction commencing otherwise there is a concern that protected species may be negatively impacted by the project. | |
| NE position on Worst Case Scenario (WCS) | The rationale and parameters for the selection of the realistic Worst Case Scenarios (WCS) for each broad development option is generally clear and is based on the project parameters as set out in [APP-117] Chapter 4 - Project Description of the Environmental Statement. The impacts for onshore terrestrial ecological receptors are plainly set out in [APP-131] Table 20-3 of Chapter 20 - Onshore Ecology and Ornithology for all development scenarios. | |
| **Baseline Characterisation** | | |
| Data suitability, | We consider the data and baseline characterisation is broadly suitable, however some clarification is required on why particular methods were chosen to refine the data search data. | |

| | | |
|---|---|---|
| baseline characterisation.<br><br>and data gaps. | In addition, in order to clarify and ascertain the necessary mitigation measures for some ecological receptors, it is considered that further information is required through pre-construction surveys and that the extent of the pre-construction surveys are clearly set out in the DCO. Our detailed comments highlight the specific areas where clarification and pre-construction surveys are required to support the mitigation proposals, and are summarised below:<br><br>• Pre-construction surveys are required to ascertain the importance of two crossing locations for bats where the crossing method has yet to be determined. The surveys should then inform the type of crossing method to be used based on the impact. The crossing locations are near to and/or link suitable roosting and foraging habitat for bats, this includes Alderford Common SSSI, which is noted for containing hibernation and maternity bat roosts.<br><br>• Further pre-construction hibernation survey data is required for bats on trees where hibernation potential exists to inform if mitigation measures are required. Surveys and mitigation should follow industry best practice and be recorded in the OLEMS document.<br><br>• Clarification is required as to why a particular methodology was chosen to refine the bat species data obtained from the Norfolk Biodiversity Information Service (NBIS) to inform the bat surveys. It is unclear why a 50m buffer from the DCO area was used to identify particular bat species to inform the survey methodology?<br><br>• An Arboricultural Impact Assessment and Tree Protection Plan has not been completed as part of the Environmental Statement. However, the [APP-228] Arboricultural Report (Appendix 20.15 of Chapter 20, document reference 6.1.20) recommends that a full tree survey of the whole DCO boundary prior to construction to identify trees to avoid and inform the necessary mitigation measures and Tree Protection Plan. Natural England advise that this commitment is carried through in the OLEMS document.<br><br>Further clarification is required as to what pre-construction surveys will be undertaken. It is not clear from the OEMP whether a full suite of pre-construction surveys for all potentially impacted ecological receptors will be carried out. For example, will the inaccessible parts of DCO boundary from the original surveys for badgers be resurveyed pre construction and prior to the granting of any licence. | |
| **Environmental Impact Assessment** | | |
| Identified impacts | Natural England is broadly satisfied that the majority of impacts are identified and assessed, however some areas where | |

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| | Natural England advise further clarity is required on the identification and assessment of impacts are outlined within the Detailed Comments table. This includes further clarity regarding the impacts on the River Wensum and associated habitats and species should a bentonite breakout occur and as a result of the suggested mitigation measures. We advise that the INNS mitigation measures (Impact 10) are carried through to and coordinate with the Bentonite Breakout Plan, which is necessary to mitigate for the potential for the release/breakout of inert drilling fluids (Impact 1). | |
| Methodology | It is not clear why a 50m buffer from the DCO area was used to define the search area for 'significant' bat species data from NBIS to inform the transect and static surveys. | |
| Cumulative Effect Assessment (CEA) | Natural England considers that justification has not been provided as to why the consented solar farm north of Cawston has not been listed as a potential project for consideration in the cumulative impact assessment ([APP-131] Table 20-15 of Chapter 20). | |
| Assessment Conclusion | Natural England generally concurs with the assessment conclusions. | |
| **Habitats Regulations Assessment** | | |
| Screening | The Habitats Regulations Assessment Screening report provided ([APP-060] document ref. 5.4.1) screens in the potential for a likely significant effect on all qualifying features of the River Wensum SAC, however the Screening document has been updated by the Screening Matrices document ([APP-061, APP-062] document reference 5.4.2) and the Report to Inform Appropriate Assessment document ([APP-060] document reference 5.4). In the matrices document potential effects upon white-clawed crayfish, brook lamprey and bullhead (qualifying features of the River Wensum SAC) have been screened out due to the Applicant's commitment to use trenchless crossing techniques at the River Wensum, however there is the potential for these species to be impacted should a bentonite breakout occur. A bentonite breakout plan is proposed as mitigation for the Desmoulin's whorl snail *Vertigo moulinsiana* and *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation and is potentially relevant for the other qualifying features of the River Wensum. Further clarity is required as to why the Applicant has screened out potential effects upon white-clawed crayfish, brook lamprey and bullhead when there is a potential impact pathway on these species and mitigation may be required. | |
| Methodology | | |
| Appropriate Assessment | Further consideration should be given as to whether the bentonite breakout plan mitigation proposals are relevant as mitigation for potential impacts on white-clawed crayfish, brook lamprey or bullhead and should be included in the Appropriate Assessment. | |
| Incorporated Mitigation | Natural England considers that the embedded mitigation identified in the RIAA is broadly acceptable with respect to impacts on designated nature conservation sites and for cable | |

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| | crossings over water courses (which has the potential to impact on designated sites and qualifying features). | |
| Appropriate Assessment conclusion | With respect to the onshore elements of the project, Natural England does not disagree with the summary of potential effects on the River Wensum SAC as set out in Table 10-1 of the RIAA, however clarity is required as to why white clawed crayfish, brook lamprey and bullhead were screened out and an appropriate assessment of the impact of the project on these qualifying features of the River Wensum not undertaken. | |

**Mitigation Summary that must be secured in the DCO/DML**

- EPS mitigation licences required – bats, badger, DLL and water vole (if found during pre-construction surveys).

- Pre-construction surveys and appropriate mitigation measures (if required pre/post installation) to be submitted to LPA and agreed in consultation with NE for reptiles, birds, badger, bat roost potential surveys for structures (includes trees), breeding birds, water voles, invertebrates and for follow up surveys to be carried out where required, e.g., bat activity surveys, bat hibernation surveys, survey of receptor site for reptiles if translocation is required.

- Post installation monitoring surveys for where EPS mitigation licences are required.

  Reasonable Avoidance Measures (RAMS) for GCN and reptiles. Post-construction surveying/monitoring for designated habitats and species that will be affected, such as hedgerows used by bats, grasslands, ponds, GCN, cereal field margins and for reports to be submitted. Where mitigation is proven not effective further mitigation measures may be required and will need to be approved. Methodology and any remediation to be agreed with the LPA and in consultation with Natural England.

- Pre- construction OLEMS in consultation with Natural England to be secured and to also include: Tree Protection Plans and an Arboricultural Method Statement, INNS Management Plan, Bentonite breakout plan.

- Mitigation and compensation to be secured.

- Landowner and stakeholder agreement of land for mitigation – to be secured. If mitigation and compensation are required outside of the DCO boundary this also needs to be agreed with landowners and secured in the DCO.

- If translocation of a species is required the habitat areas needs to be suitable and area secured.

- Protection areas (buffer areas) of habitats particularly SSSIs, SACs, ancient woodland and veteran trees to be secured.

- Habitat creation to be detailed in the OLEMS. This should include details of enhancements following consultation with landowners and other stakeholders.

- With respect to the above comments, Natural England advises consultation and agreements with landowners and stakeholders is required to secure mitigation. We remind the Applicant the mitigation hierarchy must be followed with the commitment to BNG additional to this.

**Detailed Comments**

| Point | Section | Natural England's Comment | Risk |
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| Document Used: [APP-022] 2.17 Habitats of Protected Species Plan | | | |
| 1 | Sheet 36 | Editing note - Sheet 36 does not include a full key | |
| 2 | All | The full legend is not displayed on all maps – some key features are missing. | |
| Document Used: [APP-090] 6.1.4 Chapter 4 Project Description | | | |
| 3 | General and Appendix 4.1 | All crossings of the onshore cable route are listed within a Crossing Schedule (Appendix 4.1 to Chapter 4 – Project Description) and the method of crossing identified – either trenchless or open cut. However, the method for some crossings has yet to be confirmed within the Schedule. The project description does not specify when the undecided crossing locations will be determined and on what basis, for example as a result of pre-construction ecological surveys? Natural England would seek to be consulted on, and be provided with all relevant evidence, for all undecided crossing locations prior to construction commencing otherwise there is a concern that protected species may be negatively impacted by the project. | |
| Document Used: [APP-103] 6.1.17 Chapter 17 Ground Conditions and Contamination | | | |
| 4 | 17.6.1.3<br>Para 149, 150 and 151 | The list of activities with the potential to cause contamination does not include potential impacts caused by HDD. The potential for bentonite breakout has not been included in the assessment of impacts, particularly given SEP and DEP crosses the River Wensum SAC and SSSI where the sensitivity of surface waters is considered to be high.<br>Although reference to additional impacts relating to surface water quality and ecological habitats being provided in the Water Resources and Flood Risk Chapter 18 [APP-104] and Onshore Ecology and Ornithology Chapter 20 [APP-106], Natural England advises consideration needs to be given to the potential for bentonite breakouts during HDD in this [APP-103] Ground Conditions and Contamination Chapter and for the necessary mitigation measures to be identified in this Chapter. | |

| Point | Section | Natural England's Comment | Risk |
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| Document Used: [APP-106] 6.1.20 Chapter 20 Onshore Ecology and Ornithology | | | |
| 5 | 20.5.3.4. para 138 (GCN)<br>20.5.3.5. para 145 (Badger)<br>20.5.3.6. para 152 (Water vole)<br>20.5.3.10 para 188 | Natural England is aware that the Applicant has applied for draft licences for protected species (bats, badgers and water voles) and that Natural England have approved the use District Level Licence (DLL) prior to construction to ensure compliance with the legal status of GCN and mitigate for potential impacts on this species.<br>In order to future proof the project and enable long term environmental gains, it is important to undertake the following in combination with the EPS mitigation licences and DLL, it would be beneficial to consider the following:<br>- Pre-construction surveys to ensure habitats at the site have not changed substantially since survey. Surveys should be used to identify if any changes to the draft mitigation licence is required.<br>- Reasonable Avoidance Measures (RAMS) to be employed – GCN, but his would also benefit other amphibians and also reptiles.<br>-<br>Post-monitoring surveys followed up by changes to mitigation where mitigation is proven to be ineffective.<br>The findings from the pre-construction surveys, should be used to identify if any changes to the draft mitigation licence is required.<br>Post-monitoring surveys should be conditioned and secured within the DCO.<br>Reasonable Avoidance Measures (RAMS) should still be adhered to and all mitigation as per the obtained licences to be included in the OLEMS.<br>Please note that full procurement of the DLL should be undertaken within no more than 12 months prior to the commencement of onshore construction works.<br>With regards to water vole please note that in November 2021, under Section 111 of The Environment Act changes to The Wildlife and Countryside Act 1981 and The Conservation of Habitats and Species Regulations 2017 have been introduced, meaning Natural England will be able to issue wildlife licences for 'overriding public interest' for animals and plant species listed on Schedules 5, 6, & 8 of The Wildlife and Countryside Act 1981.<br>The changes are likely to be introduced in January 2023 and will include water voles. | |

