Hornsea Project Three
Offshore Wind Farm

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Applicant's comments on responses to the ExA's Written Questions submitted by Interested Parties at Deadline 1

Date: 21st November 2018

Hornsea 3
Offshore Wind Farm

Ørsted

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Front cover picture: Kite surfer near a UK offshore wind farm © Ørsted Hornsea Project Three (UK) Ltd., 2018.

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1. Applicant's comments on responses to the ExA's First Written Questions submitted by Interested Parties

1.1.1.1 Following the issue of First Written Questions by the Examining Authority outlined in the Rule 8 Letter of 9th October 2018 to the Applicant and other Interested Parties, the Applicant has made comments to the Interested Parties responses to the questions. Details of Applicant's responses are set out within this document in subsequent sections below.

1.1 Written Question - Alternatives and Design Flexibility

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.1.11	National Grid Electricity Transmission (NGET)	"The ES describes the locations considered for connecting the project to the national grid [APP-092] (paragraph 2.2.1.1). It states that NGET's decision making took into account technical, commercial, regulatory, environmental, and socio-economic aspects. Please provide an explanation of NGET's reasons for selecting the connection point at Norwich Main.	When a wind farm developer wishes to connect to the national transmission network, there is a joint assessment to identify a cost-effective connection point. The regulatory framework requires the wind farm developer, acting as Offshore Transmission Owner, to work with National Grid to find an economic and efficient connection option. The wind farm developers look at offshore and onshore routeing considerations for the wind farm cables and National Grid as System Operator looks at the network reinforcements that may be needed, taking account of the capacity sought and timing of the connection. These assessments are carried out in line with the framework set by government and the Regulator. The assessment for the Ørsted Hornsea Three project concluded that the wind farm developer	The applicant's position is aligned with NGET as documented in 6.4.4.1 ES Volume 4 - 4.1 - Grid Connection and Refinement of the Cable Landfall [APP-092].

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			would cable below ground to the National Grid network, rather than National Grid extending its network of overhead lines across Norfolk to the coast. When Ørsted applied for the Hornsea Three connection, National Grid (as System Operator and the Transmission Owner) and Ørsted (the Developer) reviewed all feasible sites available for the connection between Bicker Fen and Eye. Please see Figure 2.1, Grid Connection and Indicative Route Options, in Ørsted's Environmental Statement Volume 4 Annex 4.1 for the sites considered at Bicker Fen, Weston Marsh, Walpole, Necton, Norwich Main and Eye. We then looked at the effect on the electricity network of connecting Hornsea 3 on the various locations to identify the extent of works required. The assessment looks at technical, commercial, regulatory, environmental, planning and deliverability aspects. These were considered for each individual option and then compared between the options. In addition to that, we also compared the overall cost between the options. Necton was discounted because when the assessment was made, Necton had been contracted as the connection point for a total of approximately 5.3GW. Connecting Hornsea Three to Necton would overload the current capacity there, requiring at least a further 5 bays extension and a new 400kV line. Taking into consideration all the above, Norwich Main was chosen as the preferred option due to it	

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			having the overall shortest export cable route, lower flood risk and lowest environmental risk.	
Q1.1.12	National Grid Electricity Transmission (NGET)	A relevant representation [RR-106] has suggested that Hornsea Project Three, rather than Norfolk Vanguard, should be connected to the national grid at Necton. The ES states that, during NGET's offer preparation for Hornsea Project Three, a connection offer made to another developer meant that the connection point at Necton reached capacity. The Necton option was therefore discounted from further consideration. Was NGET in the position of considering connection requests at Necton from more than one developer at the same time? If so, was NGET's assessment of the technical, commercial, regulatory, environmental, and socioeconomic aspects carried out on a comparative basis? What were the reasons for offering a connection to another developer rather than Hornsea Project Three?	Multiple connection applications will be assessed at the same time if the timing of the applications coincide with each other. This was not done for Ørsted Hornsea 3 and Vattenfall Norfolk Vanguard/Boreas because Ørsted applied after Vattenfall. For the above reason, there was no comparative assessment. When Ørsted Hornsea Three's application was received, we were finalising the Vattenfall Norfolk Vanguard and Boreas connections. Hence Hornsea Three was assessed behind Norfolk Vanguard.	The applicant's understanding is aligned with NGET.

1.2 Written Question - Ecology - Offshore

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.2.2	Natural England (NE)	Paragraph 4.4.5 of NE's representation [RR-097] states that the consideration of each phase in isolation failed to consider cumulative impacts over time. Please explain why the approach outlined in paragraph 12.7.1.14 of the ES [APP-072] and paragraph 11.7.2.6 of the ES [APP-083] is not adequate.	Natural England remains of the view that the implications of a phased build scenario over a number of years has not been fully considered and it is also unclear whether any particular impact is considered to be temporary or long term. Whilst Natural England recognises inter-related effects have been considered in 12.7.1.14, this document is a tabulated summary of the information from other chapters. It is not a sufficient assessment on its own and is not appropriately considered/cross referenced in the chapters assessing individual impacts to allow an informed judgement to be made on the adequacy of the assessment of inter related effects (N.B. The interrelated effects chapter only covers EIA matters relating to the wider marine environment, and does not apply to in-combination impacts on designated sites). Additionally, as NE and JNCC fundamentally disagree with the assessments in many of the individual chapters. We do not believe that the project led and receptor led effects have been appropriately assessed. One of the main concerns is in relation to the recoverability of receptors during different phases of the project. Especially for long/term temporary impacts which could be persistent over the lifetime of the project. For example, a receptor impacted in the construction phase may be considered to be likely to recover within 5 years, and therefore a judgment of the level of overall impact made on that basis. As the potential O&M works are considered in isolation, there is an underlying assumption that these are new impacts on a recovered/un-impacted receptor, and again the judgement of significant is made on the basis that the receptor will recover within 5 years. This does not take account of the possible scenario whereby a receptor impacted at construction	The Applicant would note that the approach taken to the impact assessment has been adopted over several offshore wind farm projects (and in other industries) in recent years and has been found to be acceptable by regulators, nature conservation bodies and other stakeholders, including Natural England. However, as requested by the Ex.A, the Applicant has provided clarification on the assessment of the cumulative impacts of Hornsea Three on The Wash and North Norfolk Coast SAC and the North Norfolk Sandbanks and Saturn Reef SAC across the lifetime of the project (i.e. construction, operation and maintenance and decommissioning phases). This is presented in the Applicant's response to the Ex.A question Q1.2.103 at Appendix 17 to the Applicant's response to Deadline I (REP1-178). As noted in the Applicant's response to Q1.2.103, a phased build does not affect recoverability of the relevant features as this would not result in repeat physical disturbance of the same area of seabed across different phases, due to the risk this would pose to the integrity of installed export cables. The Applicant would further highlight that operation and maintenance activities will be highly localised and intermittent (see Table 2.14 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement; APP-062) and the benthic communities affected are predicted to recover following disturbance events such that no long-term effects are predicted. As noted in the Applicant's response to Natural England's Written Representation (REP1-213), the Applicant will produce a similar narrative to provide clarity for the assessment for the Markham's Triangle pMCZ to enable JNCC and Natural England. This will be submitted to the ExA at Deadline III.

