THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Hornsea Project Four Offshore Wind Farm

Natural England's Comments on the Report on the Implications for European Sites (RIES) [PD-015]

For:

The construction and operation of Hornsea Project Four Offshore Wind Farm, located approximately 69 km from the East Riding of Yorkshire in the Southern North Sea, covering an area of approximately 468 km^2.

Planning Inspectorate Reference: EN010098

18th August 2022

Introduction

Natural England have reviewed the Report on the Implication for European Sites (RIES) [PD-015] for Hornsea Four Offshore Windfarm. We provide answers to the questions posed within the document in Appendix 1, alongside confirmation of Natural England's positions on likely significant effects (LSE) and adverse effects on site integrity (AEoI).

General Comments

Natural England note that only submissions up to Deadline 5a (4th July 2022) have been considered in the RIES, therefore the RIES does not take account of updated advice on various aspects since then. Where we are able to, we have signposted to our updated advice. Natural England recommends that the REIS is updated before it is included within an ExA report to the Secretary of State (SoS). As previously advised to PINS and BEIS, Natural England does not consider consultation on the RIES adequately discharges the statutory requirement to consult Natural England on Appropriate Assessments, as the RIES draws no AEoI conclusions. This is magnified in instances such as Hornsea Four where substantial volumes of Examination submissions are not considered with the RIES.

If it is considered that the conservation objectives for any designated site interest feature will be negatively impacted or there is reasonable scientific doubt regarding this, then an Adverse Effect on Integrity (AEoI) cannot be excluded.

Appendix 1: Questions within the RIES

Section 2: Overview

2.1.1 - ***The ExA is not aware of any representations from IPs identifying any additional UK European sites for inclusion in the assessment, with the exception of the Tweed Estuary SAC (see ID 3.5.1 of Table 3.5 below). IPs are invited to comment.***

Please see Table 1 in Appendix 2 below.

2.1.2 - The ExA is also of the understanding that there is agreement regarding the citation information for the sites assessed. IPs are invited to comment.

Citations are available online e.g at UK Protected Areas | JNCC - Adviser to Government on Nature Conservation

2.2.1 - The ExA is not aware of any representations from IPs identifying any additional impacts to be assessed. IPs are invited to comment.

Please see Table 1 within Appendix 2 below.

Section 3: Likely Significant Effects

3.2.1 - The ExA understands that the Applicant's conclusions of no LSE with respect to the sites above [The River Derwent SAC [Matrix 5 of AS-012], Lindisfarne SPA, Lindisfarne Ramsar, and Tips of Corsemaul and Tom Mor SPA] were not disputed by any IPs during the examination. IPs are invited to comment.

Natural England would have expected to see the river and sea lamprey features of the River Derwent SAC considered in the Appropriate Assessment. As highlighted in Natural England's conservation advice, whilst there is considerable information available about the biology of river and sea lamprey in freshwater and estuaries, very little is known about their habits in estuaries and the sea, consequently a pathway for impact cannot be ruled out or quantified. As highlighted in our Risk and Issues log, it is for this reason that we do not consider it possible to undertake a meaningful assessment of the impacts on migrating lamprey at this time. Given the distance between the designated sites and the project we would judge the risk to these species to be low, though we cannot qualify this with any evidence.

NE do not believe there would be LSE on the Lindisfarne SPA and Ramsar site.

Tips of Corsemaul and Tom Mor SPA is in Scotland so not within our remit.

Table 3.1: Issues raised by the ExA and IPs in relation to the Applicant's screening of LSEs (alone and in combination)

Subtidal and intertidal benthic ecology				
ID	**Site**	**Impact**	**Question**	**Response**
3.1.1	Flamborough Head SAC Humber Estuary SAC, SPA and Ramsar	Changes to physical processes during construction and decommissioning	i) In respect of Flamborough Head SAC, NE is requested to provide reasoning for its request to screen in a LSE from changes to physical processes during construction and decommissioning and confirm which qualifying features it considers LSE relate to. ii) Can NE explain why it considers there to be a LSE to Humber Estuary SAC and Ramsar?	The inclusion of a coastal access ramp and the cofferdams around the HDD exit pits had the potential to impact on coastal and nearshore sediment transfer which could have had implications for Flamborough Head SAC, as well as the Humber Estuary SAC. Over the course of the Examination the Applicant provided further detail of their proposals and clarified elements within their project description which gave NE greater confidence in their conclusions in this regard. It should be noted however that impacts may begin to arise during the construction phase, through for example the placement of rock protection, that continue to impact during operation and beyond the operational lifetime of the project.
3.1.2	Flamborough Head SAC	Changes to hydrodynamic regime (as a result of impacts to Flamborough Front) during operation	The ExA understands that NE's concerns regarding impacts on Flamborough Front relate to effects on primary production. NE is requested to explain the basis upon which it considers a LSE to the habitat qualifying features of	Reefs.