| Point | Section | Natural England's Comment | Risk |
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| 6 | 20.5.2 Para 91 and 92<br><br>And [APP-218] 6.3.20.5 of The Breeding Bird Report (Section 5.3) | The ES acknowledges that the DCO order limits run through predominantly arable land with most field boundaries marked by hedgerows. Although it is stated that *'arable fields are typically of low value and are suboptimal for use by protected and notable species*' The ES does acknowledge that for ground nesting birds such as skylark, arable field do provide nesting habitat. Skylark is the most abundant and widespread bird of conservation concern (red listed species) breeding within the DCO boundary and should be fully mitigated for.<br><br>The Breeding Bird Report states that *'Given the abundance of arable and grassland habitat, and of nesting skylarks within these habitats, mitigating impacts to this particular species will require careful consideration.'*<br><br>The Breeding Bird Report APP-218] (Section 5.3) states that, *'construction works within arable habitat (but not clearance of the habitat) are inevitably anticipated to occur throughout the skylark breeding season'.* This will result in a loss of nesting habitat, potentially over a number of seasons depending on the construction scenario employed.<br><br>Natural England considers a pre-construction bird survey should be carried out and a secured in the DCO with mitigation detailed in the OLEMS.<br><br>Pre-construction surveys should ensure that a full assessment of the impacts can be made and the loss of breeding habitat for arable nesting species such as skylark quantified. Further details will be required for how any impacts on the loss of nesting habitat for skylark can be mitigated for. Detailed mitigation should be provided in the OLEMS. | |
| 7 | 20.5.2 Habitats<br><br>Para 94 | The order limits are within 100 metres of two woods (Smeeth Wood and Colton Wood) which are ancient woodlands and may be sensitive air quality and dust impact. The ES does not identify these woodlands as 'ancient woodlands' in this paragraph, however they are referenced in other parts of the document.<br><br>The Zones of Influence (ZoI) for Ancient Woodland should be clearly stated with consideration given to any potential edge effects. We refer the Applicant to Natural England's standing advice for ancient woodland and the management of buffers Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk). These should be incorporated into the OLEMS. | |
| 8 | 20.5.3.1 | The Breeding Bird Survey Report states that *'the surveys recorded nine Red list species, nine Amber list species and four Schedule 1 species breeding territories within the DCO boundary, as* | |

| Point | Section | Natural England's Comment | Risk |
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| | Para 110 to112<br><br>[APP-218] 5.4 Breeding Bird Survey Report 6.3.20.5 | *well as significant numbers of sand martins breeding in the cliffs at Weybourne and a colony at Mangreen Quarry.'*<br><br>Natural England advises suitable mitigation measures should be put in place to minimise the impact to these species. Pre-construction surveys must be completed and used to inform the appropriate mitigation which should be fully detailed in the OLEMS.<br><br>If pre-construction bird surveys reconfirm the presence of breeding sand martins within the bank which would be impacted by construction, we advise suitable mitigation measures must be followed. Please note that in this case the bank would need to be removed before May, prior to birds searching for nest sites. Full detailed habitat mitigation would also be required and fully detailed in the OLEMS. | |
| 9 | 181 Onshore Ecology<br><br>[APP-216] 6.3.20.3 Static Bat Detector and Transect Survey Report Figure 5 | Alderford Common and the River Wensum are important foraging areas for several species of bats including barbastelle. The summary maps (Figure 5) in [APP-216] Section 6.3.20.3 Static Bat Detector and Transect Survey Report highlight the use of the River Wensum and surrounding woodlands as important for foraging and commuting bats and within core substance zones of barbastelle maternity roosts. The figure includes important commuting routes for barbastelle north of Attlebridge. However, the full commuting route is not shown on the maps – the route continues north-north-west past the top of the map towards Alderford Common and it would be assumed that commuting would continue beyond the map boundary.<br><br>North of Attlebridge is where the compound site at Swannington will be located. Given the route of commuting presented in [APP-216] Figure 5 it could be assumed that commuting would continue to Alderford Common SSSI, which has been known to support roosting bats and is linked via suitable habitats. Though HDD will be employed at the section through the Marriotts Way cycle route (also commuting route), the commuting route extends north-north-west (and off the map) and this section will be open cut. The crossing techniques for the areas closest to Alderford Common have not been confirmed. Alderford Common lies within 250m of the route. There are potential impacts to important foraging and core sustenance zones for important colonies of bats (barbastelles) and other species. If bats are commuting to Alderford Common SSSI there could also be potential impacts to important roosts present within the protected site.<br><br>There is a gap in data provided between Attlebridge and the static locations Swannington. Pre-construction surveys for bats should be undertaken in this area to establish if the two undecided crossing locations near to Alderford Common (Reepham Road and School Road) are important | |

| Point | Section | Natural England's Comment | Risk |
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| | | commuting or foraging routes for bats. The survey data should then be used to inform the decision on whether to open cut or HDD these crossing points.<br><br>Alderford Common SSSI is noted for roosting bats. Commuting and foraging routes linked to the SSSI may be impacted through open cut trenching. Impacts need to be assessed and detailed mitigation provided in the OLEMs. Consideration should be given to connecting and supporting habitats. | |
| 10 | 20.6.1<br>Para 194, 196,197 and 202 | The use of HDD methods at the crossing of the River Wensum is embedded within the SEP/DEP scheme design to avoid direct impacts to the River Wensum SAC and SSSI.<br><br>Given the recent HDD drilling mud breakouts experienced on several other OWF projects, Natural England advises that a commitment to use best available techniques and a precautionary methodology be included We advise the Applicant to partner with Environment Agency on the River Wensum Partnership project.<br><br>We consider there is a lack of clarity provided on the potential risks of a breakout and its impact to all protected species and habitats.<br><br>Potential impacts to white-clawed crayfish and invertebrate species in the event of a breakout must be assessed and a suitable emergency plan put in place.<br><br>Natural England advises the restoration of the HDD compound on the flood plain of the river Wensum should be restored in accordance with the River Wensum Restoration Strategy and the River Wensum SAC conservation objectives Supplementary Advice. Where possible, measures should restore appropriate soil/ground moisture conditions so that water levels are continuously at or just above the ground surface throughout the year. All bentonite breakouts within designated sites should be reported to Natural England within 24 hours and before clean-up operations begin. | |
| 11 | 20.6.1.9 Point 282 | Himalayan balsam was recorded within the DCO order limits and noted as predominately along watercourses such as tributaries of the Wensum at Swannington and on the Rivers Tud and Bure.<br><br>There is no mention of signal crayfish and the potential to spread crayfish plague in this part of the assessment. Mitigation for potential impacts from the spread of crayfish plague from signal crayfish to white clawed crayfish is also not included in the Outline Ecological Management Plan. | |

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| | | Though survey results indicate that White Clawed-Crayfish (WCC) were absent in six out of the seven watercourses surveyed, American Signal Crayfish (ASC) were detected in five of the seven watercourses surveyed. ASC carry crayfish plague which is lethal to WCC. As such, every attempt must be made to minimise the potential spread of crayfish plague. Though trenchless crossings are proposed at the River Wensum, threats from non-native crayfish species and crayfish plague are severe.<br><br>We advise mitigation to avoid the spread of Himalayan balsam and other Invasive Non-Native Species must be detailed in the OLEMS.<br><br>Further precautionary and preventative measures should be put in place during construction to minimise the risk of spreading American Signal Crayfish or associated crayfish plague and with the correct control measures put in place and fully detailed in the OLEMS. Weybourne Stream, River Glaven, River Bure, unnamed tributary of the Rivers are of particular concern. An INNS Management Plan should be included in the OLEMS.<br><br>We advise that monitoring for bentonite breakouts throughout HDD beneath the relevant watercourses, with a commitment to cease drilling and enact remedial measures immediately upon discovery of a breakout must be carried out and fully detailed in the OLEMS to include remedial effects and controls. | |
| 12 | 20.6.1.10.3<br><br>Para 294<br><br>[APP-227] 6.3.20.14 Badger Confidential Appendix – Section 4.3 | Inaccessible parts of the DCO boundary and the surrounding 30m have not been surveyed so it is possible that badgers are present but unrecorded in the un-surveyed parts of the DCO boundary (which account for approximately 10% of the total footprint of the DCO boundary), especially considering seasonal constrains e.g. the majority of surveys were undertaken in summer.<br>Therefore, we advise pre-construction surveys should not only cover areas with previously confirmed setts, but should cover the whole of the DCO area plus a 30m buffer and include those sets previously recorded as disused.<br><br>Natural England are aware that a draft licence has been obtained. The findings from the pre-construction surveys, should be used to identify if any changes to the draft mitigation licence is required.<br><br>Please note that surveys required to inform badger licensing will need to be completed within two months of submitting the licence application to inform precise, mitigation requirements. | |

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| 13 | 20.6.1.11<br>Para 300 | *'The ongoing creation of opportunities for roosting bats within trees is a natural cyclical process, often associated with trees maturing and developing features such as rot-holes, tear-outs and hazard beams which are usually absent from younger trees. The removal of a number of trees could therefore interrupt this cycle, leading to a potential future reduction in the availability of bat roosting habitat as trees which would have developed into suitable bat roost trees are instead removed.'*<br><br>As bats are a mobile species which will switch between tree roosts, where trees where roosts have not been confirmed, Natural England advises update surveys should be carried out pre-construction where trees have been assessed as having potential to support roosting bats, if those trees are to be removed and/or impacted upon e.g., through light/noise/vibration. This should be secured in the DCO. | |
| 14 | 20.6.1.14<br>Paras 322 to 324 | With regards to pink-footed geese and overwintering birds, Natural England is developing standard advice for mitigation measures to be adopted to mitigate disturbance impacts to NNC SPA Pink Foot Geese. During examination we will work with the Applicant to get this secured in the DCO. | |
| 15 | 20.6.1.17.2<br>Para 345 | *'The moderate magnitude effect on reptile populations considered to be of medium sensitivity represents an impact of moderate adverse significance, particularly if reptiles are killed and habitats destroyed. This would result in reptile populations being permanently lost from multiple sites.'*<br><br>Natural England advises all effort to deter reptiles from site and to move encourage reptiles to move to adjacent sites should be implemented within the mitigation measures to reduce potential injury and/or harm to reptiles.<br><br>We suggest manipulation of habitats to discourage reptiles from using the site should be employed in the first instance. The creation of habitat to replace those habitats destroyed needs to be included in the OLEMs. Pre-construction surveys to be carried out and detailed in the OLEMs. | |
| 16 | 20.7.3.1 Para 368<br>Table 20-15 | In-combination: the route for the Norwich Western Link (NWL) Road crosses the SEP and DEP cable route. This may have direct and / or indirect cumulative effects for a range of species and habitats and particularly on commuting, foraging and roosting bats. The point at which the projects overlap is within an area important for a range of roosting, foraging and commuting bat species, including an important barbastelle colonies. | |

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| | | Table 20-15 states that the Norwich Western Link project, '*will be subject to a planning process requiring appropriate mitigation measures to be implemented therefore limiting the potential for cumulative effects to occur.*' However, it is not clear if the impacts will be fully mitigated to an acceptable level; therefore there is the potential for there still be cumulative impacts from the residual impacts.<br><br>Natural England encourage some communication between plans/projects to ensure mitigation covers all areas of concern. We emphasise the importance of minimising habitat loss, fragmentation and disturbance to a range of species and habitats including breeding birds, roosting and foraging and/or commuting bats.<br><br>In addition, Natural England encourages the Applicant to work alongside other plans and projects for the enhancement proposals for species and habitats. | |
| 17 | 20.11 | There is currently only limited onshore post construction survey or monitoring proposed to ensure protected habitats and species have been successfully reinstated post construction. Within the EMP post construction monitoring is currently only proposed for new planting, buffer zones and for protected species as required under EPS mitigation licences. Natural England advise that a commitment in the combined OLEMS to post-construction monitoring is also included for other priority habitats and protected species which will be affected, such as hedgerows used by bats, grasslands, ponds, cereal field margins etc.<br><br>Natural England recommends that the OLEMS (to be submitted with the final DCO application) contains a commitment to post-construction surveying/monitoring for designated habitats and species that will be affected, such as hedgerows used by bats, grasslands, ponds, GCN, cereal field margins, etc.<br><br>The '*Potential Monitoring Requirements'* (20.11) for other species and habitats doesn't specify if this monitoring is taking place during or after construction, or both. Please provide further clarification. | |
| | Document Used: [APP-108] 6.1.22 Chapter 22 Air Quality | | |
| 18 | Para 298. Table 22.58<br><br>222 | Table 22-58 states that '*Very few ecological receptors…have the potential to be affected by all three construction phase impacts*.' And it is concluded that '*there will therefore be no pathway for interaction to exacerbate the potential impacts associated with these activities during construction*'. However, Smeeth Wood ancient woodland, the unnamed ancient woodland near | |