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			phase is impacted again in the O&M phase before full recovery has occurred, meaning overall recovery is now up to 10 years and therefore potentially of much greater significance. Equally there has not been consideration of the potential scenario of a phased build over numerous years which could substantially change the conclusions around the recoverability of features over the lifetime of the project. Natural England has not been able to find reference to 11.7.2.6 paragraph within the ES, but are happy to provide further comment if required.	While the Applicant is content to provide such clarifications, the Applicant's position is that the implications of a phased construction have been fully considered within the Environmental Statement, with the maximum design scenario for each onshore and offshore topic assessing a construction phase over two phases. The conclusions made within the Environmental Statement with respect to the significance of effect are therefore valid for a phased construction and effects of greater significance will not occur.
Q1.2.3	NE	Paragraph 4.2.4 of NE's representation [RR-097] states that it is unclear whether the best available evidence was used to determine impact and refers to unspecified offshore wind farm projects where actual construction impacts have been significantly greater than those predicted.	Please see Natural England's Cable paper included in the correspondence. Please also see Natural England's other Benthic Annexes which highlight how the lessons learnt from previous projects identify uncertainties within the HOW03 application and the introduces scientific doubt in the Applicant's conclusions.	Please see the Applicant's response to Natural England's Written Representation (REP1-213) and associated annexes. The Applicant would note that the Project Description has been developed using lessons learned from the offshore wind industry, including Round 1 and Round 2 offshore wind farm developments. For example, activities not included in historic offshore wind consent applications (e.g. sandwave clearance, operation and maintenance activities including cable remedial burial or repair), have been included in the Project Description and DCO/DMLs for Hornsea Three. The Applicant would also refer the Ex.A to its response to Natural England's Written Representation submitted at Deadline 2 (and particularly the comments on the Natural England offshore wind farm cabling paper; REP1-213). The Applicant notes that this paper refers to unspecified offshore wind farm projects which makes it very difficult for the Applicant to respond on whether the conditions at these wind farms are similar to those at Hornsea Three and therefore whether the conclusions are applicable.

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		Please direct us to the evidence that shows that the actual impacts from historic projects have been greater than the modelled impacts and explain how these examples relate to the assessments for Hornsea Project Three and the requirements in the draft Development Consent Order (dDCO)[APP-027].		
Q1.2.6	NE, Marine Management Organisation (MMO)	Table 2.38 of the ES [APP-062] states that the introduction of hard substrates associated with foundations, scour protection and cable protection would only lead to a	NE RESPONSE: Natural England agrees that in terms of the wider EIA context (i.e. outside of designated sites) the impacts may be considered minor adverse on epifaunal and infaunal communities. However, we believe that there would be a likely significant effect within designated sites, which may hinder the conservation objectives for the site and therefore there is a risk of an adverse effect on integrity of the designated sites. Natural England received further information from the applicant on the subject of scour protection and rock placement on 10th October 2018. Please see Annex D2 for detailed comments on this additional	The Applicant acknowledges the MMO response to this question and has nothing further to add. The Applicant also acknowledges Natural England's response to this question and further discussion of the implications of cable protection on designated sites is outlined in the Applicant's response to Natural England's Written Representation (REP1-213) and associated annexes.

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		minor adverse impact. Do you agree that there are unlikely to be significant changes in the composition of epifaunal and infaunal communities as a result of the introduction of hard substrates?	information, however, it should be noted that overall our advice remains unchanged.	
			MMO RESPONSE: Based on the evidence provided, the MMO is in agreement that the introduction of hard substrate would lead to minor adverse impact and that there is likely to be no significant changes to the faunal communities as a result.	

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Q1.2.8	NE, MMO	Table 2.38 of the ES [APP-062] states that the risk of spreading invasive and non-native species is minor adverse to negligible. Do you agree with this assessment of the risk to benthic communities from invasive and non-native species?	NE RESPONSE: Natural England believes that if the relevant best practice operational management measures are implemented to ensure that the risk of spreading INNS is minimised as much as possible the risk will only be minor adverse to negligible. It would be appropriate for the Applicant to provide a best practice management plan for INNS MMO RESPONSE: Based on the available information the MMO agree that the risk of spreading invasive and non-native species is minor adverse to negligible.	The Applicant acknowledges the MMO and Natural England's responses to this question. As proposed by Natural England, the Applicant has committed to production of a Biosecurity Plan prior to construction of the project (see Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement; APP-062 secured by Schedule 11, Condition 13(1)(d)(iii) (generation assets DML) and Schedule 12, Condition 14(1)(d)(iii) (transmission assets DML) of the draft DCO submitted for Deadline 1). This would be based on the best available evidence on invasive and non-native species (INNS) and the best practice management measures to minimise the risk of introducing or spreading INNS during construction, operation and maintenance and decommissioning phases of Hornsea Three.
Q1.2.13	NE, MMO, EIFCA	Representations from NE [RR-097], the MMO [RR-085] and the EIFCA [RR-070] suggest that there is a need for additional survey data to be collected for the nearshore cable corridor re-route. Please explain why historical data	NE RESPONSE: Natural England has been provided with a clarification note from the Applicant on 9th October 2018 which provided additional drop down video data for the Wash and North Norfolk Coast SAC. We have provided further advice on what would be considered an adequate baseline report and our views on the acceptability of the further survey data in benthic Annexes D1 and D7. MMO RESPONSE: In our RR submitted to PINS on 20 July 18, the MMO raised a number of concerns regarding the limited availability of survey data for the inshore cable corridor reroute. Since then, the applicant has provided the Wash and North Norfolk Coast SAC clarification note to the MMO on 9 October 18, which outlines further survey work and data analysis for the cable reroute.	The Applicant acknowledges the responses provided by the MMO, EIFCA and Natural England to this question and the comments in relation to The Wash and North Norfolk Coast SAC Clarification Note (at Appendix 5 to the Applicant's response to Deadline I; REP1-140). In summary, the Applicant understands that the current status on this point is as follows: The MMO is in agreement that sufficient data have been presented for the purposes of the EIA. EIFCA is in agreement that the baseline characterisation within The Wash and North Norfolk Coast SAC is sufficient (see draft SoCG with the Eastern IFCA), based on the findings of the validation survey