			Flamborough Head SAC should be screened in.	
3.1.3	Humber Estuary SAC, SPA and Ramsar site	Physical processes – indirect effects as a result of impacts to the Smithic Bank	NE is requested to explain the basis upon which it considers there to be a LSE on the Humber Estuary SAC, SPA and Ramsar site from impacts on Smithic Bank and to confirm the qualifying features for which it considers there are LSE.	Natural England provided detailed advice in relation to marine processes at Deadline 7 which discusses the potential impact pathway between Smithic Bank and the Humber Estuary (See REP7-103). The qualifying features of the SAC for which a Likely Significant Effect cannot be ruled out are: Atlantic Salt Meadows Salicornia and other annuals colonizing mud and sand Sandbanks which are slightly covered by seawater at all times Mudflats and sandflats not covered by seawater at low tide Estuaries Grey Seal Impacts to these features should also be considered in the context of their function as supporting habitat for SPA features and as Ramsar features where appropriate.
3.1.4	Flamborough Head SAC, Humber Estuary SAC, SPA and Ramsar	Physical processes – impacts from the temporary access	The ExA understands that NE's concerns relate to cliff erosion and not to impacts on European sites.	The Applicant has provided additional information and clarification throughout the examination which has addressed Natural

		ramp in the intertidal area	NE is requested to confirm if the ExA's understanding is correct and whether it agrees a LSE from changes to physical processes from the temporary access ramp can be excluded for Flamborough Head SAC and the Humber Estuary SAC, SPA and Ramsar	England's initial concerns in relation to this impact pathway.
Table 3.2: Marine Mammals				
3.2.1	SNS SAC	Changes to sediment transport regime	The Applicant and NE are requested to confirm and justify their positions in relation to effects on the SNS SAC from changes to the sediment transport regime. Can NE confirm which phase(s) of the development its concerns relate to.	Natural England's concerns relate to increases in suspended sediment rather than changed to the sediment transport regime. As the Hornsea 4 Array lies wholly within the SNS SAC, and the MDS would permit a large volume of sediment to be disposed within the area during construction, we would expect this impact to be considered within the HRA.
3.2.2	SNS SAC Humber Estuary SAC and Ramsar	Changes to hydrodynamic regime (as a result of impacts to Flamborough Front) during operation	The ExA understands that NE's primary concern relates to the potential for impacts on the Flamborough Front to affect prey availability for the marine mammal qualifying species of SNS SAC and Humber Estuary SAC; this matter is addressed at ID 3.2.3 below. NE is invited to comment on whether it has any additional concerns	Natural England's concerns relating to the hydrodynamic regime link to prey availability as described.

			regarding impacts on the harbour porpoise of the SNS SAC or grey seal of the Humber Estuary SAC as a result of changes to the hydrodynamic regime. (also for FFC SPA see 3.3.2)	
3.2.3	SNS SAC Humber Estuary SAC	Changes to physical processes - indirect effects on prey availability	Do the Applicant and NE consider that there is potential for a LSE on harbour porpoise of the SNS SAC and grey seal of the Humber Estuary SAC as a result of indirect effects on prey availability due to impacts on the Flamborough Front?	Based on the evidence available and the location of the Flamborough Front and HOW4 array, Natural England believe there is a pathway for impacts on prey availability. Natural England also highlight the comments made in the applicant's submission [REP5-066] which refer to the importance of Smithic Bank for sandeel and other fish species.
3.2.4	SNS SAC	Piling noise - indirect effects on prey availability (herring) from piling noise	Please can NE confirm whether it considers the impacts of piling on herring and indirect effects on birds and marine mammals could result in a LSE to any qualifying features of European sites, and if so, which ones. (Same question for Birds see 3.3.4)	As Herring is a key prey item of Harbour porpoise it cannot be ruled out that impact of piling on herring might have an indirect impact on harbour porpoise. Natural England considers the combination of impacts resulting from the proposals would constitute a LSE on the Harbour Porpoise feature of the SNS SAC.
3.2.5	Humber Estuary SAC and Ramsar	Physical processes – indirect effects as a result of impacts to the Smithic Bank	See 3.1.3	Indirect effects on grey seals as a result of impacts to Smithic Bank may arise due to modification of supporting habitat (see 3.1.3) and impacts on prey availability see 3.2.1