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| | 22.7.1<br>Para 277 | Ketteringham, Alderford Common SSSI and small areas of the River Wensum SSSI and SAC are included here.<br><br>River Wensum SSSI and Colton Wood ancient woodland lie within or 0m from the DCO boundary. These sites are sensitive to dust impacts. Colton Wood and the unnamed ancient woodland (near Ketteringham) are stated as having 'high' sensitivity.<br><br>It is stated that 'in-*combination increases in nutrient nitrogen and acid deposition and NOx and NH3 concentrations may also cumulatively affect designated ecological sites*.<br><br>The sites named here are protected habitats and sensitive to dust impacts. Natural England advises clarification is needed as to whether these sites will be further impacted.<br><br>If there is likely to be an effect on a designated feature, Natural England advises the OLEMS should include mitigation measures to reduce changes in air quality, e.g. using efficient vehicles, reducing the number of vehicles/time on the road, timing of construction to support biodiversity, possible use of barriers.<br><br>The Zones of Influence (ZoI) for Ancient Woodland should be clearly stated with consideration given to any potential edge effects. We refer the Applicant to Natural England's standing advice for ancient woodland and the management of buffers Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk). These should be incorporated into the OLEMS. | |
| Document Used: [APP-282] 6.5 Schedule of Mitigation and Mitigation Routemap | | | |
| 19 | Table 1.3 (20.25) | The schedule and the Onshore Ecology and Ornithology chapter (20.6.1.17.3) notes potential reptile translocation which the Reptile Survey Report states is required for three sites where there is '*relatively high risk of experiencing impacts associated with construction of SEP and DEP, given that these sites will be subject to ground works such as excavation to install the onshore export cables.' (4.4 Reptile Survey Report)*.<br><br>If translocation is required, the receptor site would also require reptile surveys to be carried out to establish the current reptile population at the site and determine whether the site has capacity for an additional population. | |
| 20 | 20.17 and 20.18 | Mitigation has been provided for trees where roosts have been confirmed present. The *Bat (Roost) Survey Report* states, '*The potential for roosting bats in all trees within the DCO boundary will need to be reconsidered within the survey season (May to August/September)* | |

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| | | *immediately preceding tree removal'*. Pre-construction bat roost potential surveys for all trees are not mentioned in the *Schedule of Mitigation and Mitigation Route Map*.<br><br>Soft-felling has been included for trees where an EPS mitigation licence is required. However, bats are a mobile species and will switch roosts regularly. As such, soft-felling should be carried out as a precautionary measure on those trees with potential (moderate and high) for roosting bats, even where bats have not been identified as roosting during surveys.<br><br>As per the Bat (Roosting) Survey Report, Section 4.4, please also note, '*If future surveys (e.g. in 2024) record no evidence of bats roosting in trees which have previously (in 2021) had roosting bats confirmed as present, these trees would still require an EPS mitigation licence to legally permit their removal.'*<br><br>Pre-construction surveys are to be carried out comprising a ground-level appraisal of bat roost suitability/potential, followed by bat roost emergence/re-entry surveys of any trees with High or Moderate bat roost potential which are to be removed or impacted upon. Surveys should be carried out in the season immediately preceding tree removal or management works. This should include a re-assessment of roost potential of trees within the DCO boundary, to include has assessment of hibernation potential. Where roost potential exists ground-level assessment to be carried out, followed by emergence/re-entry surveys or hibernation surveys, where required. An EPS mitigation licence will still be required if future surveys record no evidence of bats roosting in trees in which roosting was previously (in 2021) recorded.<br><br>The above should be included in the Schedule of Mitigation and Mitigation Route Map and detailed in the OLEMs. | |
| 21 | Para 20.24 – pg 54 | As per comment in the Outline Management Plan, several pre-works and post-construction mitigation measures are proposed in the Invertebrate Survey Report but are not included in the Mitigation table.<br><br>Natural England advises details to be included in the mitigation and OLEMS and Schedule of Mitigation and Mitigation Route Map. | |

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| Document Used: [APP-302] 9.17 Outline Code of Construction Practice | | | |
| 22 | 3.3.1 | Woodland/Hedgerow Protection has not included protection for individual trees, including veteran and TPO trees. This should be identified through the Tree Protection Plan.<br><br>We advise The Code of Construction Practice should be informed by the Tree Protection Plan and Hedgerow Mitigation Plans and Method Statements (as specified in the Outline Ecological Management Plan and to be included in the OLEMS). | |
| Document Used: [APP-304] 9.19 Outline Ecological Management Plan | | | |
| 23 | General | As per our previous advice, Natural England would like the separate management documents combined to form the OLEMS. Consideration needs to be given as to how these will be secured in the DCO. | |
| 24 | 2 para 23 (Table 2.1.19-1) | The Extended Phase 1 Habitat Survey was carried out in March to September 2020 and January – September 2021. We advise a pre-construction walk-over survey should be carried to validate whether habitats have changed significantly since last survey and assess whether habitats are suitable for protected species. This should also take note of invasive species.<br><br>Any changes should have the relevant protected species surveys carried out if required. Details should be included in the OLEMS. | |
| 25 | 2.2 | Buffer zones for ancient woodlands are not specified, rather buffer zones *'surrounding retained areas of woodland and mature broadleaved trees will be at least 15 metres (m) in width or at least the width of the tree root protection zone, as advised by an appropriately qualified arboriculturist*.'<br><br>We advise that buffer zones should reflect the habitat and where assessment shows other impacts are likely to extend beyond this distance, such as the effect of air pollution from development that results in a significant increase in traffic, the proposal may need a larger buffer zone.<br><br>We refer the Applicant to Natural England's standing advice for ancient woodland Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk) and the management of buffers and suggest these are incorporated into the OLEMS. | |

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| 26 | 2.2 para 24 | *'The EMP will specify protective buffer zones around key retained habitats (e.g. woodland, mature broadleaved trees, ponds, species-rich grasslands and sections of watercourses). These will be specified in the EMP and relevant construction drawings, with reference to other appropriate documents, including Tree Protection Plans (TPPs), Construction Environmental Management Plan (CEMP) and standard industry guidance (e.g. BS5837:2012).'*<br><br>A full tree survey within the entire DCO boundary and Arboricultural Impact Assessment has not been undertaken. Therefore, we advise a full tree survey within the entire DCO boundary and Arboricultural Impact Assessment is required. The survey should assess potential impacts to ancient woodlands and veteran trees. Tree protection measures will need to be secured in the DCO through the OLEMS to include Tree Protection Plans and an Arboricultural Method Statement. The Code of Construction Practice and Schedule of Mitigation will also require updating to include the above.<br><br>Where management of trees is required, we advise this must be completed by a qualified arborist to ensure tree health is not impacted. No construction activities should take place within veteran tree buffer zones. | |
| 27 | 2.3.2 OEMP<br><br>5.2 (Breeding Bird Report) | The Breeding Bird Survey Report states that, *'In more sensitive areas of the DCO boundary for breeding birds, it will not be possible to complete a comprehensive check for the presence of active birds' nests, and for the ecologist to be able to confirm the locations of any such nests (thereby allowing avoidance of it).'*<br><br>The EMP makes no mention of this. For all sensitive habitats, Natural England advises clearance works must take place outside of the main breeding bird season (which runs from March to August inclusive).<br><br>As advised in the *Breeding Bird Survey Report,* in the following sensitive habitats, all clearance works must be carried out outside of the main bird nesting season (which runs from March to August inclusive):<br><br>• 'Landfall including Weybourne Camp where ground nesting birds such as grey partridge and meadow pipit are breeding in higher densities<br>• Mangreen Quarry where the Schedule 1 species, little ringed plover, is breeding<br>• Woodland areas such as the area of woodland near Ringland | |

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| | | We advise the area outlined for tree clearance in Weybourne Wood to be undertaken in the autumn (September to November inclusive) to avoid impacts during the main breeding season and to the Schedule 1 species crossbill which breeds from January until April. | |
| 28 | 2.3.2 | '*If active birds' nests are found, these will be retained in situ and allowed to reach their natural conclusion without being disturbed or damaged*.'<br><br>There is no mention of a buffer areas for protection of birds' nest if any are found on site during construction.<br><br>Where vegetation removal does not take place outside of the main breeding bird season and active birds' nest are found, a suitable buffer must be put in place to protect the nest until the young have fledged. The buffer area should be based on species type and sensitivity and should be advised by the ecologist but should be at least 5m and marked out with posts and tape to prevent accidental disturbance. | |
| 29 | 2.3.2 | It is noted that clearance of ground vegetation may be required to deter birds such as skylark nesting within the construction area, though there is no mention of timings. Where clearance of ground cover is required for determent of skylarks Natural England advises this should be carried out outside of the main breeding bird period, which extends from March to August. | |
| 30 | 2.3.3 | Soft-felling of trees assessed as having moderate and high potential for roosting bats should be carried out. Bats will roost switch regularly. As such, Natural England recommends soft-felling of trees requiring management/removal should be carried out even where further pre-construction surveys find no bats to be roosting.<br><br>Due to the mobile nature of bats, where medium and high potential trees are to be impacted, soft-felling should be carried out where trees require removal/management to ensure that individuals are not harmed.<br><br>Note, where roosts are confirmed present an EPS mitigation licence will be required and mitigation provided as detailed in the licence. | |
| 31 | 2.3.5 | The *Otter and Water Vole Survey Report* states that '*In order to mitigate this possible impact, Construction Exclusion Zones (CEZ) will be established within 10m of all ten watercourses (i.e. all watercourses which provide suitable habitat for riparian mammals, including the one at Furze* | |

| Point | Section | Natural England's Comment | Risk |
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| | | *Meadow near Ketteringham in which no signs were found).'* However, there is no reference to this in the OEMP.<br><br>Natural England advises a 10m Construction Exclusion Zone is established within 10m of the watercourses providing suitable habitat for riparian mammals and detailed in the OLEMS. | |
| 32 | 2.3.6 | The Reptile Survey Report states that pre-construction walkover survey of the DCO boundary will be completed to identify any new areas of suitable reptile habitat which become established in the period between surveys and construction (Section 4.4). This is not included in the OEMP. The document does not detail sites in which translocation is required.<br><br>We advise a pre-construction survey for reptiles is included in the OLEMs. Details of sites where translocation is required and details of the translocation site (e.g. location, suitability) are to be provided in the OLEMS. | |
| 33 | 3.3.7 | Though a DLL for great crested newts will be applied, Reasonable Avoidance Measures (RAMs) should still be implemented.<br><br>Natural England recommends RAMS is implemented and details provided in the OLEMS. | |
| 34 | 4 | Post-construction mitigation measures are not detailed for all protected species.<br><br>We advise the OLEMS contains a commitment to post-construction surveying/monitoring for designated habitats and species that will be affected. | |
| Document Used: [APP-224] 6.3.20.11 Invertebrate Survey Report | | | |
| 35 | Section 6 | The *Invertebrate Survey Report* states that *'Manipulation of dune communities to create mobile dune systems, with associated bare ground and habitat niches, are encouraged in other areas in the UK through the Dynamic Dunescapes initiative'.*<br><br>Natural England advises this mitigation should be included in the OLEMS. | |
| 36 | 6.1 | Several pre-works and post-construction mitigation measures are proposed in the *Invertebrate Survey Report* but are not included in the Outline Ecology Management Plan.<br><br>We advise Pre-works and post-construction mitigation measures for invertebrates to be detailed in the OLEMS and Schedule of Mitigation and Mitigation Route Map. | |

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| 37 | 7 | Construction Exclusion Zones have been recommended in the *Invertebrate Survey Report but have not been included in the OLEMS.* Natural England advises Construction Exclusion Zones to be implemented and detailed in the OLEMS. | |
| Document Used: [APP-129] 6.2.18 Chapter 18 Water Resources and Flood Risk | | | |
| 38 | 18.6.1.1.1 Para 106<br>18.6.1.3 Para 133<br>18.6.1.2.3 point 128<br>Table 18-35 | The Applicant acknowledges the risk of bentonite breakout during the use of trenchless crossings to cross watercourses and associated floodplain wetland systems. However, it is also stated that, '*The use of trenchless crossing techniques means that there is no impact in the majority of water bodies*.' Natural England advises the potential for bentonite to occur should be included within the assessment of impacts to watercourses. If there is a potential for breakout then there is the potential for an impacts.<br><br>Natural England advises that further clarity is provided in the documents provided on HDD tolerance monitoring, how quickly bentonite release can be stopped, or an assessment of a worst-case scenario bentonite breakout considering extent, timings, and environmental impacts. We recommend the Applicant provides information on HDD tolerance monitoring, how quickly bentonite release can be stopped, or an assessment of a worst-case scenario bentonite breakout considering extent, timings, and environmental impacts.<br><br>Sediment increases as a result of bentonite breakout should also be considered with regards to lamprey species which are present in several watercourses including Swannington Beck where its *'high sensitivity would combine with a low magnitude of effect to create an impact of moderate adverse significance'* as a result of increased sediment supply.<br><br>In Table 18-35 the potential for cumulative impact due to an increase supply of sediment is assessed as 'moderate adverse' for Swannington Beck and the River Wensum for residual impacts.<br><br>Natural England advises the restoration of the HDD compound on the flood plain of the river Wensum should be restored in accordance with the River Wensum Restoration Strategy and the River Wensum SAC conservation objectives. The conservation objectives require supporting processes (on which the features rely) are maintained. The target for water quality is to achieve at least good chemical and biological status. The potential impacts of HDD breakout and | |