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		are insufficient and state what, in your view, would be required to provide an adequate baseline.	Following review of the clarification note, the MMO is able to confirm that a drop down video survey has been undertaken and the predictions made by the applicant regarding the sediments, habitats and the recovery of the sediments are in line with what was assessed in the ES. Furthermore, it can be confirmed that no biogenic or geogenic reefs have been observed. The information provided give the MMO confidence in the predictions by the applicant in the ES. Although no new geophysical data has been collected within the reroute area of the nearshore export cable corridor, the data that has been collated provides sufficient information for the baseline environment for the purpose of informing the EIA	presented at Appendix 5 to the Applicant's response to Deadline I. The Applicant acknowledges the comments made by the Eastern IFCA with respect to sensitivity of subtidal mixed sediment habitat and the potential requirements for rock protection. These comments are consistent with the key points raised in the Eastern IFCA's Written Representation (REP1-118), to which the Applicant has provided a response. Natural England acknowledge that the information within The Wash and North Norfolk Coast clarification note is acceptable for benthic ecology characterisation (see paragraph 2.5 of Annex D1 of Natural England's response to Deadline I; REP1-210), however Natural England maintains residual concerns with the information presented relating to cable burial (see Applicant's response to Natural England's Written Representation; REP1-213). The Applicant refers the Ex.A to its response to Natural England's Written Representation submitted at Deadline 2, and particularly the comments on the Natural England offshore wind farm cabling paper (REP1-213), which provides clarification on the use of site specific geophysical and geotechnical data to inform cable burial risk assessments. These data are not used to determine the likelihood of burial success or inform the volumes of cable protection likely to be used. As indicated in the Applicant's response to the Ex.A question Q1.2.4 (REP1-122), for cable burial, a range of methodologies and tools could be used, including pre-trenching and rock cutting which can be used to install cables in areas of stiff clays and rock. The Applicant therefore does not agree that there is a higher likelihood of cable protection being required in the areas of subcropping rock.
			EIFCA RESPONSE: The Applicant used a combination of Hornsea Three site specific data and desktop data sources to characterise seabed types within the nearshore section of the cable corridor. Hornsea Three site specific data however, did not extend into the re-routed area of cable route that runs through The Wash and North Norfolk Coast Special Area of Conservation (SAC) (Figure 1). Biotopes (habitat type supporting particular species) in this area were instead determined by using desktop data sets to extend the nearshore biotope maps generated from the Hornsea Three site specific benthic ecology data into the re-routed area and provide the baseline characterisation for the Environmental Impact Assessment (Paragraph 2.7.6.2. of Volume 2, Chapter 2: Benthic Ecology). Whilst desktop data indicated sediment types were broadly similar across the area with sandy sediments inshore grading into coarse/mixed sediments further offshore, providing the applicant with confidence in the extrapolation, Eastern IFCA do not consider this provides the required level of confidence to enable impacts from the development to be properly predicted. The type of seabed is important because the sensitivities of different biotopes varies.	

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			In addition, the assigned biotopes differ considerably from those shown in Natural England's latest feature extent data for the SAC (June 2018 data release) (Figure 1). However, the data used by Natural England to inform the feature extents are also considered low confidence, as they have been taken from broadscale habitat mapping surveys conducted prior to 2000 (Foster-Smith et al., 1999) at a much lower spatial resolution than that required to assess habitats within the cable corridor. The age of the data is important in marine sedimentary environments where changes in characteristic habitat types can occur over relatively short timescales (weeks and months, or even days in extreme cases). The fact that biotope data have been extrapolated from point data and surveys pre-dating 2000 means there is low confidence in the type of habitat in the nearshore cable area. Therefore, either site-specific surveys should be undertaken to ascertain the actual habitats present, or a precautionary approach should be taken to managing activities in the area to ensure potential impacts on most sensitive habitats cannot occur. It is relevant to highlight that, because of the low confidence in the habitat data available along the North Norfolk Coast, Eastern IFCA have taken a precautionary approach when applying fishery management measures in this section of the MPA to protect subtidal mixed sediments and subtidal mud. This has resulted in Eastern IFCA proposing a large proposed closure on the North Norfolk Coast (5922 ha) prohibiting towed demersal fishing gears between 0 and 3nm from the shore. This extends an existing closure (Eastern IFCA Byelaw 12) between Blakeney and Mundesley on the North Norfolk Coast, which has the effect of protecting seabed habitats from abrasion or penetration from trawling or dredging (Figure 2). To fully assess the impacts of cable installation works on Annex 1 habitat, which include H1110 Sandbanks which are slightly covered by	

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			sea water all the time, within the SAC a better understanding of the distribution of these habitats is required. Mixed sediments are a sub-feature of subtidal sandbanks (detail provided in statutory conservation advice for the SAC – see Natural England (2018)1. This seabed type can support a wide range of species that are not found in sandier seabed habitats, which means they have a greater sensitivity to physical disturbance, for example from cable laying or cable protection. In addition, a better understanding of the habitat types and benthic communities is also important when considering cable burial options and the requirement for rock armoring and to provide a baseline for post-construction monitoring surveys. Since submitting our Relevant Representation, the Applicant has provided Eastern IFCA with additional survey data for the near-shore cable area, gathered during surveys in summer 2018. This includes drop-down video sampling within the section of the cable corridor that coincides within The Wash and North Norfolk Coast SAC. Eastern IFCA consider that the additional data partially to validate the baseline assessment (Clarification Note: Baseline and impacts of cable installation); they support the classification of mobile sediments across the nearshore section of the cable route. However, whilst visual assessments of habitat type can be made using video methods and can contribute to the classification of habitat types, to accurately assess sediment and benthic community composition Eastern IFCA considers that further grab samples should be taken and assessed for particle size and biota. Furthermore, Eastern IFCA's understanding of the habitat in this area is that mobile sediments could overlay subtidal chalk2 features. Video assessment of the seabed does not allow an assessment of underlying habitat below the top layer. If large areas of rock or other unsuitable habitat exist, then it is likely that it will not be possible to bury a substantial proportion of the cable within the SAC. This could result in a requirement for rock armoring to protect unburied	

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			cable, which would result in a permanent loss of sedimentary habitat in that area.	
Q1.2.14	The Wildlife Trusts (TWT)	TWT's representation [RR-047] states that more realistic expectations of cable burial and protection within The Wash and North Norfolk Coast Special Area of Conservation are required. Please provide further justification for your view that the assessments in the application documents are not realistic. What reasonable measures should, in your view, be taken to remedy this situation	TWT consider that further information is required regarding the impact of the cable route within The Wash and North Norfolk Coast SAC to ensure no adverse effect on integrity. This is for several reasons: 1. Cable burial There is evidence to suggest that a sediment veneer over rock is present within the cabling route within the SAC. This may increase difficulties in cable burial. The amount of sediment veneer covering rock should be considered in more detail to understand predicted cable burial success. Our concerns regarding cable burial have increased based on the cable burial failure we have seen in The Wash and North Norfolk Coast SAC for Race Bank Offshore Wind Farm. We have recently responded to a marine licence application for further remedial burial works and cable protection within the SAC for Race Bank Offshore Wind Farm, which we have objected to (MLA/2018/00385). We require certainty that the same issues will not occur for Horsea Three cables within the SAC. 2. Cable protection If cables cannot be buried, then cable protection will be required. Although the applicant is proposing sensitive cable protection, it will still result in the introduction of a hard substrate in a soft sediment	The Applicant's comments on TWT's response to this question are set out in the Applicant's response to TWT's Written Representation (REP1-023).