Table 3.3: Offshore and intertidal ornithology				
3.3.1	FFC SPA Humber Estuary SPA	Changes to physical processes – all project phases	NE is requested to provide reasoning for its request to screen in changes to physical processes to the FFC SPA and Humber Estuary SPA and confirm which qualifying features it considers a LSE should be identified for.	Based on the information presented in the examination, changes to physical processes that could affect supporting habitat within the Humber Estuary SPA and for foraging FFC SPA seabirds cannot be excluded. These interactions should therefore be screened into the HRA and the potential for LSE should be explored.
3.3.2	FFC SPA	Changes to hydrodynamic regime (as a result of impacts to Flamborough Front) during operation	See ID 3.2.2 of Table 3.2; the ExA's question applies equally to FFC SPA. NE is also requested to clarify which qualifying features its concerns relate to.	See response to 3.2.2. Based on the information presented within the examination, we consider that impacts to the Flamborough Front could give rise to changes in primary productivity and prey availability which may impact on all features of the FFC SPA.
3.3.3	FFC SPA	Changes to physical processes - indirect effects on prey availability	NE is requested to confirm whether it considers there to be a LSE on qualifying features of the FFC SPA as a result of indirect effects on prey availability due to impacts on the Flamborough Front, and if so, to which qualifying feature(s)?	We consider that impacts on the Flamborough Front resulting in potential changes in primary productivity and prey availability may impact on all features of the FFC SPA. We also consider impacts to Smithic Bank could resulting in changes to prey availability which may impact on all features of the FFC SPA.

				Natural England considers there to be LSE on all features of the FFC SPA due to the combination of potential impacts arising from this project.
3.3.4	FFC SPA	Piling noise - indirect effects on prey availability (herring)	See 3.2.4	As herring is a key prey item of FFC birds it cannot be ruled out that impact of piling on herring might have an indirect impact on bird assemblages when taken in combination with other indirect impacts affecting prey availability.
3.3.6	FFC SPA	Seabird assemblage	(i) Is NE content that potential impacts on the seabird assemblage feature of FFC SPA have been satisfactorily addressed? (ii) Does NE consider there to be LSE on the seabird assemblage feature of FFC SPA, if so for what impact-effect pathways?	i) NE consider sufficient information has been provided to enable assessment of the seabird assemblage feature. Please see our Deadline 7 ornithology position for further details [REP7-104]. ii) Yes, NE considers there to be LSE on the seabird assemblage feature of FFC SPA due to the collision and displacement impact-effect pathways as well as the potential for indirect effects resulting in changes to prey availability.
3.3.7	FFC SPA	Gannet and kittiwake - barrier effects	(ii) Can NE confirm whether it agrees a LSE on gannet and kittiwake from barrier effects during all phases can be screened out? (iii) Is NE content that barrier effects are accounted for in the displacement assessments?	NE disagrees that LSE on gannet and kittiwake from barrier effects during all phases can be screened out, however we are content that they are accounted for within the displacement assessment for these species.

3.3.8	FFC SPA	In-combination effects – herring gul	The ExA notes that a LSE on herring gull from collision risk is identified in Matrix 24 of [AS-012]. NE is requested to clarify its position	Herring gull is not a feature of the SPA, but it forms part of the seabird assemblage feature. Therefore, impacts on this species should be considered within the Assessment of the Seabird Assemblage feature.
3.3.9	Humber Estuary SPA	Physical processes – indirect effects as a result of impacts to the Smithic Bank	3.1.3	3.1.3
3.3.10	Humber Estuary SPA	Physical processes – impacts from the temporary access ramp in the intertidal area	3.1.4	3.1.4
3.3.11	Greater Wash SPA	Impacts from works in the ECC – marine processes	Can NE confirm whether it has any remaining concerns relating to the Greater Wash SPA and if so, expand on the particular features of concern.	Natural England advise that marine process impacts from works in the ECC should be screened in to the HRA to inform the overall assessment of LSE. However, we have no specific concerns relating to this matter at this time.
3.3.12	Farne Islands SPA	Razorbill (as an unnamed component of the Farne Islands SPA seabird assemblage)	In [REP2-047] and [REP3-054], the Applicant and NE refer to AEoI. Please can the Applicant and NE confirm the ExA's understanding that both parties agree there is a LSE on razorbill of the Farne Islands SPA?	Natural England consider that there is a clear impact pathway for the razorbill feature of the Farnes SPA that justified a conclusion of LSE. However, we are satisfied that there are no adverse effects on the Farne Islands SPA seabird assemblage.
3.3.13	Lindisfarne SPA Lindisfarne Ramsar	These sites are identified in the Applicant's	(ii) Can NE confirm whether it has any comment in relation to exclusion of LSE for Lindisfarne SPA,	NE do not believe there would be LSE to the Lindisfarne sites given the distance. But