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| | | bentonite breakout and chemicals used to stop and clear up breakouts should be assessed against water quality guidelines.<br><br>Further, potential impacts to white-clawed crayfish in the event of a breakout must also be assessed and a suitable emergency plan put in place.<br><br>The potential impact of an HDD breakout is not included in the assessment for Increased Sediment Supply. We advise the potential impact of an HDD breakout on features of interest and their supporting habitats should be assessed. | |
| Document Used : [APP-130] 6.2.19 Chapter 19 Land Use, Agriculture and Recreation | | | |
| 39 | 19.7.1.4<br>Para 140 | 'The study area also crosses two Higher CSS agreements, and ten Middle CSS agreements' We advise the Applicant must consult the Rural Payments Agency at the earliest opportunity to discuss the impacts to schemes.<br><br>In addition, mitigation should be provided to ensure that species of Page 117 of 141 conservation note are not unduly impacted by the projects. | |
| 40 | 19.7/1.9 | Open cut techniques will cross several Public Rights of Way (PRoW). Though trenchless crossing methods will be used to cross the Norfolk Coastal Path it is noted that access restrictions may occur during the short term.<br><br>Any diversions of recreational routes must not impact upon protected species or habitats. | |
| 41 | 19.7.2.2.3<br>Para 200 and 203 | The development will result in a '*permanent loss of less than 10ha of ALC grade 3 land*' (assumed to be Grade 3a BMV agricultural land). It is noted that *'this represents a small proportion of the county resource. Therefore, the impact to agricultural productivity is still considered to be an effect of low magnitude'* and that with the implementation of mitigation the residual impact significance would be minor adverse. Mitigation measures include private agreements with landowners regarding any permanent land losses, however, it is not clear how these private agreements will mitigate for the permanent loss of the agricultural land?. | |

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| | | Natural England seeks clarification as to what the opportunities are for mitigation and details of mitigation measures that will reduce the impact to minor adverse to be detailed in the OLEMS and for consideration as to how these will be secured through the DCO. | |
| 42 | 19.7.2.2 .6<br>Para 203 | Table 19-23 states the residual impact for the permanent loss of land for agriculture as Moderate Adverse. However, this is noted as Minor Adverse in the Potential Impacts During Operations Section.<br><br>Clarification is needed here as to whether the residual impact will be moderate adverse or minor adverse. | |
| 43 | 19.8.3.2 | The cumulative impact during construction for temporary loss of land for agricultural and soil degradation and loss of soil to erosion are given as minor adverse as each project has committed to best practice mitigation.<br><br>Natural England encourages some communication between plans/projects to ensure mitigation covers all areas of concern. | |
| 44 | 19.8.3.7<br>Point 267 | It is noted that there is potential for an increased area of permanent loss of agricultural land to occur and the potential for cumulative impacts to be present which may be greater than SEP and DEP alone. *'Additional mitigation measures may be required, including an agricultural survey to determine whether the land associated with the onshore substations is Grade 3a or 3b i.e. is the land included within the BMV banding which would increase its sensitivity.'*<br><br>Natural England advises additional mitigation measures and agricultural surveys must be detailed in the OLEMS and consideration should be given to how there will be secured in the DCO. | |
| 45 | 19.12 | It is stated that, *'Monitoring is proposed for land use, agriculture and recreation via the Outline Landscape Management Plan (OLMP) (document reference 9.18)'.* However, there appears to be no mention of this in the OLMP.<br><br>We advise monitoring is detailed in the OLEMS and consideration as to how these measures will be secured through the DCO. | |

| Point | Section | Natural England's Comment | Risk |
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| Document Used: [APP-214] 6.3.20.1 Extended Phase 1 Habitat Survey Report | | | |
| 46 | 4 | Figure 1: 'Tree map' Showing Proportional Spatial Coverage of Broad Habitat Categories within the DCO Boundary does not display properly within the report. Editing error - Map to be replaced. | |
| Document Used: [APP-216] 6.3.20.3 Static Bat Detector and Transect Survey Report | | | |
| 47 | Executive Summary | It is noted that '*the survey effort focused on areas within the onshore cable corridor that had been identified as likely to be key sites for commuting and foraging bats and/or areas where impacts were considered most likely, namely the onshore substation site*.' However, though Alderford Common SSSI lies outside of the DCO limits, is within 180m west of one of the areas of the static bat detector surveys and yet the common itself does not appear to have been surveyed, despite known roosts and hibernacula known at the common, plus providing suitable foraging habitat suitable foraging and commuting habitats connects the common to the site.<br><br>It is noted that the River Wensum and Swannington appear the most important for barbastelle. However, there is a lack of survey data for this area with no transect or static data available for what is potentially an important foraging and commuting area (around Alderford Common SSSI). Sites outside of the DCO boundary that provide suitable foraging and roosting habitats, functionally linked and core sustenance zones should be considered for surveys and evidence presented as to why surveys are not required. | |
| 48 | Section 3.5 | Core Sustenance Zones (CSZ) have been considered around barbastelle maternity sites. However, it is not clear whether they have been considered for other potentially important areas, e.g. Alderford Common SSSI and for other species of bats.<br><br>Natural England queries whether Core Sustenance Zones been considered for other potentially important areas and other bat species? Does the DCO boundary overlap with CSZ in other areas? Alderford Common lies within 180m west of the DCO boundary and there is good connectivity between the site and the DCO boundary. Connecting and supporting habitats should also be considered. | |
| 49 | Executive Summary<br><br>Section 5.1 | The data shows that the *'areas around the River Wensum and Swannington appear the most important for barbastelle, with the area being of District scale conservation importance to bats.*' This is further supported by data searches and unseen data from Wild Wings Ecology which '*purports to show a meta-population of barbastelle bats, considered to be of international* | |

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| | | *importance, located around the River Wensum corridor and nearby woodlands in the general area between Lenwade and the A47*.' The River Wensum is considered to be of high importance for bats.<br><br>Considering the above information, the Onshore Ecology chapter (20.6.1.11.1, Point 301) concludes that the magnitude of impact for all scenarios '*could be permanent due to irreversible damage to bat populations which could feasibly arise due to loss of important roosts (such as maternity or hibernation roosts) or substantial mortality of individual animals, particularly where this relates to rarer species such as barbastelle, Myotis species or serotine*.'<br><br>The area around Lenwade, Weston Longeville, Swannington, Ringland has been identified for its significance for important colonies of bats plus important foraging and commuting routes. We advise that loss of habitat should be minimised and impacts are minimised within this area to avoid irreversible damage to habitats and therefore species. Sufficient mitigation should be included in the OLEMS and secured with post-monitoring surveys completed. | |
| 50 | Executive Summary<br><br>Table 20-15 Onshore Ecology & Ornithology [APP-131]<br><br>Also 20.7.3.1<br><br>Point 368 | The DCO boundary passes through woodland areas at Ringland Covert, Colton Wood. It is noted that '*the data from 2021 suggests that the river sites and Ringland Covert are sites for foraging bats, including some rarer species, namely barbastelle, Myotis species and serotine*.'<br><br>In combination - The route for the Norwich Western Link Road crosses the SEP and DEP cable route. This may have direct and / or indirect cumulative effects on commuting, foraging and roosting bats. The point at which the projects overlap is within an area important for a range of roosting, foraging and commuting bat species, including an important barbastelle colony.<br><br>[APP-131] Table 20-15 (Onshore Ecology & Ornithology) states that the Norwich Western Link project, '*will be subject to a planning process requiring appropriate mitigation measures to be implemented therefore limiting the potential for cumulative effects to occur.*' However, it is not clear if the impacts will be fully mitigated to an acceptable level; therefore, there is the potential for there still be cumulative impacts from the residual impacts.<br><br>It is unclear whether mitigation measures will be sufficient. Natural England encourage some communication between plans/projects to ensure mitigation covers all areas of concern.<br><br>We emphasise the importance of minimising habitat loss, fragmentation and disturbance to roosting and foraging and/or commuting bats. | |

| Point | Section | Natural England's Comment | Risk |
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| 51 | Figure 4.10 Onshore Project Area – Sheet 11 of 18 | Figure 4.10 Onshore Project Area shows an Open cut technique used for a section of Scotchwood Hills, this area is important for foraging, commuting and roosting bats, in particular barbastelle (see above) in combination with the proposed Western Link.<br><br>Natural England recommends trenchless technique should be considered here to minimise impacts to important colonies of bats. | |
| 52 | 3.1 | Habitats such as woodlands, waterbodies and grassland will provide suitable foraging habitat for bats and as noted, may also support roosting bats. However, the Static Bat Detector and Transect Survey Report does not mention the impacts to potential roosts within habitats. The Bat (Roosting) Report focuses on trees/structures within the PEIR boundary, but there is no mention of potential impacts to existing/known roosts within habitats that may be affected and those that may be functional linked e.g. Alderford Common SSSI.<br><br>Pre-construction roosting surveys should consider potential impacts to existing roosts within habitats as well as trees and structures and should include hibernation roosts. | |
| 53 | 4.12 | It is unclear why only a 50m buffer has been applied for the NBIS data search for bats, '*they were only included in the results where the location of the record was within approximately 50m of the DCO boundary or well connected to the boundary via good quality habitat such as woodland and rivers*.'<br><br>Given the mobile nature of bats the proposed 50m buffer requires further justification.<br><br>Though Core Sustenance Zones (CSZ) have been used for barbastelle maternity colonies within the Weston area, it is not clear whether these have been used for other key areas. Natural England would advise using CSZ when assessing impacts to bats and their habitats and consulting MAGIC to identify the presence of any protected species licence in the PEIR boundary, or within the zone of influence of the proposed development. | |
| 54 | 4.1<br>4.3<br><br>5.1 | The report states that in several locations the registration times of bat recordings suggests roosts may be located in the vicinity.<br><br>'*Of particular note are the significant number of barbastelle registrations…. This site recorded the highest number of registrations for barbastelle across all sites surveyed for bats. Timings suggest there could be a maternity roost or roosts nearby*.' | |

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| | 4.13 | Also of note are the registration times at Weybourne Woods suggesting there may be roosts located in the vicinity. There will be removal of trees within this area which could impact upon commuting and/or foraging and roosting bats.<br><br>It is not clear why the results of the bat static surveys were not used to inform assessments of trees where static detector survey data suggest roosts within close proximity to the DCO boundary. '*Where analysis has revealed bat activity close to sunset/sunrise times, this can be indicative of nearby roost locations. However, a different survey approach (i.e. emergence/re-entry surveys of potential roost features) would be required to confirm the location of any roosts*.'<br><br>Natural England advises that further clarity is needed as to why these areas where potential maternity roosts /trees with potential to support roosting bats within close proximity to the DCO boundary were not surveyed. Consideration needs to be given to Core Sustenance Zones (CSZ) and connecting and supporting habitats to avoid disturbance and impact to foraging and roosting bats. | |
| Document Used: [APP-223] 6.3.20.10 Bat (Roosting) Survey Report | | | |
| 55 | General | The report states that*, 'trees within the onshore cable corridor were appraised for their potential to support roosting and hibernating bats.'* It is not clear whether the results of the bat static surveys were used to inform assessments of trees where static detector survey data suggest roosts within close proximity to the DCO boundary. The Static Bat Detector and Transect Survey Report (Section 4.13) states that *'Where analysis has revealed bat activity close to sunset/sunrise times, this can be indicative of nearby roost locations. However, a different survey approach (i.e. emergence/re-entry surveys of potential roost features) would be required to confirm the location of any roosts.'* This implies further surveys of these areas have not been carried out.<br><br>Further clarity is required if trees were surveyed where static data suggested roosting in close proximity. | |
| 56 | 4.2 | Natural England notes hibernation surveys of trees have not been carried out. Hibernation roosts represent important habitats and bats are a highly mobile species and the report states that, '*It should be noted that none of the 13 trees subject to nocturnal emergence/re-entry surveys were considered to have significant hibernation roost potential.'* Though not considered to provide | |