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			environment. The applicant has calculated that 0.004% of subtidal sandbank will be lost within The Wash and North Norfolk Coast SAC due to cable protection. When considering the scale of the impact, the judgement in the Sweetman case should be borne in mind. In the Sweetman case, it was determined that the removal of just 0.53% of the limestone pavement feature (0.006% of the whole SAC) constituted an adverse effect on site integrity. There are numerous other examples where habitat loss of less than 1% has been shown to constitute an adverse effect on the integrity of a European site1. We have concerns regarding the in-combination impacts of the cabling works with other activities within The Wash and North Norfolk Coast SAC. The following activities have not been included in the in-combination assessment, and must be to understand the in-combination effect: · Race Bank Offshore Wind Farm cabling works – existing infrastructure and new works. · Linc Offshore Wind Farm cabling routes – existing infrastructure. · Commercial fishing. From our understanding, the maximum 10% protection estimate has been made by taking account the amount of cable protection used in other projects. However, the amount of cable protection for Race Bank Offshore Wind farm, located within the same SAC as Hornsea Three cables, appears to be an anomaly and much higher than other projects. We are concerned that Race Bank cables within the SAC will continue to become exposed requiring further cable protection. As stated previously, we require certainty that the same issues will not occur for Hornsea Three cables within the SAC.	

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			TWT suggest that the following should be considered to give to give certainty that there will be no adverse effect on The Wash and North Norfolk Coast SAC. · Certainty that the cable can be buried if a sediment veneer over rock is present. The applicant has informed us that they are confident that they will be able to cut into rock in order to bury the cables. Further information on the confidence in cutting and burial techniques is required, including information from similar activities for other projects. In addition, how much geophysical information of the route within the SAC is available to determine how much sediment veneer over rock there may be within the cable corridor? This information would be useful in providing confidence in the proposed maximum 10% cable protection required within the SAC. · Due to the issues we have seen with cable burial within the SAC, we would like to understand what the likelihood is of similar problems occurring along the Hornsea Three cable route along the North Norfolk Coast. Due to the dynamics within the Wash, sediment does not remain in situ which has resulted in cable exposure and the requirement for cable protection. Does the applicant expect similar coastal processes within the Hornsea Three cable route which may result in cables becoming exposed and the requirement further cable protection? We are aware that rocky outcrops along the North Norfolk Coast area do become exposed due to the shifting sediment. · It would be useful if the applicant could provide examples of cable burial success from other cable routes within the area e.g. Dudgeon and Sheringham Offshore Wind Farms. We would like to understand if the cables from these offshore wind farms have become exposed and how much cable protection has been used.	

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			TWT has provided further detail outlining our concerns regarding cabling within The Wash and North Norfolk Coast SAC within our Written Representation.	
Q1.2.15	NE	Paragraph 5.4.13 of NE's representation [RR-097] states that there are outstanding questions regarding how the survey data have been analysed and interpreted. Errors have been noted in the results and the significance of potential impacts on biotopes and VER. Please identify the nature of these errors and the implications that you think this has for the findings of the ES.	Lack of confidence in survey evidence This has been a focus of the discussions during the evidence plan process, but we continue to have concerns over the appropriateness of the analyses, and note in particular: • splitting data by sediment type for analyses creates clusters that are unlikely to prove meaningful ecologically. We understand that doing this will lower the size of the dataset for analysis, but we would expect the contractors to investigate more appropriate ways of dealing with scale. If the analysis must be split, investigating split by geographical area than sediment type would be more appropriate. • use of 'shoe horning' to ensure samples match a biotope. Rather than supplying the 'closest' biotope to the grouping, it would be preferable to just describe characterising species of the group • appropriate use of infauna and epifauna in datasets dependent on sample ability rather than strict definitions of infauna vs epifauna, e.g. some epifauna (e.g. brittlestars) are much better sampled by grab, as opposed to epifauna such as seapens. • We consider that the methods used for faunistic analysis by the applicant are such that there is little opportunity that true ecological patterns and relationships could emerge. As such, we have low confidence in the biotoping results as well as any conclusions as to characterisation or monitoring resulting from them. Implications for the findings of the ES	The Applicant notes Natural England's comments on the benthic data analysis and has provided responses against each point raised below. • The approach adopted for the Hornsea Three benthic ecology data analysis has been employed previously on a number of offshore wind farms including Hornsea Project One and Hornsea Project Two. The Applicant notes that for both of these projects, and the other projects where this approach has been used (i.e. Atlantic Array and Triton Knoll offshore wind farms), this was acceptable to Natural England and JNCC at the time of consenting. The approach used is also consistent with that presented in the Hornsea Three Preliminary Environmental Impact Report (PEIR) and the Applicant would highlight to the Ex.A that they did not receive feedback regarding the appropriateness of splitting data by sediment type in the Section 42 consultation response from Natural England. The Applicant notes Natural England's comment regarding initially splitting data by geographical area rather than sediment type but would point out that the JNCC Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Parry, 2015) outlines that, to assign a biotope, there should be step-wise progression through the classification from level 1 to level 5 of the Marine Habitat Classification for Britain and Ireland. The Applicant would point out that levels 2 and 3 of the classification are based solely on the substrate type and biological

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			It would only be possible to fully identify the implications for the results of the ES with reanalysis of the benthic survey evidence, including peer-review by NMBAQC/SNCBs. We understand that, for timing reasons, it is now not likely to be possible to undertake reanalysis before examination and so we advise that the examining body considers that the results include a degree of uncertainty, and thus includes a further layer of precaution when considering benthic survey results.	zone of the sample. On this basis, the Applicant maintains that initially splitting data into sediment groups is a useful and valid initial approach to biotope mapping for very large datasets. The Applicant would also highlight that no other stakeholder, including Cefas, have raised any concerns with the data analysis approach adopted. • With regard to the second point about 'shoe horning' for biotope allocation, this comment is noted, however the Applicant also notes that the classification of the community data into biotopes is not always straightforward and this is acknowledged as a limitation in paragraph 2.7.6.3 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). The Applicant would point out that the process of identifying and assigning biotopes to benthic sample data is a standard method in characterisation for the purposes of EIA and, as discussed above, the Benthic Ecology, Fish and Shellfish and Marine Processes Expert Working Group (EWG) advised the Applicant that biotopes should be used in the benthic ecology assessment, rather than more broad descriptions of sediment/faunal communities. • Natural England's comments regarding infauna and epifauna are noted. The Applicant notes that, as outlined in paragraph 2.6.2.5 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102), this has been done as the epifaunal data recorded from the grab samples were generally low in abundance and were therefore combined with the epifaunal data from the drop down video survey for analysis. It should be