	Tips of Corsemaul and Tom Mor SPA	screening report [REP2-005] within the initial site selection process (Table 3), but none of them is included in Table 6 (or 7).	Lindisfarne Ramsar and the Tips of Corsemaul and Tom Mor SPA?	notes that Tips of Corsemaul and Tom Mor SPA is Scottish so not within our remit
Table 3.4: Onshore ecology				
3.4.1.	Humber Estuary SPA	Effects on little tern and breeding and non-breeding bittern were not assessed by the Applicant [Matrix 26 of AS-012]. Table 1 of the HRA screening Report [e-page 30 of REP2-005] states that NE advised to screen out little tern for all sites. There is no such statement in respect of bittern.	The ExA is not aware of any concerns raised by IPs in respect of bittern. The ExA seeks confirmation from NE that LSE can be excluded for the bittern qualifying feature of the Humber Estuary SPA.	Yes, LSE can be excluded for bittern in the Humber Estuary SPA.
Table 3.5: Migratory fish				
3.5.1	Humber Estuary SAC and Tweed Estuary SAC	Lamprey	NE is requested to expand on its comments relating to lamprey: (i) Does NE consider that further	As stated in 3.2.1 above, Natural England would have expected to see the river and sea lamprey features of the Humber Estuary SAC

			screening is required for the Tweed Estuary SAC? Please include details of any impact-effect pathway considered to be credible in your response. (ii) Noting the Applicant's consideration of impacts on lamprey of the Humber Estuary SAC, as noted above, does NE consider there to be a LSE? Please provide details of the feasible impact pathway if so.	River Derwent SAC and the sea lamprey feature of the Tweed Estuary SAC considered in the in the Appropriate Assessment (N.B. as river lamprey are known to remain in coastal waters, we would consider the potential for a pathway between the project and the river lamprey of the Tweed SAC to be low due to the distance between the proposal and the river Tweed). As highlighted in Natural England's conservation advice, whilst there is considerable information available about the biology of river and sea lamprey in freshwater and estuaries, very little is known about their habits in estuaries and the sea, consequently a pathway for impact cannot be ruled out. As highlighted in our Risk and Issues log, it is for this reason that we do not consider it possible to undertake a meaningful assessment of the impacts on migrating lamprey at this time. Given the distance between the designated sites and the project we would judge the risk to these species to be low, though we cannot qualify this with any evidence. Underwater noise, barrier effects and EMF are the key impact pathways we would have anticipated being explored.

3.4.1 - NE is also invited to comment as to whether it considers there are any additional LSEs that are not identified in the Applicant's screening matrices or detailed in Tables 3.1 to 3.5.

Natural England consider that LSE should be determined at the feature level rather than for individual impact pathways which are treated in isolation, as the RIES seems inclined to do. Therefore, we are unable to meaningfully comment on this question. Please see Table 1 in Appendix 2 below.

3.4.2 - The ExA is not aware of any concerns being raised in relation to LSEs from in-combination effects. IPs are invited to comment.

See above.

Section 4 – Adverse Effects on Integrity

4.1.1 - The ExA understands that: at the point of reporting there is agreement that the conservation objectives applied to the Applicant's assessment are correct in all cases, and; that there are no disputes over the interpretation of the conservation objectives in the information provided to support the competent authority's appropriate assessment. IPs are invited to comment.