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| | | optimal conditions for hibernating bats 'the use of tree roosts for transition or opportunistic roosting during mild weather in winter months cannot be ruled out.'<br><br>Natural England advises pre-construction surveys should include a re-assessment of hibernation potential and where hibernation potential exists, further surveys should be carried out where trees will be impacted. Where trees are to be removed/managed trees should be soft-felled outside of the main hibernation and maternity roosting period. Suitable periods for this are usually September to October and end of February to March, depending on weather conditions. | |
| 57 | 4.4 | The report mentions that trees assessed as having Low bat roost potential will be soft-felled if suitable roosting features exist.<br><br>Natural England advises soft-felling should be carried out as a precautionary measure on those trees with potential for roosting bats, even where bats have not been identified as roosting during surveys.<br><br>Bats are a mobile species and will switch roosts regularly. Please note that trees with confirmed bat roosts will be subject to an EPS mitigation licence in which standard mitigation includes soft-felling of features. | |
| Document Used: [APP-217] 6.3.20.4 Wintering Birds Survey Report | | | |
| 58 | General | Natural England advises that Annex I Pink Foot Geese as our primary concern and will work with the Applicant to implement standard mitigation measures for this species. Natural England/Applicant will be able to share more information on this prior to the start of Examination | |
| Document Used: [APP-218] 6.3.20.5 Breeding Bird Survey Report | | | |
| 59 | 5.1 | It is noted that, '*A thorough check can only be carried out on small areas such as sections of hedgerows; in larger areas particularly woodland and extensive areas of vegetation, it will not be possible to definitely rule out the possibility of secretive nesting species, so in such cases it will be necessary to time works accordingly to avoid the main bird nesting season.'*<br><br>In such instances we advise work should only take place outside of the main breeding bird season to avoid disturbance and/or killing/injury to breeding birds. | |
| 60 | 6.3.20.5 – Breeding Bird Report<br><br>Section 5.5 | The Breeding Bird Report outlines habitat creation for breeding birds. Natural England advises this should be included in the scheme. | |

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| | | We recommend habitat creation is detailed in the OLEMS. This should include details of enhancements following consultation with landowners and other stakeholders. | |
| 61 | 5. | It is noted that, *'These pre-emptively cleared areas would likely require pre-construction checks by an ecologist to confirm the absence of nesting birds, but this habitat manipulation should successfully deter most nesting bird activity from these areas'.*<br><br>Natural England advises a pre-construction check of such areas should be carried out by a suitably qualified ecologist to ensure absence of nesting birds. This as well as habitat manipulation should be detailed in the OLEMS. | |
| Document Used: [APP-219] 6.3.20.6 Initial Biodiversity Net Gain Assessment.pdf | | | |
| 62 | 4.2 | Natural England welcomes SEP and DEP's voluntary commitment to achieve BNG.<br>Much of the DCO order limits runs through arable fields defined by hedgerows. Biological Net Gain is partly focused on hedgerow habitats, including in-filled and new hedgerows. Hedgerows and treelines provide important connectivity and foraging habitat to a range of species including, nesting birds, foraging and commuting bats, badgers, hedgehogs, amphibians, invertebrates, and reptiles, the Applicant should ensure this approach is adhered to. There may be opportunities to enhance habitats for reptiles.<br><br>Natural England welcomes that BNG details are being considered for hedgerows within the OLEMS and the proposed ecological mitigation and enhancement package.<br><br>We recommend restoration of important habitats, such as hedgerows and SSSIs (including the River Wensum and Alderford Common SSSI) should be focused on for BNG.<br><br>Natural England emphasises the importance of ensuring restoration to address potential impacts around particular areas, such as those used by roosting, foraging and commuting bats (e.g. near the River Wensum, Alderford Common SSSI).<br><br>We emphasise the importance of enhancing and creating new connectivity between habitats. | |
| 63 | | Natural England considers it is important that a that a landscape scale approach is applied with a clear strategy of how measures can be delivered across a wider area beyond the compulsory purchase corridor of the route. Measures to create new, restore existing and link severed or isolated habitats across the wider area should be incorporated, with the focus on wetland and woodland habitats. | |

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| | | Natural England emphasises the importance of first following the mitigation hierarchy, with BNG additional to this.<br><br>To be secured this approach should also Biodiversity Net Gain should be secured. | |
| Document Used: [APP220] 6.3.20.7 Onshore Ecology Desk Study | | | |
| 64 | 3.1 | The search area for '*online resources was also subsequently refined in November 2021 to cover only the area within 2km of the DCO boundary*'. It is unclear if this information involves the use of the Impact Risk Zone layer to inform the decision. Clarification should be requested. | |
| Document Used: [APP-221] 6.3.20.8 Reptile Survey Report | | | |
| 65 | 4.3 | It is noted that refuge mats were destroyed at three sites resulting in incomplete survey data for those sites. '*At both the River Tud and Valley Farm, Swardeston reptile survey sites, interference with the refuges from cattle was so extensive that these surveys had to be aborted as the majority of refuges were regularly destroyed each time they were redeployed.'*<br><br>*'A number of the refuges'* were also destroyed at the Muckleburgh Collection, the area at which the landfall compound will be set up. Two of the 15 sites surveyed sites were also located outside of the DCO boundary.<br><br>Several surveys were subject to suboptimal weather with temperatures outside of the optimal conditions and many surveys carried out in overcast conditions. Although adverse weather only affected a small proportion of the surveys, this is in addition to the above constraints mentioned.<br><br>Clarity is required regarding the completeness and validity, and therefore the robustness, of the survey data. We advise sufficient mitigation must be employed and detailed in the OLEMS. | |
| Document Used: [APP-225] Appendix 20.12 - National Vegetation Classification (NVC) Survey Report | | | |
| 66 | Section 6 | Several pre-works and post-construction mitigation measures are proposed in the Invertebrate Survey Report that overlap with mitigation for important plant assemblages.<br><br>For audit trial purposes and avoidance of doubt Natural England recommends details should be included in the Outline Management Plan. See reference to Invertebrates within the OLEMS comments | |

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| 67 | Section 6 | The report states, '*Clearly the impacts will need to be taken into account in any Biodiversity Net Gain calculation. The landowner has put forward some enhancement proposals across the site which may help to offset any further negative impacts if tied in with the project.'* Natural England reminds the Applicant the mitigation hierarchy should be adhered to in the first instance. Biodiversity Net Gain is additional to this.<br><br>Impacts should be avoided and mitigated for in the first instance. We welcome the inclusion of measures for habitats and protected species to be incorporated into the Biodiversity Net Gain. However, these measures must be additional to the mitigation required to avoid/reduce/mitigate for impacts. | |
| Document Used: [APP-226] 6.3.20.13 Appendix 20.13 - Riparian Mammals (Water Vole and Otter) Survey Report | | | |
| 68 | Sheet 2 of 6 Otter and Water Vole Survey Report<br><br>Sheet 11 of 14 - Habitats of Protected Species Figure and Figure 4.10 Onshore Project Area – Sheet 5 of 18 | Water vole presence (water vole feeding sign) is noted near Little Barningham along a stream. The method of crossing at this section is not detailed as open cut or HDD. The area does not appear to be a stream/ditch on the habitat map but is described in the *Otter and Water Vole Survey Report* as '*unnamed ditch south of Little Barningham, which is part of a tributary of the River Bure'* and appears to be a watercourse as does on Google maps.<br><br>Natural England advises clarification of the type of habitat at this area and crossing method for this location to be detailed. | |
| Document Used: [APP-228] 6.3.20.15 Arboricultural Report | | | |
| 69 | General | The Arboricultural Report is not an Arboricultural Impact Assessment.<br><br>Natural England advises a full tree survey within the entire DCO boundary is required prior to work on the onshore cables commencing. This should highlight any ancient/veteran trees to avoid and then using micro-siting and HDD to avoid these trees and should inform an arboricultural impact assessment.<br><br>An arboricultural impact assessment will inform a method statement to detail specific measures for tree protection to include figures and tree root protection zones must be included in the OLEMS and should be secured. | |

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

**Appendix J to the Relevant Representations of Natural England**

**Legislative and Policy Framework**

For:

The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference EN010109

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14th November 2022

## Appendix J Legislative and Policy Framework

# 1. INTRODUCTION

## 1.1. Purpose and structure of these representations

1.1.1. These Representations are submitted in pursuance of rule 10(1) of the Infrastructure Planning (Examination Procedure) Rules 2010 ('ExPR') in relation to an application under the Planning Act 2008 for a Development Consent Order ('DCO') for the construction and operation of two offshore wind farms called Sheringham Extension Project (SEP) and Dudgeon Extension Project (DEP) Offshore Wind Farms ('the Projects') submitted by Equinor, ('the Applicant') to the Secretary of State. The wind turbines ("the Array") are situated approximately 16km and 27km from the North Norfolk Coast in the Southern North Sea, with the export cables proposed to make landfall at Weybourne, Norfolk, and the grid connection at Norwich sub-station. The offshore wind farm will be used for the generation of electricity.

# 2. STATUS AND FUNCTIONS OF NATURAL ENGLAND AND JNCC

## 2.1. Natural England

2.1.1. Natural England is a statutory body established under the Natural Environment and Rural Communities Act 2006 ('NERC Act'). Natural England is the Government's statutory advisor on the natural environment, helping to protect England's nature and landscapes for people to enjoy and for the services they provide. Natural England is an executive non-departmental public body, sponsored by the Department for Environment, Food and Rural Affairs ('Defra'). It provides advice to Government and others, forming its own views based on the best scientific evidence available.

2.1.2. Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promoting access, recreation and public well-being, and contributing to the way natural resources are managed so that they can be enjoyed now and by future generations.

2.1.3. Section 2 of the NERC Act provides that Natural England's general statutory purpose is:

*'… to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.'*

2.1.4. Section 2(2) states that Natural England's general purpose includes:

a. promoting nature conservation and protecting biodiversity;

b. conserving and enhancing the landscape;

c. securing the provision and improvement of facilities for the study, understanding and enjoyment of the natural environment;

d. promoting access to the countryside and open spaces and encouraging open-air recreation; and

e. contributing, in other ways, to social and economic well-being through management of the natural environment.

2.1.5. Natural England is required to keep under review all matters relating to its general purpose,[1] and to provide public authorities with advice where they request this.[2] Natural England's remit extends to the territorial sea adjacent to England, up to the 12 nautical mile limit from the coastline.[3]

2.1.6. Natural England is a statutory consultee in respect of (amongst other matters):

a. all applications for consent for Nationally Significant Infrastructure Projects which are likely to affect land in England;[4] and

b. the environmental information submitted pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations').[5]

c. Plans or projects that are subject to the requirements of the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations') or the Offshore Marine Conservation (Natural Habitats etc) Regulations 2017 ('Offshore Regulations') which are likely to have a significant effect on European protected sites – that is, sites designated as Special Areas of Conservation ('SACs') (and candidate SACs ('cSACs'))[6] and Special Protection Areas ('SPAs') and

[1] NERC Act, s.3(1).
[2] NERC Act, s.4(1).
[3] NERC Act, s.1(3).
[4] Planning Act s.42; Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, reg. 3 and sched.1.
[5] Regs. 3(1), 10(6), 11(1), 16(2)(b), 20(3)(g), 22(3)(f), 24(5)(f) of the EIA Regs.
[6] As a matter of law cSACs are protected as they are included within the definition of 'European site' set out at regulation 8 of the Habitats Regs. A cSAC is the term given to sites which Member States have decided are Sites of Community Importance ('SCI') within their borders containing either species prescribed in Annex II of the Habitats Directive or which have Annex I habitat types. Sites containing priority habitats or species must be listed as SCIs and then designated as SACs. These sites are known as cSACs until such time as those sites are confirmed as SACs or a decision is taken that they should not be SACs.

potential SPAs ('pSPAs')[7] for the purposes of the EU Habitats and Birds Directives – in England;[8]

d. proposals likely to damage any of the flora, fauna or geological or physiographical features for which a Site of Special Scientific Interest ('SSSI') has been notified pursuant to the Wildlife and Countryside Act 1981 (as amended) ('WCA 1981');[9]

e. proposals relating to the English territorial sea capable of affecting, other than insignificantly, any of the protected features of a Marine Conservation Zone ('MCZ') or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent, where the Examining Authority believes that there is or may be a significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ.[10]

2.1.7. It is also the Government's policy to consult Natural England in respect of sites listed for the purposes of the Convention on Wetlands of International Importance especially as Waterfowl Habitat signed at Ramsar on 2 February 1971 ('Ramsar sites'), as if they were European protected sites.[11]

2.1.8. In addition, Natural England performs duties relating to SSSIs under the WCA 1981, and in relation to European protected sites and species under the Habitats Regulations.