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				noted that both epifaunal and infaunal communities were used to inform the ultimate biotope classification. With respect to Natural England's fourth point, the Applicant would note that there is a degree of subjectivity and therefore, professional judgment, to biotope classification. However, the Applicant considers that, by using the sediment type as a starting point, this removes some of the potential variability. As outlined in paragraph 2.7.6.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, it is important to note that any uncertainties in individual biotope codes assigned to certain sites has been controlled by grouping habitats with similar overall general ecology, species assemblages and sensitivities together as valued ecological receptors (VERs), and considering designated features of nature conservation sites as separate VERs. The impact assessment is undertaken against these VERs and this approach was presented to, and discussed with the Benthic Ecology, Fish and Shellfish and Marine Processes Expert Working Group (EWG), at a meeting on 21 June 2016 as outlined in the Consultation Report, Annex 1: Evidence Plan (APP-035). Therefore, even if there were some subtle differences in the biotopes assigned then the conclusions of the assessment would be unchanged as the assessment would have been made on the same overarching VER. Finally, the Applicant would highlight that the biotopes identified and assigned to the Hornsea Three data are consistent with the habitats, species and biotope recorded in the desktop datasets discussed in section 3 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement, for this part of the southern North Sea. For these reasons the Applicant's position is that there can be confidence in the biotope characterisation results or in the conclusions of the assessment resulting from them. Natural England's comment regarding the implications for monitoring are incorrect as the benthic analysis undertaken to date was for the purposes of characterisation

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				for the EIA/HRA and not as a pre-construction baseline to inform a monitoring programme. The Applicant would reiterate again that the Statutory Nature Conservation Bodies (SNCBs) had the opportunity to peer review the Hornsea Three data analysis at PEIR and made no comments about the approach at this time. With regards to a peer review by the NE Atlantic Marine Biological Analytical Quality Control (NMBAQC) scheme, the Applicant would highlight that as outlined in paragraph 2.5.1.4 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement, the infaunal samples were analysed at a benthic laboratory which participates in the NMBAQC scheme and the Applicant is not aware of any NMBAQC standard for data analysis/biotope allocation. In summary, and for the reasons outlined above, the Applicant does not consider that it would not be appropriate or necessary to reanalyse of any part of the benthic survey data for Hornsea Three. For the purposes of informing the characterisation for the EIA/HRA for Hornsea Three, the data analysis is considered by the Applicant to be robust and comprehensive and there is no need for a further layer of precaution to be added in considering benthic survey results. precautionary. References Parry, M.E.V. 2015. Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland JNCC report No. 546 Joint Nature Conservation Committee, Peterborough
Q1.2.17	Applicant, NE	Table 2.18 of the ES [APP-062] states that cables	*Sabellaria spinulosa* is an Annex I reef habitat under the habitats directive and our advice to the Applicant during the evidence plan process was the same as to all industries; namely that Annex I reef, of	The Applicant's response to the Natural England Written Representation (REP1-213) provides a detailed overview of the

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		would be micro-sited through areas of 'lower quality' *Sabellaria* reef. Paragraph 2.7.1.19 of the ES [APP-062] acknowledges that this is a widespread benthic feature with potential for occurrence in the array and cable corridor areas. How effective is this mitigation measure likely to be given the widespread distribution of this habitat?	all quality, is avoided, within designated sites and that under the NERC Act 2006 *Sabellaria spinulosa* reef is also a habitat of conservation importance and therefore should be avoided where possible even outside of designated sites. The main area of concern in relation to impacts on Annex I *Sabellaria spinulosa* reef relates to North Norfolk Sand Banks and Saturn Reef SAC. Reef layer evidence JNCC's spatial products for Annex I reef is currently being updated. Version 7 (the current published version) of the Annex I reef layer was provided to the applicant during their PEIR consultation, and we provided updated layer images to the applicant in early 2018. JNCC were expecting to be release version 8 before the Hornsea examination, but publication is now expected to be December 2018. This data set will be required to understand how effective the mitigation measure to avoid reef (not just low quality) will be. Micrositing as mitigation It is Natural England's view that with the current cable corridor routing, primary mitigation (i.e. avoiding Annex I reefs within SACs and/or biogenic or geogenic reefs outside SACs within the Hornsea Three offshore cable corridor) will not always be possible, particularly around Saturn Reef where evidence for Annex I reef shows presence across the cable corridor. We do not consider the applicant's consideration of routing through 'lower quality' reef to be acceptable in terms of restoration of conservation objectives as the 'lower quality' reef mentioned by the applicant is still contained within area to be managed as reef, with the protection provided by Annex I status. We welcome the applicant's desire to avoid areas of higher quality reef and/or restrict cable installation to the periphery of reef features, and we consider that both of these mitigations may decrease impact on individual reefs. However, we do not consider that they will lower risk	Applicant's position with respect to *Sabellaria* reefs and micrositing around these.

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			related to leaving the overall reef feature in unfavourable condition, particularly as we are unsure as to whether the applicant can microsite around the reef feature in this area. Please see Annex D4 or further details.	
Q1.2.19	NE	Paragraph 5.4.4 of NE's representation [RR-097] states that the 'core reef approach' that was used to assess impacts on the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC) did not follow published guidance. Please explain how the adopted approach differs from the published guidance. How is any difference in approach likely to have affected the	Natural England has provided comments on the core reef approach in section 2.4 of Annex D4 and within Annex D5 of our Written Representation. Please also refer to paper by Roberts et al., 2014.	The Applicant's response to the Natural England Written Representation (REP1-213) provides a detailed overview of the Applicant's position with respect to *Sabellaria* reefs and the applicability of the 'core reef approach'.

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		findings of the ES?		
Q1.2.20	Applicant, NE, MMO	Paragraph 2.7.1.19 of the ES [APP-062] states that *Sabellaria* reefs are 'likely to be ephemeral'. What peer reviewed literature supports this assumption? Is it possible that the observed changes in distribution are attributable to regular loss of reefs from bottom trawling? Given the observed ephemerality, would pre-construction surveys be effective in mitigating potential impacts?	MMO RESPONSE: Research undertaken at the North Norfolk Sandbanks and Saturn Reef SAC (e.g. Limpenny et al., 2010, Jenkins et al, 2018) show that mature Sabellaria reef identified by Conoco Phillips in 2003, known as Saturn Reef, was not observed in subsequent surveys. Reef was observed in other areas within the SAC in 2013, although not as well developed as that observed in 2003. Reef rubble was observed in the Saturn Reef area by both Limpenny and Jenkins, but it was never determined whether the cause of the damage was due to natural (storms) or anthropogenic (trawling) impacts. Until an investigation of trawling location and intensity has been undertaken within the SAC, it is still speculation that trawling is the sole cause of the damage to Sabellaria reef. Pre-construction surveys (if undertaken temporally (within months) near to construction start dates) combined with micro-siting around reef areas should be effective for mitigating potential impacts. If the construction is to be undertaken in two phases, further surveys may need to be undertaken in areas of potential reef to ensure no reef has formed in the interim period. The MMO is in agreement that reefs tend to be ephemeral in areas of high sediment mobility and that they will have medium recoverability. References: Limpenny, D.S., Foster-Smith, R.L., Edwards, T.M., Hendrick, V.J., Diesing, M., Eggleton, J.D., Meadows, W.J., Crutchfield, Z., Pfeifer, S., and Reach, I.S. 2010. Best methods for identifying and evaluating Sabellaria spinulosa and cobble reef. Aggregate Levy Sustainability Fund Project	The Applicant acknowledges the MMO and Natural England responses to this question. As reflected in the Applicant's Deadline I response to this question (REP1-122), the Applicant is in agreement that pre-construction surveys should be scheduled within an appropriate timeframe to ensure they are fit for purpose, to allow for direct impacts on Annex I reefs to be avoided, based on the extents of these features at the time of construction. The timeframes indicated by the Applicant (i.e. 12 to 18 months) are identical to those suggested by Natural England. The Applicant's response to the Natural England Written Representation (REP1-213) provides a detailed overview of the Applicant's position with respect to *Sabellaria* reefs.