Conservation objectives for the features of the sites are set at a relativity high level and will not change during the course of this application. Natural England can confirm that those presented in Section 9 of the RIAA [REP5-012] which sign posts to Appendix D – Summary of designated sites – [App 171- APP 172 & App17] are correct as of close of Examination with the exception of the points highlighted below. Natural England note that the Supplementary Advice on Conservation Objectives (SACO) are not always referred to for SPAs (compared to SACs) and population data is often out of date, with new averages now available. The Supplementary Advice documents are 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, we recommend that Natural England's Designated Sites View is used each time information is required from these documents Site Search [redacted]

Review of RIAA Appendix D – Summary of designated sites [App 171- APP 172 & App17]

- 4.1.1.12 The Supplementary Advice for The Wash and North Norfolk Coast SAC was updated in March 2021. The report refers to March 2020.
- 7.1.1.7 refers to the wrong site (although the information appears correct)
- Information on the Greater Wash SPA is very limited, noting NE have not yet published a formal advice package.
- FFC SPA – the Applicant could refer to the SACO published in March 2020.
- Humber SPA - the Applicant could refer to the SACO published in September 2019.
- Northumbria Coast SPA - the Applicant could refer to the SACO published in September 2019.

- Teesmouth and Cleveland Coast SPA - the Applicant could refer to the SACO published in March 2021
- Coquet Island SPA - the Applicant could refer to the SACO published September 2019. The feature populations given are out by 1 year.
- Farne Islands SPA - the Applicant could refer to the SACO published September 2019. The feature populations given are out by 1 year.
- Northumberland Marine SPA – Conservation objectives have been revised Marine site detail [redacted]

4.3.1 - IPs are invited to comment if the ExA's understanding set out in Table 4.1 is incorrect

Natural England advise that a conclusion on AEoI should be made at a feature level, i.e. holistically, and should be based on consideration of all potential impacts to that feature. It is possible that an individual pathway might be considered to have insufficient impact to drive a conclusion of AEoI for a given feature when considered in isolation, but an overall conclusion of AEoI could still be reached when it is considered with all other impact pathways. We acknowledge that it is important to understand the scale of impact likely to result from each pathway, but disagree that this should be in the form of individual AEoI conclusions.

As Natural England advocate forming an AEoI judgement (both alone and in combination) at the feature level rather than for each individual impact pathway, we would struggle to provide meaningful comment on Tables 4.1 - 4.3. We have therefore provided an additional table to set out our position on each site feature with all impact pathways included (Table 1 in Appendix 2).

4.3.2 - Can NE and the RSPB please clarify this matter in relation to the other European sites assessed, aside from FFC SPA?

NE can confirm that the ornithology issues described do not preclude a view being reached in relation to AEoI alone or in combination on any other Europeans sites.

Section 5 - Alternatives and IROPI

Alternative Solutions

Q.5.1.1 - The ExA's understanding is that further parameter refinement (relating to the Maximum Design Scenarios) is desired by NE but is not currently proposed by the Applicant.
(i)NE, the RSPB and other IPs are invited to comment specifically on the implications in relation to the 'alternative solutions' test.

During the course of the examination, Natural England have proposed a number of options to avoid or reduce the potential impacts of the proposal on designated sites, and consider that the mitigation hierarchy could be further explored. Regarding marine processes, these are

summarised in the Action Log [REP6-058 and Deadline 8 update]. Regarding direct impacts on seabirds, we note that the Applicant has through the Developable Area Approach reduced the potential impacts on FFC SPA seabirds by decreasing the size of the array, as well as committing to a minimum 'air gap' above the sea surface to reduce collisions. This has reduced - but not avoided - adverse effects. It is not known to what extent further reductions in the array area wuld substantially reduce the risk of adverse effects of impacts arising, as it has not been possible to consider this within the timeframe of the Examination.

IROPI

Our submission REP4-056 sets out the significance of FFC SPA for the UK national site network and with specific respect to the English suite of SPAs for seabirds. FFC SPA is the largest seabird colony in England, the sole English SPA classified for kittiwake and razorbill and one of two English SPAs classified for guillemot. This provides the necessary context for consideration of IROPI i.e. the extent to which the development overrides the predicted impacts to the national site network. Natural England's remit does not cover other aspects of IROPI.

Section 6 - Compensatory Measures

6.1.1 - NE, the RSPB and other IPs are invited to comment regarding any outstanding concerns around the impacts of the proposed compensatory measures.