## 2.2. Authorisation to delegate

2.2.1. The Examination Authority should note that pursuant to an authorisation made on the 9th December 2013 by the JNCC under paragraph 17(c) of Schedule 4 to the Natural Environment and Rural Communities Act 2006, Natural England is authorised to exercise the JNCC's functions as a statutory consultee in respect of applications for offshore renewable energy installations in offshore waters (0-200 nm) adjacent to England. This application was included in that authorisation and therefore Natural England will be providing statutory advice in respect of that delegated authority.

# 3. LEGISLATIVE FRAMEWORK

[7] As a matter of policy, the Government expects public authorities to treat pSPAs as if they are fully designated European Sites, for the purpose of considering development proposals that may affect them. National Planning Policy Framework (July 2018), para 176; PINS Advice Note 10: Habitats Regulation Assessment for nationally significant infrastructure projects, p.3.

[8] Regulation 63 of the Habitats Regs; regulations 24(1) and (3) and 25(3)(b) of the Offshore Regs.

[9] Section 28E(1) of the 1981 Act.

[10] Marine and Coastal Access Act 2009, ss.126(2) and 147(1). The first MCZs were designated in 2013. It is submitted that where an expanse of sea is under consideration for designation as an MCZ this is a material consideration.

[11] Revised National Planning Policy Framework (July 2018), para 176; PINS Advice Note 10: Habitats Regulation Assessment for nationally significant infrastructure projects, p.3.

## 3.1. Environmental Impact Assessment

3.1.1. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2010 ('EIA Regs') transposed Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (as amended). That directive and its amending instruments have since been repealed and replaced by consolidated Council Directive 2011/92/EU ('the EIAD'). Development consent cannot lawfully be granted for EIA development unless there has been substantial compliance with the EIA Regs.[12]

3.1.2. The descriptions in the schedules apply broadly, and are not to be interpreted as mutually exclusive 'pigeonholes'.[13] In assessing whether a development is likely to have a significant effect on the environment, the Planning Inspectorate must have regard to criteria in Schedule 3 of the EIA Regs.[14]

3.1.3. Where the Examining Authority is considering adopting a scoping opinion in which it specifies what information should be required in the environmental statement (ES), it must consult Natural England in respect of proposed applications likely to affect land in England and the marine environment.[15]

3.1.4. The ES must meet the requirements of Schedule 4 to the EIA Regulations. These include providing:

a. an outline of the main alternatives studied by the Applicant and an indication of the main reasons for the Applicant's choice, taking into account the environmental effects;

b. a description of the development, its construction and operation phases, its production processes, and an estimate by type and quantity of its emissions and residues;

c. a description of the aspects of the environment likely to be significantly affected by the development including air, water, soil, fauna and flora, and landscape;

d. a description of the likely significant effects of the development on the environment, including direct, indirect, secondary, cumulative, long- and short-term, temporary and permanent effects;

e. a description of the measures envisaged in order to prevent/avoid, reduce and remedy/offset the significant adverse effects on the environment;

[12] *Berkeley v SSE* [2001] 2 AC 603, HL which also concerned the materially identical Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999..

[13] *R(Warley) v Wealden DC* [2011] EWHC 2083 (Admin) at [41]-[44] and [63]-[64] per Singh J, in relation to the materially identical Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

[14] EIA Regs, reg 7(1).

[15] Regulation 8(6) of the EIA Regs.

f. the data required to identify and assess the main effects which the development is likely to have on the environment.

3.1.5. Regulation 3(2) of the EIA Regs provides that a DCO must not be made unless environmental information has been taken into consideration. 'Environmental information' means the required ES, including any further information requested, any other relevant information, and any duly made representations made about the environmental effects of the development and of any associated development.[16] The ES must meet the required standard before consent may be granted.[17] Consideration of the environmental information must be done conscientiously. Where the development qualifies as EIA Development consent will be unlawful if the decision ignores issues relating to the significance of environmental impacts or the effectiveness of mitigation.[18]

## 3.2. Duty to conserve biodiversity

3.2.1. Section 40 of the NERC Act imposes a '*duty to conserve biodiversity*' on public authorities, and as a minimum they should have regard to conserving biodiversity, including members of the Examining Authority and the Secretary of State. In pursuance of this, section 40(1) states:

*'Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.'*

3.2.2. For the purposes of the NERC Act, conservation includes restoring or enhancing a habitat or population of organisms.[19] The Secretary of State must in particular have regard to the Convention on Biological Diversity when performing their duty.[20]

3.2.3. Section 41 of the NERC Act requires the Secretary of State to publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity in England. Section 41(3) states:

'the Secretary of State must–

(a) Take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or

(b) Promote the taking by others of such steps.'

## 3.3. European Sites

3.3.1. The Secretary of State and the individual members of the Examining Authority are each a 'competent authority' for the purposes of the Habitats Regulations, with a duty to have regard to the requirements of Council Directive 92/43/EEC of 21 May

[16] EIA Regs, reg. 2(1).
[17] *R v Cornwall CC, ex p Hardy* [2001] Env LR 25.
[18] *Smith v SSETR* [2003] EWCA Civ 262.
[19] NERC Act, s.40(3).
[20] NERC Act, s.40(2).

1992 on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds ('the Wild Birds Directive').[21] So far as lies within their powers, a competent authority in exercising any function in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds.[22]

3.3.2. The Secretary of State is also the 'appropriate authority' for the purposes of the Habitats Regulations.[23] They must accordingly exercise their functions which are relevant to nature conservation so as to secure compliance with the requirements of the Habitats Directive and Wild Birds Directive.[24] The Secretary of State must furthermore take such steps as they consider appropriate to secure the objective of the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of article 2 of the Wild Birds Directive.[25]

3.3.3. The Wild Birds Directive applies to all species of naturally occurring birds in the wild state in the European territory of the UK, including their nests, eggs and habitats.[26] Article 2 of the Wild Birds Directive requires populations of wild birds to be maintained 'at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements'.[27] Article 3 requires Member States, in the light of Article 2, to 'take the requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats'. Article 5 requires Member States to take the requisite measures to establish a general system of protection for all their wild birds, prohibiting the deliberate killing or capture, deliberate destruction or removal of nests and eggs, and deliberate disturbance of the birds insofar as this is significant having regard to the objectives of the Directive. Article 4 requires SPAs to be established in respect of particular species, in order to ensure the survival and reproduction of these species in their area of distribution. In respect of SPAs, Article 4 requires that the Member States 'shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article'. It also requires that 'outside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats.' Article 13 provides that application of measures taken pursuant to the Directive may not lead to a deterioration in the present situation as regards the conservation of wild birds.

3.3.4. The Habitats Directive aims to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora. It provides that measures taken pursuant to the Directive shall be designed to maintain or restore,

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[21] Habitats Regs, regs 7(1)(a), 3(1), and 9(3). Directive 2009/147/EC has replaced Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds.

[22] Habitats Regs, reg.10(8)

[23] Habitats Regs, reg.3(1).

[24] Habitats Regulations, reg. 9(1) and (2).

[25] Habitats Regs, reg 10(1), (3)

[26] Wild Birds Directive, art.1.

[27] Wild Birds Directive, article 2.

at favourable conservation status, natural habitats and species of wild fauna and flora of community interest.[28] Member States, in consultation with the European Commission, must select and designate areas for protection as SACs pursuant to articles 3 and 4 of the Habitats Directive. Together with SPAs, these sites make up the Natura 2000 ecological network, which establishes a coherent ecological European network that enables 'the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range'.[29]

3.3.5. Article 6 of the Habitats Directive applies both to SACs and to SPAs.[30] Article 6(2) requires that Member States shall take appropriate steps to avoid, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of the Habitats Directive. Article 6(3) requires that any project not directly connected with or necessary to the management of the European site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site, the competent national authorities shall agree to the project only after having ascertained that it will not adversely affect the integrity of the site concerned, unless it meets the criteria for derogation.

3.3.6. If an adverse effect on the integrity of the site cannot be ruled out, then the effect of Article 6(4) is that the project may only be carried out where (i) there are no alternative solutions, (ii) it must go ahead for imperative reasons of overriding public interest, including reasons of a social or economic nature; and (iii) all compensatory measures necessary to protect the overall coherence of the Natura 2000 network are secured. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised as 'imperative reasons of overriding public importance' are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or such other matters contained in an opinion of the European Commission.[31]

3.3.7. SACs and SPAs are protected as European sites in inshore waters off England (up to 12 nautical miles) by the Habitats Regulations and in offshore waters (i.e. outside 12 nautical miles) by the Offshore Regulations, which transpose the relevant parts of the Habitats Directive into domestic law. The provisions of Article 6 of the Habitats Directive which are noted above are found at regulations 63, 64 and 68 of the Habitats Regulations and regulations 28, 29 and 36 of the Offshore Regulations. In determining these applications, the Secretary of State will be acting as a competent authority for the purposes of those Regulations.

[28] Habitats Directive, art.2.

[29] Habitats Directive, art.3(1).

[30] Habitats Directive, art. 6 applies to SACs and art.7 applies it to SPAs designated under the Wild Birds Directive.

[31] Regulations 64 and 68 of the Habitats Regulations, transposing Article 6(4) of the Habitats Directive.

3.3.8. The Regulations describe a sequence of steps to be taken by the competent authority in respect of a European site when deciding whether to authorise a project. Those steps are:

**Step 1** Consider whether the project is directly connected with or necessary to the management of the site?[32] If not —

**Step 2** Consider[33] whether the project is likely to have a significant effect on the site, either alone or in combination with other plans or projects. If such an effect cannot be excluded then –

**Step 3** Make an appropriate assessment of the implications for the site in view of its conservation objectives.[34] In so doing, the competent authority must consult Natural England[35] and have regard to its representations. If appropriate, it can also obtain the opinion of the general public.[36] The competent authority is also empowered to require the Applicant to provide information for the purposes of the appropriate assessment, or to enable the authority to determine whether such an assessment is required.[37]

**Step 4** Consider[38] whether the project will adversely affect the integrity of the site, having regard to the manner in which it is proposed to be carried out, and any conditions or restrictions subject to which that authorisation might be given (the 'Integrity Test').

**Step 5** The competent authority may agree to the plan or project **only after having ascertained that the project will not adversely affect the integrity of the site**.[39]

**Step 6** If the project fails the Integrity Test in respect of the site's conservation objectives, it can only proceed if the competent authority is satisfied that there are no alternative solutions[40] and that:

**Step 7** There are imperative reasons of overriding public interest for the project.[41] If these criteria are met, the competent authority must:

**Step 8** Secure any necessary compensatory measures to ensure the overall coherence of Natura 2000, implemented in the appropriate timeframe.[42]

3.3.9. The Directives are both to be construed purposively in the light of Article 191 of the Treaty on the Functioning of the European Union ('TFEU'). Article 191(1)

[32] Under regulation 63(1)(b) of the Habitats Regs or reg. 28(1)(c) of the Offshore Regs.
[33] Under regulation 63(1)(a) of the Habitats Regs or reg.28(1)(b) of the Offshore Regs.
[34] Under regulations 63(1) of the Habitats Regs.or 28(1) of the Offshore Regs.
[35] under regulations 63(3) of the Habitats Regs or 28(3)(b) of the Offshore Regs.
[36] under regulation 63(4) of the Habitats Regs or 28(3)(f) of the Offshore Regs.
[37] By regulation 63(2) of the Habitats Regs or 28 (2) of the Offshore Regs.
[38] Pursuant to regulation 63(5) and (6) of the Habitats Regs or 28(4) and (5) of the Offshore Regs.
[39] Applying regulation 63(5) of the Habitats Regs, subject to regulation 64, or reg 28(4) of the Offshore Regs subject to reg.26.
[40] in accordance with regulation 64(1) of the Habitats Regs or 29(1) of the Offshore Regs.
[41] in accordance with regulation 64(1) of the Habitats Regs or 29(1) of the Offshore Regs.
[42] As required by regulation 68 of the Habitats Regs or 36 of the Offshore Regs.