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		Please could NE and the MMO comment on whether they agree that the reefs are likely to be ephemeral and whether it is reasonable to consider them as having medium recoverability.	Jenkins, C., Eggleton, J. D., Barry, J., O'Connor, J. (2018) Advances in assessing Sabellaria spinulosa reefs for ongoing monitoring. Ecology and Evolution 8 (2)	

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.2.25	TWT	Paragraph 2.7.1.22 of the ES [APP-062] states that no ocean quahog (Arctica islandica) were recorded in the Hornsea Project Three area and that only a limited number of juveniles were recorded in the wider Hornsea Zone. What empirical evidence is there to suggest that the potential impacts on this widely distributed species would be significant?	TWT have discussed the presence of ocean quahog within the Hornsea Three project area in more detail and have no further comments to add.	The Applicant acknowledges TWT's response to this question and has nothing further to add.

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Q1.2.29	NE	Paragraph 5.1.2.8 of the Marine Conservation Zone Assessment [APP-104] outlines the potential impacts on the Cromer Shoals Chalk Bed Marine Conservation Zone. Why do you think that this, together with other parts of the ES, does not adequately consider the worst case scenario associated with horizontal direct drilling operations?	Please refer to Natural England's Annex D6 for detailed comments on the MCZ Assessement.	The Applicant would refer the Ex.A to their response to Natural England's Written Representation (REP1-213) which provides an overview of the Applicant's position with respect to the Cromer Shoal Chalk Beds MCZ.
Q1.2.30	NE	NE's representation [RR-097] states that the features of the Markham's Triangle proposed Marine Conservation Zone (pMCZ)	Separate feature assessment We believe that levels of impact on the site discussed in the MCZ Assessment to be extremely unclear. For example: • 5,872,589 m2 is noted as the overall amount of disturbance in the site • 5,872,589 m2 is also noted as the amount of disturbance to coarse sediments within the site	As suggested by Natural England and JNCC, the Applicant has presented habitat loss numbers in tabular format. This is presented in the Applicant's response to Natural England's Written Representation (REP1-213).

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		should be assessed separately rather than by using one feature as a proxy. However, the applicant has provided a Marine Conservation Zone Assessment [APP-104] which includes an assessment of individual features of the pMCZ. If you do not consider this assessment to be adequate, please explain why. How, in your view, should the assessment have been carried out? How would the outcome of the assessment be altered if the features were assessed individually rather	Impact values (such as the 5,872,589 m2 of disturbance to coarse sediments) are prefaced with '*this represents the maximum adverse scenario for each broadscale habitat feature individually and therefore construction would not lead to a sum of the areas/proportions below being affected by temporary habitat loss*'. This again provides confusion about how total impact values are calculated through the assessment. As such it remains challenging to understand where impacts will occur and in what amounts. We suggest that this issue is related more to the presentation of the analyses than fundamental flaws in the figures. We suggest that the applicant provides a clear table in which they present the likely impact (km2) per feature, if possible split into long-term impact and temporary impact. This would allow us to more clearly understand the MCZ Assessment chapter, and to reconsider our uncertainty over its assessment.	

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		than by using one feature as a proxy?		
Q1.2.31	NE	Paragraph 5.4.8 of NE's representation [RR-097] states that the Relevant Authority will need to carry out a full Marine Conservation Zone assessment. Please supply the conservation objectives, operational advice and a sensitivity analysis for the Markham's Triangle pMCZ. If this information is not available, please advise on what information should be used to inform a Marine Conservation Zone assessment for Markham's Triangle pMCZ.	Available evidence Defra Consultation factsheet for Markham's Triangle (2018): https://consult.defra.gov.uk/marine/consultation-on-the-third-tranche-of-marine-conser/supporting_documents/Markhams%20Triangle%20factsheet.pdf Site assessment for Markham's Triangle (2017): http://jncc.defra.gov.uk/pdf/JNCC_T3PreConsultationAdviceOnPossibleOffshoreMCZs_v3.0.pdf Post survey site report (2011-12): http://randd.defra.gov.uk/Document.aspx?Document=12836_MarkhamsTrianglerMCZSummarySiteReport_v6.pdf (habitat data available https://data.gov.uk/dataset/42f967ae-082b-4d72-9a9d-55efe6558bf6/broadscale-habitat-eunis-level-3-for-markham-s-triangle-recommended-marine-conservation-zone-rmcz) We note that the conservation objective for the site's features is currently draft, and could be subject to subsequent changes. The form and content of MCZ assessments is regulator specific, however we consider the following to be of value: MB0102 - Report No 22: Task 3. Development of a Sensitivity Matrix (pressures-MCZ/MPA features): http://sciencesearch.defra.gov.uk/Document.aspx?Document=MB0102_9721_TRP.pdf JNCC's Pressures-Activities Database: http://jncc.defra.gov.uk/page-7136	The Applicant acknowledges the response from Natural England and has nothing further to add.

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		Are you in agreement with the Applicant's approach of using the conservation objectives for the Cromer Shoals Chalk Beds Marine Conservation Zone?	Natural England agrees that the Applicant has referenced the correct Conservation Objectives for the site. However, we have concerns in relation to the assessment undertaken that can be found at Annex X in relation to Cromer Shoal Assessment.	
Q1.2.32	NE, MMO, TWT	Paragraph 2.12.2.3 of the ES [APP-062] identifies a number of impacts that have been scoped out of the cumulative impact assessment. Do you agree with the decision not to assess certain impacts on benthic ecology receptors within this assessment or within the HRA in-combination	NE RESPONSE: As stated in Natural England's Relevant Representations and the response to the PEIR Consultation, we do not consider that seabed disturbance impacts related to maintenance activities should be scoped out of cumulative assessment. It is currently not clear what levels of cable protection will be added into the site during maintenance operations, though we note it may be up to 25% of initial cable length. We do agree that the following (2.12.2.3) can be scoped out: Construction phase: • Accidental release of pollutants (e.g. from accidental spillage/leakage) may affect benthic ecology. Operation and maintenance phase: • Increased risk of introduction or spread of invasive and non-native species (INNS) due to presence of subsea infrastructure and vessel movements (e.g. ballast water) may affect benthic ecology and biodiversity;	The Applicant acknowledges the responses from the MMO, Natural England and TWT. The impacts scoped out of the cumulative effects assessment in the final Environmental Statement were identical to those scoped out in the Preliminary Environmental Information Report which was consulted on during section 42 consultation. At that time, these were not raised and therefore the approach taken was considered to be appropriate. With respect to the cumulative risk of spreading INNS, as noted in response to Ex.A question Q1.2.8, the Applicant has committed to production of a Biosecurity Plan prior to construction of the project (see Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement; APP-062 secured by Schedule 11, Condition 13(1)(d)(iii) (generation assets DML) and Schedule 12, Condition 14(1)(d)(iii) (transmission assets DML) of the draft DCO submitted for Deadline 1). Similar commitments have been made for other offshore wind farm projects in the past which, based on the best available evidence on INNS and the best practice management