Natural England does not consider the proposals are sufficiently developed for LSE to be ruled out for all potentially affected sites and features. However, we acknowledge that determination of AEoI for the measures will occur at a later stage when licenses are sought for the respective works.

6.1.2 - Compensatory measures are before the ExA in relation to kittiwake, gannet, guillemot, and razorbill of the FFC SPA. NE, the RSPB and other IPs are invited to comment regarding any other sites or features where exclusion of AEoI is uncertain and therefore compensatory measures may be required, and the likely scope of such measures.

In relation to the FFC SPA it should be noted that in our final advice [REP7-104] we were able to revise our position on gannet based on the additional information supplied by the applicant and compensation is no longer required for this feature.

We would highlight that as well as the features listed by the ExA, Natural England is unable to exclude the potential for AEoI on the assemblage. As the applicant has (understandably) focused on developing compensation packages for the individual features of the SPA the applicability of these individual proposals to the overall assemblage has not been explored. Furthermore, the nature of the compensatory measures does not address the potential loss of sea areas with functional importance to FFC species, particularly guillemot and razorbill.

Natural England have provided a final position on Marine Processes at D7 [REP7-103] and within this we have suggested a course of action that the ExA/SoS might consider in response to the outstanding uncertainty.

We also highlight that AEoI cannot be excluded for the SNS SAC and that we currently lack confidence that the management tools available (i.e. SIPs) are sufficient. We would therefore reiterate our advice that additional mitigation be incorporated at this stage. (See our R&I log for further details).

Appendix 2: Summary of Designated Sites and Species Potentially Affected by this application

As a summary of our position in relation to Designated sites we are providing the two tables below on natural England's position with regards to LSE and AEoI within European sites.

Table 1: Summary of Natural England's position in relation to European sites

Site name & Citation	Features for which impacts identified.	Impact pathways	Natural England's position on AEoI
Southern North Sea SAC - UK0030395	Harbour porpoise (*Phocoena phocoena*)	• Anthropogenic underwater noise (piling, vessel disturbance and noise generated through ancillary activities such as seismic surveys and UXO detonation) • Death or injury through collision (vessel movements) • Impacts on prey availability (e.g. through impacts on the Flamborough Front, impacts to Smithic Bank, impacts of piling on herring). • Contaminants (i.e. accidental pollution)	Natural England's position overall is that AEoI cannot be excluded for the harbour porpoise feature of the SNS SAC. Of the impact pathways identified, anthropogenic underwater noise due to piling during the construction phase is considered constitute the most significant impact pathway. Natural England agree that the project alone is unlikely to exceed the noise thresholds of the Southern North Sea SAC, however there are various scenarios whereby the underwater noise thresholds for the site would be exceeded on an in-combination basis. Although the Applicant has suggested that these impacts can be managed through the use of a Site Integrity Plan (SIP), Natural England have a number of concerns regarding the implementation of SIPs and for this reason do not consider that it is possible to rule out the potential for AEoI until the post-consent SIP is provided for assessment. In relation to vessel disturbance and vessel collision risk, Natural England agree with the Applicant's assessment of the impacts of Hornsea 4 alone. We highlight that the assessment of in-combination effects is more challenging, with the full extent of vessel movements from all potential plans and projects across the site being difficult to quantify or qualify. Due to the scale of the SAC and the likely

			sensitivity of the harbour porpoise to these pressures, the risk of adverse impacts is considered to be low, however this remains a gap in the evidence. Within the assessment of Marine Processes and Fish and Shellfish impacts, there have been potential impact pathways identified that could impact on prey availability within on in the vicinity of the SNS SAC. Due to the lack of evidence in key areas the potential for significant impacts to the prey resource cannot currently be excluded. Please see REP07-103 for our detailed advice and consideration of the best way forward.
Flamborough Head SAC UK0013036	Reefs	• Changes to physical processes as a result of impacts from the ECC and landfall during all stages of the project, as well as beyond the operational lifetime of the project • Increased levels of suspended sediment during All stages of the project • Potential changes to the hydrodynamic regime (arising as a result of potential impacts to the Flamborough Front).	As a result of the significant uncertainties outlined within REP07-103 we are unable to exclude the potential for AEoI on the reef feature of the Flamborough Head SAC. Please see REP07-103 for our detailed advice and consideration of the best way forward.
The Wash and North Norfolk Coast SAC – UK0017075	Harbour Seal (*Phoca vitulina*)	• Increase in anthropogenic underwater noise (e.g. piling, vessel disturbance and ancillary activities such as seismic surveys and UXO detonations) • Death or injury through collision (vessel movements) • Prey availability	On the basis of the information supplied throughout the examination, Natural England agree that AEoI can be excluded.
Humber Estuary SAC – UK0030170	Grey Seal (*Halichoerus grypus*)	• Increase in anthropogenic underwater noise (e.g. piling, vessel disturbance and ancillary activities such as seismic surveys and UXO detonations) • Death or injury through collision (vessel movements)	On the basis of the information supplied throughout the examination, Natural England agree that AEoI can be excluded.