TFEU provides that 'Union policy on the environment shall contribute to the pursuit of the…objectives [of] preserving, protecting and improving the quality of the environment'; and Article 191(2) provides that Union policy on the environment shall aim at a high level of protection, and shall be based on the precautionary principle and on the principle that preventive action should be taken.

3.3.10. Further to this, case law of the Court of Justice of the European Union has established the following points:

a. Articles 6(2) and 6(3) are aimed at achieving the same level of protection. The Habitats Directive therefore requires that Member States take systematic and effective measures pursuant to Article 6(3) which guarantee the avoidance in fact of significant deterioration of the habitats or disturbance of the species for which SPAs and SACs have been designated.[43]

b. Article 6(3) of [the] Directive makes the requirement for an appropriate assessment of the implications of a plan or project conditional on there being a probability or a risk that that plan or project will have a significant effect on the site concerned. In light of the precautionary principle in particular, such a risk exists if it cannot be excluded on the basis of objective information that the plan or project will have a significant effect on the site concerned. It follows that the Habitats Directive requires that any plan or project undergo an appropriate assessment of its implications if it cannot be excluded on the basis of objective information that that plan or project will have a significant effect on the site concerned.[44]

c. Under Article 6(3) of the Habitats Directive, 'an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field'.[45]

d. 'An assessment made under Article 6(3) of the Habitats Directive cannot be regarded as appropriate if it contains gaps and lacks complete, precise and definitive findings and conclusions capable of removing all reasonable scientific

[43] CJEU, Case C-241/08 *Commission v France* at paras 30-36; Case C-535/07 *Commission v Austria* at paras 57-58.
[44] CJEU Case C-418/04 *Commission v Ireland* at paras 226 to 227; Case C-127/02, *Landelijke Vereniging tot Behoud van de Waddenzee v Staatsecretaris van Landbouw, Natuurbeheer en Visserij* at paras 43-45
[45] CJEU Case C-127/02 *Waddenzee* at para 61.

doubt as to the effects of the works proposed on the SPA concerned'.[46]

e. In the context of priority habitats within SACs, 'a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of SCIs, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal'[47] and these impacts should be appropriately assessed. Furthermore, the CJEU has held that the loss of SPA habitat cannot be mitigated for by not reducing the total SPA habitat or enhancing it. Instead, those compensatory measures should be considered, if necessary, under Article 6(4) and not as part of the appropriate assessment.[48]. As a matter of policy, this case law also applies to habitat designated under the Ramsar Convention.

f. In order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project (mitigation) on that site.[49]

## 3.4. Ramsar Convention

3.4.1. The UK is a party to the 1971 Convention on Wetlands of International Importance, done at Ramsar, Iran ('the Ramsar Convention').

3.4.2. Article 2(1) of the Convention provides that 'Each Contracting Party shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance'.

3.4.3. Article 4 of the Convention provides:

a. Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on

[46] CJEU Case C-404/09 *Commission v Spain* at para 100; cf case C-304/05 *Commission* v *Italy* [2007] ECR I-7495, paras 58-59, 67-70 and judgement of 25th July 2018, *Grace and Sweetman*, C-164/17, EU:C:2018:593, paragraph 39.

[47] CJEU Case C-258/11 *Peter Sweetman and Others v An Bord Pleanála* [2013] ECR-000, para 48. See also judgement of 17 April 2018, *Commission vs. Poland (Białowieża Forest)*, C-441/17, EU:C:2018:255, paragraph 116.

[48] CJEU Case -164/17 Grace and Sweetman vs An Bord Pleanala [2018]

[49] CJEU Case C-323-17 *People Over Wind and Sweetman vs Coillte Teoranta,* para 40.

wetlands, whether they are included in the List or not, and provide adequately for their wardening.

b. Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.

c. The Contracting Parties shall encourage research and the exchange of data and publications regarding wetlands and their flora and fauna.

d. The Contracting Parties shall endeavour through management to increase waterfowl populations on appropriate wetlands.'

3.4.4. The Government designates Ramsar sites in accordance with the criteria set out in the Convention, in recognition of the international importance of these sites as a wetland wildlife habitat.

3.4.5. In accordance with Government Circular: Biodiversity and Geological Conservation Statutory Obligations and their Impact within the Planning System (ODPM 06/2005), and the National Planning Policy Framework (2018), paragraph 176, Ramsar sites are subject to the same procedures described in the preceding section (in relation to European sites) as a matter of UK Government Policy, in order to assist the Government in fully meeting its obligations under the Ramsar Convention.

## 3.5. **Sites of Special Scientific Interest (SSSIs**)

3.5.1. SSSIs are notified as such by Natural England under section 28 of the WCA 1981(as amended), where we are of the opinion that land is of special interest by reason of any of its flora, fauna, or geological or physiographical features.

3.5.2. Section 28G of the WCA 1981 places legal obligations on public authorities in relation to SSSIs. These authorities are known as 'section 28G authorities', and the definition given at s.28G(3) embraces all public office-holders including the Secretary of State and the Examining Authority.

3.5.3. An authority to whom section 28G applies has a duty in exercising its functions so far as their exercise is likely to affect the flora, fauna or geological or physiographical features by reason of which a SSSI is of special interest to:

*'take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest.'*

3.5.4. In addition, where the permission of a section 28G authority is needed before proposed operations may be carried out, the section 28G authority must, in

accordance with section 28I(5) of the WCA 1981, take any advice received from Natural England into account:

a. in deciding whether or not to permit the proposed operations; and
b. if it does decide to do so, in deciding what (if any) conditions are to be attached to the permission.

3.5.5. 'Permission' is defined so as to include any kind of consent or authorisation.[50] As the Applicant requires development consent from the Secretary of State in order to proceed with its proposals, and as the Secretary of State is a section 28G authority, the duties under section 28I(5) apply to the Secretary of State.[51]

3.5.6. Section 35 of the WCA 1981 empowers Natural England to declare as a 'National Nature Reserve' ('NNR') any land which is managed as a nature reserve and is of national importance. Protection is afforded to the NNR through the management of the SSSI, European and Ramsar features that share a boundary and habitats of the NNR.

## 3.6. Marine Conservation Zones

3.6.1. In respect of Marine Conservation Zones (MCZs), where Natural England is the appropriate statutory conservation body, it has the power under section 127 of the Marine and Coastal Access Act 2009 to give advice and guidance as to:

a. The matters which are capable of damaging or otherwise affecting any protected feature of an MCZ;
b. The matters which are capable of affecting any ecological or geomorphological process on which the conservation of any protected feature or features of an MCZ is (wholly or in part) dependent;
c. How any conservation objectives stated for an MCZ may be furthered, or how the achievement of any such objectives may be hindered;
d. How the effect of any activity or activities on an MCZ or MCZs may be mitigated; and
e. Which activities are, or are not, of equivalent environmental benefit to any particular damage to the environment.

## 3.7. European Protected Species

3.7.1. Regulation 9(3) of the Habitats Regulations, headed 'Duties relating to compliance with the Directives', stipulates that:

*'a competent authority, in the exercising of any of their functions, must have regard to the requirements of the Habitats Directive so far as they may be affected by the exercise of those functions'.*

[50] WCA 1981, s.28I(7).

[51] Natural England accepts that the notice requirements of section 28I(2) to (4) have been satisfied for the purposes of the Secretary of State's determination of the planning applications at issue here.

The Examining Authority and Secretary of State are both 'competent authorities' by virtue of reg.7(1), which includes any person holding a public office.

3.7.2. In relation to species of animals and plants listed in Annex IV of the Habitats Directive, article 12 of the Directive provides that the UK must take the requisite measures to ensure that they are subject to a system of strict protection.

3.7.3. In relation to the animal species, the system must in particular prevent the deliberate capture or killing of specimens of these species in the wild; deliberate disturbance of these species; deliberate destruction or taking of eggs from the wild; and deterioration or destruction of breeding sites or resting places. Disturbance or destruction may be indirect, for instance through noise or light pollution, or loss of habitat.[52]

3.7.4. The plant species must be protected in particular from deliberate picking, collecting, cutting, uprooting or destruction in their natural range in the wild.

3.7.5. Article 16 of the Habitats Directive provides that this strict protection may be derogated from only where (i) there is no satisfactory alternative, (ii) the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, and (iii) the purpose is (a) protecting wild fauna and flora and conserving natural habitats; (b) preventing serious damage to crops, livestock, forests, fisheries and water and other types of property; (c) public health and safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment; (d) research, education, and repopulating and re-introducing these species; or (e) to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species listed in Annex IV in limited numbers specified by the competent national authorities.

3.7.6. Regulation 43 of the Habitats Regs and the provisions of the WCA 1981 make it a criminal offence to engage in the behaviour prohibited by the Habitats Directive. However, prohibitions enforced by penalties for infractions are not in themselves adequate to implement the Directive if they will not prevent significant destruction or disturbance taking place in fact: 'such protection requires that individuals be prevented in advance from engaging in potentially harmful activities'.[53]

3.7.7. The Court of Justice of the European Union has accordingly ruled that Member States must not only adopt a comprehensive legislative framework, but also to implement concrete and specific protection measures that are coherent, co-ordinated and preventive in nature.[54] Such a system of strict protection must enable the effective avoidance of deterioration or destruction of breeding sites or

[52] CJEU Case C-103/00, *Commission v Greece*, judgment para 34 and Opinion of Léger AG delivered on 25 October 2001, paras 46, 56 and 57; *R(Morge) v Hampshire CC* [2010] EWCA Civ 608 at [49]. [2011] UKSC 2 at [19].

[53] CJEU, Case C-418/04 *Commission v Ireland* at para 208.

[54] CJEU Case C-183/05, *Commission v Ireland*, paras 29-30.

resting places caused by development.[55] Strict protection must be enforced even if the population of the species is not declining.[56]

3.7.8. The Secretary of State should follow the guidance in paragraphs 99 and 116 of Circular 06/2005, and take care to ensure that any disturbance of protected species, including harm to their habitats, food-sources, resting-places or breeding sites, is avoided unless they consider that the derogation criteria are likely to be met, in which case they should require any necessary licence to be obtained before development commences.[57]

## 3.8. Nationally Protected Species

3.8.1. Certain birds, other animals and plants which are listed in the schedules to the WCA 1981 are protected from disturbance, injury and capture or taking by the provisions of Part 1 that Act, which makes it a criminal offence to disturb, injure, capture or take them.

3.8.2. Under section 16 of the WCA 1981, licences may be issued to authorise these activities, provided that certain conditions are met. The conditions do **not** include derogation for the purpose of facilitating development, nor for general social or economic purposes.

3.8.3. Badgers and their setts are also protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take badgers or to interfere with a badger sett. There is provision within the legislation for Natural England to permit activities affecting badgers or their setts where there is suitable justification and the problem cannot be resolved by alternative means.

## 3.9. Areas of Outstanding Natural Beauty ('AONBs')

3.9.1. Section 85(1) of the Countryside and Rights of Way Act 2000 ('CRWA 2000') requires all persons holding public office, public bodies and Ministers of the Crown, when exercising or performing any functions so as to affect land in an AONB to 'have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty'. By section 92(2) of the CRWA 2000, this includes having regard for conserving its fauna, flora and geological and physiographical features.

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[55] CJEU Case C-383/09 *Commission v France,* opinion of Advocate-General Kokott *at* para 89; judgment at paras 21, 35, 37.

[56] CJEU Case C-103/00 *Commission v Greece* para 31; CJEU Case C-518/04 *Commission v Greece*, para 21.

[57] That was the approach endorsed by the High Court in *R(Woolley) v East Cheshire DC* [2010] Env. L.R. 5 at [27]-[28]. In *Morge v Hampshire CC*, the Supreme Court appears to have thought that it would not be unlawful to grant permission for a development unconditionally, unless it were thought unlikely that the criteria would be met. This was on the premise that it was sufficient for the prohibited conduct to be subject to criminal penalties if no species licence were obtained. However, the CJEU authorities cited above - which the Supreme Court did not consider in that case – make it clear that a preventive approach must be taken by the planning authority. It would be unsafe for the Secretary of State to grant consent without ensuring, so far as he can, that the requirements of the Directive would be met.