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		assessment for the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation? If not, why not?	Accidental release of pollutants (e.g. from accidental spillage/leakage) may affect benthic ecology. Please also see Natural England's comments on the HRA for the nearshore area which included further detail on our concerns for the Wash and North Norfolk Coast SAC – Annex D5.	measures, would seek to minimise the risk of introducing or spreading INNS. However, in acknowledgement of Natural England and TWT's comments in relation to the Race Bank applications for operation and maintenance activities within The Wash and North Norfolk Coast SAC (note, these were not publicly available at the time of drafting the final Environmental Statement), the Applicant will provide an updated in-combination assessment for the Wash and North Norfolk coast with consideration of these activities.
			MMO RESPONSE: The risk of spreading invasive and non-native species was determined as minor adverse to negligible. The MMO would not therefore exclude this from assessment of the cumulative effects, as there is potential for any invasive species colonising Hornsea Three to impact (act as a stepping stone) from Hornsea Two and One offshore wind farm projects and vice versa. The MMO agree that the remaining impacts would be local to Hornsea Three and should not be considered within cumulative effects.	
			TWT RESPONSE: We believe that "Maintenance operations may result in temporary seabed disturbances and potential effects on benthic ecology" should not be screened out of the cumulative impact assessment. For some offshore wind farms, we are seeing repeated works to cable routes and the cumulative effect of this with other activities must be taken into account.	

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Q1.2.38	NE, RSPB, MMO	Representations from NE [RR-097], RSPB [RR-113] and the MMO [RR-085] consider that an appropriate site specific baseline has not been established. Why do you consider that two years of survey data is essential to provide an appropriate baseline? Given the potential for the variability in the number and distribution seabirds, what increased confidence would be provided by an additional 8 months of data?	NE RESPONSE: Natural England advises that a minimum of two years of survey data are collected to inform the Environmental Statement. This is because there can be considerable variability in the numbers of birds that will be present in an offshore area between years and therefore characterising the use of a project area by a species requires multiple years of data in order to sample that variability. If the variability in numbers between years is high, or the purpose of the surveys is to undertake a statistical analysis of changes in bird numbers, then potentially more than two years of data would be needed. By not capturing any of the inter-annual variability between December and March there is a significant risk that the abundance of individuals is under or over-estimated and consequently there is a higher level of scientific uncertainty around any of the conclusions reached. If data from a second year were collected for December- March, this would mean there are two complete years of baseline survey data for each month. This would allow an abundance estimate to be derived for these months that incorporates a degree of the inter-annual variability in bird numbers, and so will be a more accurate reflection of the actual numbers of birds using the project area. Natural England consider that this would increase the accuracy of the population estimates and reduce the potential bias that arises by having not sampled the inter-annual variability. As an example, the density of kittiwake in the project area in April of year 1 of the DAS surveys was 2.73 birds/km2 compared to 0.22 birds/km2 in year 2 (see Table 1.24 of Applicant's ES Annex 5.4). If only one year of DAS data could be used for April the predicted collisions would be around 12 times higher in year 1 compared to year 2. Likewise Table 1.15 in the Applicant's ES Annex 5.4 shows an	The Applicant has provided a response to the issues raised by Natural England in Appendix 8 to the Applicant's submission at Deadline 1 (REP1-141), as part of the Applicant's response to Natural England's relevant representation (RR-097), as part of the Applicant's response to the RSPB's relevant representation (RR-113) and the Applicant's response to the Examining Authorities questions (REP1-122). With regard to the comparison of inter-annual variation in population estimates presented by Natural England, it is important to note that the comparison made uses months from the breeding season, a period when inter-annual variability is typically greater than at other times of the year. Whereas the months for which only one year of survey data has been collected (December to March) are in the non-breeding season for the majority of species. The Applicant has considered the likely inter-annual variability for this period in Appendix 8 to the Applicant's response at Deadline I (REP1-141) and concluded that the likely variability observed in previous data obtained as part of historical boat-based surveys during December to March would not be sufficient to change the impact assessment conclusions reached in Volume 2, Chapter 5: Offshore Ornithology (APP-065) or the RIAA (APP-051).

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			example of the inter-annual variability in abundance for gannet – for example in August 2016 the abundance of gannet is estimated at 159 birds compared to 1738 birds in August of 2017. By having data from two years for August means that this inter-annual variability can be factored into the subsequent impact assessment so that it is a more accurate representation of the numbers of birds using the project area and is less likely to under or over-estimate the impacts. Full details of Natural England's position on the baseline data can be found in Section 2 of Annex C of our Written Representations.	
			RSPB Response The RSPB considers that two years of survey data represents the very minimum amount of data that is required to establish a credible ornithological baseline. The aim of the baseline is to account for natural temporal and spatial variability in seabird density which can be influenced by factors such as e.g. weather and marine currents, and their potential impacts upon the distribution of food resources. can, increasing coverage from 10% to 20% be shown by examination of survey data from other proposed developments. For example: • One year's aerial surveys for the proposed Dounreay Tri development recorded very few puffin in most months' survey, with a maximum of 44 recorded in any month, except June when 1174 were recorded. This difference was so extreme that another survey was commissioned for this month, and only 130 puffin were recorded. Such variability was only over one survey year, and to a large extent within one month.	The Applicant has explored the uncertainty arising from potential inter-annual variability of the densities of key populations at Hornsea Three using all the data that are available for the proposed wind farm site, including zonal data collected during the period 2010 to 2013 and predictive modelling of data. Furthermore the potential effect of this variability on the certainty that can be attached to impact assessment conclusions has also been explored (Appendix 8 to the Applicant's submission at Deadline 1 (REP1-141)). These analyses indicate that the conclusions of impact assessment are reasonable and precautionary. It is considered that the examples provided by the RSPB in relation to inter-annual variability are not a reasonable comparison with the circumstances at Hornsea Three, for the following reasons: 1. The examples provided by the RSPB are during the breeding season, when variability is typically higher, particularly if the survey area is close to a breeding colony (as is the case in both of the examples provided).