		• Prey availability	
	River Lamprey Sea Lamprey	• Underwater noise • Barrier effects • EMF	As highlighted, very little is known about the biology and distribution of lamprey within our estuaries and the sea. Consequently Natural England does not consider it possible to carry out a meaningful assessment of impacts to migrating lamprey at this time. However, given the distance between the designated sites and the project we consider the risk to these species to be low.
	Atlantic Salt meadows *Salicornia* and other annuals colonizing mud and sand Sandbanks which are slightly covered by seawater at all times Mudflats and sandflats not covered by seawater at low tide Estuaries	• Changes to physical processes (as a result of impacts from the ECC and landfall) • Nitrogen deposition	As a result of the significant uncertainties outlined within REP07-103 we are unable to exclude the potential for AEoI on the features listed. Please see REP07-103 for our detailed advice and consideration of the best way forward.
Humber Estuary Ramsar – UK11031	Habitats as listed for the SAC above, including their functioning as supporting habitat for the designated ornithological features.		
Humber Estuary SPA – UK9006111	Habitats that support the classified features including: Intertidal mixed sediment; Intertidal mud; intertidal sand and muddy sand; and *Salicornia* and other annuals colonising mud and sand.		

River Derwent SAC	River Lamprey Sea Lamprey	• Underwater noise • Barrier effects • EMF	As highlighted, very little is known about the biology and distribution of lamprey within our estuaries and the sea. Consequently, Natural England does not consider it possible to carry out a meaningful assessment of impacts to migrating lamprey at this time. However, given the distance between the designated sites and the project we consider the risk to these species to be low.
Tweed Estuary SAC -	Sea Lamprey	• Underwater noise • Barrier effects • EMF	As highlighted, very little is known about the biology and distribution of lamprey within our estuaries and the sea. Consequently, Natural England does not consider it possible to carry out a meaningful assessment of impacts to migrating lamprey at this time. However, given the distance between the designated sites and the project we consider the risk to these species to be low.
Berwickshire and North Northumberland Coast SAC – UK0017072	Grey Seal (*Halichoerus grypus*)	• Increase in anthropogenic underwater noise (e.g. piling, vessel disturbance and ancillary activities such as seismic surveys and UXO detonations) • Death or injury through collision (vessel movements) • Prey availability	On the basis of the information supplied throughout the examination, Natural England agree that AEoI can be excluded.
Greater Wash SPA – UK9020329	Red-throated diver (*Gavia stellata*) Common scoter (*Melanitta nigra*) Little gull (*Larus minutus*)	• Disturbance • Displacement	NE is able to rule out AEoI for impacts to red throated diver and common scoter for the project alone and in-combination with other consented plans and projects. We are unable to rule out AEoI with the inclusion of SEP&DEP in the in-combination assessment, due to the lack of detailed information available regarding these projects.
Flamborough and Filey Coast SPA - UN9006101	Gannet (*Morus bassanus*)	• Death through collision and displacement • Sub-lethal effects due to displacement • Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	Natural England are now able to rule out adverse effects on gannet alone and in-combination with other consented plans and projects at FFC SPA. We note the situation regarding Avian Influenza is rapidly evolving. We will endeavour to update PINS and BEIS on the situation and any implications for our advice. See REP7-070 for our final ornithology position.