## 3.10. National Parks

3.10.1. National Parks, along with AONBs, have been confirmed by the Government as having the highest status of protection in relation to landscape and scenic beauty. National Park purposes are to conserve and enhance their natural beauty, wildlife and cultural heritage and to promote opportunities for the understanding and enjoyment of their special qualities by the public.

3.10.2. The statutory duties are provided for in Section 11A(2) of the National Parks and Access to the Countryside Act 1949 (National Parks). Specifically, they state that, "in exercising or performing any functions in relation to, or so as to affect, land" in these areas, relevant authorities "shall have regard" to their purposes.

# 4. POLICY FRAMEWORK

## 4.1. Introduction

4.1.1. The documents referred to below are statements of overarching policy which are central and applicable to planning decisions affecting biodiversity. It is presumed that the Examining Authority has copies of them, and therefore it has not been thought necessary to include them as Annexes to these Representations.

## 4.2. National Policy Statements

4.2.1. This section summarises the provisions of *EN-1: Overarching Policy Statement for Energy* and *EN-3 National Policy Statement for Renewable Energy Infrastructure* that are most relevant to Natural England's case in relation to particular topics[58]. Bracketed references are made to the corresponding sections of each NPS.

4.2.2. **Environmental Statement** - When considering an application for a DCO, the Secretary of State and the Examining Authority should satisfy themselves that likely significant effects, including any significant residual effects taking account of any proposed mitigation measures or any adverse effects of those measures, have been adequately assessed [EN-1 at 4.24]. Where necessary, the Secretary of State and the Examining Authority should request further information where necessary to ensure compliance with the EIA Directive [EN-1 at 4.24].

4.2.3. **Habitats and Species Regulations** - Prior to granting a DCO, the Secretary of State must, under the Habitats Regulations, consider whether the project may have a significant effect on a European site (including Ramsar sites), either alone or in combination with other plans or projects [EN-1 at 4.3.1].

4.2.4. The Applicant should seek the advice of Natural England and provide the Examining Authority, with such information as it may reasonably require, to determine whether an Appropriate Assessment is required [EN-1 at 4.3.1]. In the

[58] References to EN-1 and EN-3 are combined for purposes of this section for purposes of organising the section by topic. This is consistent with, eg, EN-1.3.1, which requires EN-1 to be read "in conjunction" with EN-3. The exact wording of any provision may have been modified in order to remove outdated or irrelevant references (e.g., "IPC" is replaced with "Secretary of State" or "Examining Authority" where relevant, or references to designations that are irrelevant to the facts of this case, such as AoNBs have been removed) in order to adapt these provisions to the circumstances of this case for the purposes of these Written Representations.

event that an Appropriate Assessment is required, the Applicant must provide the Examining Authority with such information as may be reasonably be required to enable it to conduct the Appropriate Assessment [EN-1 at 4.3.1].

4.2.5. **National Designations** - In sites with nationally recognised designations (including Sites of Special Scientific Interest and National Parks) consent for renewable energy projects should only be granted where it can be demonstrated that the objectives of designation of the area will not be compromised by the development, and any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits [EN-3 at 2.5.33].

4.2.6. **Impacts on Biodiversity and Geological Conservation** - Where the development is subject to EIA, the Applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity [EN-1 at 5.3.3]. The Applicant should also show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests [EN-1 at 5.3.3].

4.2.7. As a general principle, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. Where significant harm cannot be avoided, compensation measures should be sought [EN-1 at 5.3.7].

4.2.8. In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; habitats and other species of principal importance for the conservation of biodiversity; and to biodiversity and geological interests within the wider environment [EN-1 at 5.3.8].

4.2.9. Where a development proposal is located outside of a SSSI and is likely to have an adverse effect on the SSSI (either individually or in combination with other developments), development should not normally be granted. Where an adverse effect, after mitigation, on the SSSI's notified special interest features is likely, an exception should only be made where the benefits (including need) clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs [EN-1 at 5.3.11]. The Secretary of State should use requirements and/or planning obligations to mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity or geological interest [EN-1 at 5.3.11].

4.2.10. For species and habitats that have been identified as being of principal importance for the conservation of biodiversity in England, the Secretary of State should ensure that these are protected from the adverse effects of development by using requirements or planning obligations [EN-1 at 5.3.17]. The Secretary of State should refuse consent where harm to the habitats or species would result, unless the benefits (including need) of the development outweigh that harm [EN-1 at 5.3.17]. In this context the Secretary of State should give substantial weight to any such harm to the detriment of biodiversity features of national or regional

importance which it considers may result from the proposed development [EN-1 at 5.3.17].

4.2.11. The Applicant should include appropriate mitigation measures as an integral part of the development. These include measures that will minimise harm to species or habitats during the construction of the operation and, where practicable, restore habitats after construction work have finished [EN-1 at 5.3.18]. Where the Applicant cannot demonstrate this, the Secretary of State (and the Examining Authority) should consider what appropriate requirements should be attached to any consent and/or planning obligations entered into [EN-1 at 5.3.19].

4.2.12. The Secretary of State (and the Examining Authority) will need to take account of what mitigation measures may have been agreed between Natural England or the Marine Management Organisation, and whether these bodies have granted or refused or intends to grant or refuse, any relevant licences, including protected species mitigation licences [EN1 at 5.3.20].

4.2.13. The following provisions of EN-3 are of particular relevant to Natural England's case in relation to the topic of Biodiversity and Geological Conservation:

4.2.14. **Impacts on Birds** -The Secretary of State (and the Examining Authority) will want to be satisfied that the collision risk assessment has been conducted to a satisfactory standard having had regard to the advice from the relevant statutory advisor [EN-3 at 2.6.104].

4.2.15. Subject to other constraints, wind turbines should be laid out within a site, in a way that minimises collision risk, where the collision risk assessment shows there is a significant risk of collision [EN-3 at 2.6.108].

4.2.16. **Impacts on Marine Mammals** - If piling associated with an offshore windfarm is likely to lead to the committing of an offence (which would include deliberately disturbing, killing or capturing a European Protected Species), an application may have to be made for a wildlife licence (to the Marine Management Organisation) to allow the activity to take place [EN-3 at 2.6.91].

4.2.17. Where assessment shows that noise from offshore piling may reach noise levels likely to lead to such an offence, the Applicant should look at possible alternatives or appropriate mitigation before applying for a licence [EN-3 at 2.6.93].

4.2.18. The Secretary of State (and the Examining Authority) should be satisfied that the preferred methods of construction, in particular the construction method needed for the proposed foundations and the preferred foundation type, where known at the time of application, are designed so as to reasonably minimise effects on marine mammals [EN-3 at 2.6.94]. Unless suitable noise mitigation measures can be imposed by requirements to any development consent the Secretary of State may refuse the application [EN-3 at 2.6.94].

4.2.19. **Impacts on Fish, Intertidal and Subtidal Habitats** - The Applicant's assessment should include relevant information about the impacts of development activities (including cabling) on the likely receptors, including the potential loss of habitats [EN-3 at 2.6.74, 2.6.81 and 2.6.113].

4.2.20. The Secretary of State (and the Examining Authority) should be satisfied that activities during the construction, operational and decommissioning phases (including cabling) have been appropriately designed, including in relation to the

mitigation of adverse effects on fish and intertidal and subtidal habitats, to avoid or minimise harm to those features wherever possible in accordance with the relevant NPS policies on biodiversity [EN-3 at 2.6.72 to 2.6.89 and 2.6.111 to 2.6.119; see also EN-1 at 5.3.7 & 5.3.8]. Any consent that is granted by the Secretary of State should be flexible to allow for necessary micro-siting of elements of the proposed wind farm during its construction [EN-3 at 2.6.194].

4.2.21. **Impacts on Physical Environment** - The assessment should include predictions of the physical effect that will result from the construction and operation of the required infrastructure and include effects such as the scouring that may result from the proposed development [EN-3 at 2.6.194].

4.2.22. The Secretary of State (and the Examining Authority) should be satisfied that the methods of construction, including use of materials, are such as to reasonably minimise the potential for impact on the physical environment [EN-3 at 2.6.196].

4.2.23. Mitigation measures which the Secretary of State (and the Examining Authority) should expect, include the burying of cables to a necessary depth and using scour protection techniques around offshore structures to prevent scour effects around them, and Applicants should consult the statutory consultees appropriate mitigation [EN-3 at 2.6.197].

4.2.24. **Future Monitoring of Environmental Impacts** - The Secretary of State (and the Examining Authority) should consider whether the Applicant should be required to undertake monitoring prior to and during the development's construction, and during its operation, in order to measure and document the effects of the development. This enables an assessment of the accuracy of the original predictions and may inform the scope of future EIAs [EN-3 at 2.6.5.1].

4.2.25. Ecological monitoring is likely to be appropriate during the construction and operational phases to identify the actual impact so that, where appropriate, adverse effects can then be mitigated and enable further useful information to be published relevant to future projects [EN-3 at 2.6.71].

## 4.3. National Planning Policy and Guidance on Protected Sites and Species

4.3.1. **National Planning Policy Framework ("NPPF")** - Although the NPPF does not contain specific policies for NSIPs, and defers to the NPSs in this respect, it is submitted that the provisions of the NPPF, including those relevant to the conservation and enhancement of the natural environment, are both important and relevant considerations, and should be taken into account by the Secretary of State and the Examining Authority for purposes of assessing this DCO application[59].

4.3.2. NPPF makes it clear that setting is an important consideration in relation to heritage assets. It notes that the significance of a heritage asset derives not only from its physical presence, but also from its setting (para 172 and 173).

4.3.3. **Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System (ODPM 06/2005)** - This Circular is relevant here, as indicated in EN-1 at, *e.g.*, 5.3.2. Reference to

[59] See NPPF at paragraph 45.

certain provisions of that Circular has already been made in relation to Section 3 of these Written Representations (the Legislative Framework).

4.3.4. In addition, Natural England refers to the following provisions of the Circular that are relevant to Natural England's case for the purposes of this examination.

4.3.5. *European sites*: In relation to Step 2 of paragraph 3.3.8, *supra* (the 'likely significant effect' determination under the Habitats Regulations Assessment steps), the Circular provides:

a. The decision on whether an appropriate assessment is necessary should be made on a precautionary basis. An appropriate assessment is required where there is a probability or a risk that the plan or project will have significant effects on the site. This is in line with the ruling of the European Court of Justice in Case C-127/02 (the Waddenzee Judgement) which said '*any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or project*'[60].

b. If an appropriate assessment is required, [it] is for the decision-taker to consider the likely and reasonably foreseeable effects and to ascertain that the proposal will not have an adverse effect on the integrity of the site before it may grant permission. If the proposal would adversely affect integrity, or the effects on integrity are uncertain, but could be significant the decision-taker should not grant permission, subject to the provisions of regulations' 64 and 68 of the Habitats Regulations (or regulations 28 and 36 of the Offshore Regulations).[61]

c. In the Waddenzee judgement, the European Court of Justice ruled that a plan or project may be authorised only if a competent authority has made **certain** that the plan or project will not adversely affect the integrity of the site. 'That is the case where *no reasonable scientific doubt* remains as to the absence of such effects.' Competent national authorities must be '***convinced***' that that there will not be an adverse effect.[62]

4.3.6. *Protected Species*: With respect to wild plant and animal species (including all species of wild bird) protected under the 1981 Act or the Habitats Regulations

[60] Circular 06/2005 at paragraph 13.
[61] *Id* at paragraph 20; references to the Habitats Regulations and Offshore Regulations are as amended.
[62] *Id* at paragraph 21.

a. It is essential that the presence [of] protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.[63]

4.3.7. **Advice Note 10: Habitats Regulation Assessment** - The Examining Authority is also reminded of the Planning Inspectorate's own Advice note 10: Habitats Regulations Assessment (April 2012).

## 4.4. European Commission Guidance

4.4.1. The European Commission has produced guidance on the protected sites and species procedures. This includes the following relevant guidance:

- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2018);
- EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC (November 2001);
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (2007);
- The implementation of the Birds and Habitats Directives in estuaries and coastal zones (2011);
- Wind energy developments and Natura 2000 (October 2010);
- Non-energy mineral extraction and Natura 2000 (July 2010); and
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC (final version February 2007).

[63] *Id* at paragraph 99.