	Kittiwake (*Rissa tridactyla*)	• Death through collision • Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	Natural England is unable to rule out AEoI resulting from Hornsea Four in-combination with other consented projects. We note the situation regarding Avian Influenza is rapidly evolving. We will endeavour to update PINS and BEIS on the situation and any implications for our advice. See REP7-070 for our final ornithology position.
	Guillemot (*Uria aalge*)	• Death through displacement • Sub-lethal effects due to displacement • Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	Natural England is unable to rule out AEoI resulting from Hornsea Four alone. We note the situation regarding Avian Influenza is rapidly evolving. We will endeavour to update PINS and BEIS on the situation and any implications for our advice. See REP7-070 for our final ornithology position.
	Razorbill (*Alca torda*)	• Death through displacement • Sub-lethal effects due to displacement • Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	Natural England is unable to rule out AEoI resulting from Hornsea Four in-combination with other consented plans and projects. We note the situation regarding Avian Influenza is rapidly evolving. We will endeavour to update PINS and BEIS on the situation and any implications for our advice. See REP7-070 for our final ornithology position.
	Seabird assemblage	• Death through collision and displacement • Sub-lethal effects due to displacement • Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	Natural England is unable to rule out AEoI for the project alone. We note the situation regarding Avian Influenza is rapidly evolving. We will endeavour to update PINS and BEIS on the situation and any implications for our advice. See REP7-070 for our final ornithology position.
Coquet Island SPA – UK9006031	Seabird assemblage	• Death through collision and displacement • Sub-lethal effects due to displacement	Natural England can rule out AEoI for the project alone and in-combination with other consented plans and projects.

		• Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	
Farne Islands SPA – UK9006021	Seabird assemblage	• Death through collision and displacement • Sub-lethal effects due to displacement • Impacts to supporting habitat and barriers to connectivity with supporting habitat • Prey Availability	Natural England can rule out AEoI for the project alone and in-combination with other consented plans and projects.

Table 2: Summary of Natural England's position in relation to Marine Conservation Zones (MCZs) and Sites of Special Scientific Interest (SSSI)

Site Name & Detail	Features for which impacts have been dentified	Potential Impact Pathways	Natural England's position
Holderness Inshore - UKMCZ0035	High energy circalittoral rock Intertidal sand and muddy sand Moderate energy circalittoral rock Spurn Head (subtidal) Subtidal coarse sediment Subtidal mixed sediment Subtidal mud Subtidal sand	• Changes to physical processes as a result of impacts from the ECC and landfall during all stages of the project, as well as beyond the operational lifetime of the project • Increased levels of suspended sediment during All stages of the project • Potential changes to the hydrodynamic regime (arising as a result of potential impacts to the Flamborough Front).	Natural England is unable to exclude the potential for significant impacts to Holderness Inshore MCZ beyond reasonable scientific doubt. Please see REP07-103 and our final Risk and Issues log for further details.
Holderness Offshore – UKMCZ0078	Subtidal coarse sediment Subtidal mixed sediment Subtidal sand Ocean Quahog (Arctica islandica) North Sea glacial tunnel valleys	• Changes to physical processes as a result of impacts from the ECC and landfall during all stages of the project, as well as beyond	Natural England is unable to exclude the potential for significant impacts to Holderness Offshore MCZ beyond reasonable scientific doubt.

		the operational lifetime of the project • Increased levels of suspended sediment during All stages of the project • Potential changes to the hydrodynamic regime (arising as a result of potential impacts to the Flamborough Front).	Please see REP07-103 and our final Risk and Issues log for further details.
River Hull Headwaters SSSI – 1003424	Lowland fens Lowland mire grassland and rush pasture, Lowland wetland floodplain fen, waterfringe fen, spring/flush fen and raised bog lagg, River supporting habitat, Wet woodland		Natural England is satisfied that the application incorporates sufficient mitigation to avoid the potential for significant impacts on the SSSI.
Dimlington Cliffs SSSI - 1003488	Geological Feature (EC - Quaternary of East England)	• Changes to physical processes as a result of impacts from the ECC and landfall during all stages of the project, as well as beyond the operational lifetime of the project	The applicant has not considered the potential for impacts to Dimlington Cliffs SSSI. Please see REP-07-103.
Humber Estuary SSSI - 1000783	Estuary Geology and geomorphology (Spurn Point) Grey seal (Also the estuary as a supporting habitat for the ornithological features of the site)	See corresponding features in Table 1 above.	Natural England is unable to rule out the potential for significant impacts to these features of the Humber Estuary SSSI. See corresponding SPA and SAC features in Table 1 above.
Flamborough Head SSSI - 1002289	Reefs Aggregations of breeding birds	See corresponding features in Table 1 above.	Natural England is unable to rule out the potential for significant impacts to these features of the Flamborough Head SSSI. See corresponding SPA and SAC features in Table 1 above.