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			• At the Seagreen Alpha and Bravo sites in the Forth and Tay region of Scotland, two years survey were carried out between 2009 and 2011 and surveys were repeated during the breeding season of 2017. In July 2010 1330 gannet and 546 kittiwake were recorded in both sites combined. In July 2011 237 gannet and 1285 kittiwake were recorded in the same area and in 2017 there were 1290 gannet and 4463 kittiwake recorded. While such variability cannot be directly assumed to occur at Hornsea 3, and it is acknowledged that it occurred at a different time of year than the missing Hornsea survey months (largely autumn and winter, see Table 2.3 – Survey effort in the Hornsea Zone in Year 1 (2011/12) and Year 2 (2012/13), Hornsea Project Two Environmental Statement, Volume 5 – Offshore Annexes, Annex 5.5.1, Ornithology Technical Report Part 1), it is indicative potential scale of variability and why one year's survey data is unacceptable and two years is an absolute minimum. The two year period that is typically requested for a development represents a compromise between the need for clear data to establish a baseline and our appreciation of the commercial requirements of the applicant. It is important to note that the greater the potential impacts of a scheme (influenced, amongst other factors, by the size of the scheme and the duration of its operation) the more important it becomes to have a detailed and sufficiently robust ornithological baseline. Given the size of the Hornsea Three scheme and its 35 year proposed operational period it is possible that the full two years of survey data may prove to be inadequate.	2. Hornsea Three lies in an offshore setting (150 km from the breeding colony) and the period in question is the non-breeding season (December to March) when variability is likely to be lower. The meta-analysis (Volume 5, Annex 5.4: Data Hierarchy Report (APP-110)) of zonal data indicates a relative low variability of the densities of key species in this period. The Applicant highlights that there are only four months during the non-breeding season for which one year of site specific digital aerial survey data were collected.

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			Given the potential for the variability in the number and distribution seabirds, what increased confidence would be provided by an additional 8 months of data? As highlighted above the additional 8 months of data would provide greater information to enable potential spatial and temporal variations to be identified and addressed during the evaluation of the scheme. Further confidence in the ability of the data to capture spatial variability would also be obtained if data from all four of the camera operating during survey were analyses and presented, increasing coverage from 10% to 20%.	
			MMO RESPONSE: The MMO defers to NE as the statutory nature conservation body and experts in ornithology. However, the requirement for 2 years of ornithological monitoring data to inform wind farm applications is a standard approach undertaken by all wind farms. By only including 18 months of data some important periods are only surveyed once and therefore the results may not be representative of the overall use of the site.	The Applicant would highlight that 20 months of site-specific aerial survey data has been collected which is supplemented by an extensive boat-based survey dataset collected to support the applications for the Hornsea Project One and Hornsea Project Two offshore wind farms. The Applicant would also highlight information presented in Appendix 8 to the Applicant's submission at Deadline 1 (REP1-141) which shows that there are many projects that have been granted consent without the support of two years of data, many of which do not have the underlying extensive contextual data that supports the Hornsea Three application.
Q1.2.42	NE	Paragraph 5.2.2 of NE's representation [RR-097] states that the hierarchical data selection method for integrating densities/numbers	Please note that Natural England does not agree that the historical boat-based data can be used to inform the impact assessment for Hornsea Three as presented by the Applicant. This includes integration of either the Hornsea Three boat survey data or the wider Hornsea Zone boat survey data with the DAS data collected in 2016/17. Further details of Natural England's position can be found in Section 2 of Annex C of our Written Representations With reference to the questions posed in Q1.2.42, Natural England has provided detailed comments regarding the Applicant's hierarchical data	The Applicant has responded to the points made in this response in Appendix 8 to the Applicant's submission at Deadline 1 (REP1-141), as part of the Applicant's response to Natural England's relevant representation (RR-097), as part of the Applicant's response to the RSPB's relevant representation (RR-113) and the Applicant's response to the Examining Authorities questions (REP1-122)..

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		of species derived from digital aerial and boat-based survey data is flawed. Please explain in more detail why you consider the method to be flawed. What, in your view, are the implications for the findings of the ES and HRA?	selection method in paragraphs 2.11-2.18 of Annex C of our Written Representations and also in detailed advice that we provided to the Applicant in December 2017 as part of the Evidence Plan Process. In summary we consider the approach to be flawed for a number of reasons. One of the criteria for deciding whether or not to integrate historical boat survey data with the 2016/17 digital aerial survey data is the extent of overlap between the confidence intervals between population estimates derived from the different surveys which we do not consider to be an appropriate method because we do not consider it appropriate to combine data collected from different survey platforms with no evidence of compatibility of data collected (or estimates and confidence intervals derived from these data) across these different platforms. A second criterion used in the hierarchical data selection method is the extent of survey coverage available from the historical boat-based surveys, which in the case of the dataset of historical boat data that overlap with Hornsea Three, Natural England do not consider sufficient to support generation of population estimates and confidence intervals. Natural England also do not agree with the Applicant's hierarchical method which results in just one year of digital aerial data being deemed sufficient in months where the confidence intervals around the monthly estimate overlap with the confidence intervals in the boat data for the equivalent month by 50% or more. Just because the confidence intervals overlap does not mean the two estimates are not statistically different from one another and the point of needing more than one year of data is to ensure that the natural variability is captured in the mean and confidence intervals of the sample. The result of application of the hierarchical data selection method is that 1) it combines variable amounts of data from differing years	

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			(spanning years 2010 to 2017) within individual species' assessments; 2) it includes data collected over variable spatial scales within individual species' assessments; 3) it uses density and abundance estimates based on inadequate survey coverage and sample size. Natural England do not consider this to be methodologically appropriate. The implications for the findings of the ES and the HRA are that the Applicant's approach introduces an unacceptable level of uncertainty to the assessments of impacts on species, with the potential that predicted impacts are significantly under or over-estimated. Consequently Natural England would not be able to agree with the conclusions of the ES or conclude no adverse effect on site integrity beyond reasonable scientific doubt.	
Q1.2.51	NE	Paragraph 5.2.6 of NE's representation [RR-097] states that a considerably higher confidence and emphasis should be placed on the use of colony data to inform colony specific breeding seasons. Please explain why more confidence should be placed on	NE advise that when undertaking an assessment in relation to a specific colony (e.g. for HRA) it is important where possible, to use colony specific breeding seasons for the assessment. It should be noted that while establishing seasonal definitions is the first stage in progressing to apportioning birds at the project site to individual colonies, it should be independent from the determination of a suitable apportioning rate. (see section 7, in particular 7.9-7.15 in Annex C of our Written Representations for more detail on this). Of the evidence sources available to establish colony specific breeding seasons, NE place higher confidence in observations made at the colony, as opposed to at sea observations. Colony specific observations (e.g. colony attendance, egg laying, chick fledging, colony desertion dates) give a clear indication of when birds are present at the colony and the assumption that birds observed are part of the colony in question is a reasonable one. Indeed, Busch and Garthe (2018) in their paper on the need to consider annual cycles within cumulative	The Applicant has responded to the points made in this response in the Applicant's response to Natural England's written representation (REP-097)

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		colony specific data rather than 'at sea' abundance data to define the length of the breeding season. Please provide a summary of the key findings and associated caveats of any peer reviewed evidence that supports your view. How would the use of colony data most likely alter the findings of the ES and the HRA?	assessments, use kittiwake as an example and recommend the use of a 'colony attendance' season (in place of a 'breeding season') and base this on colony specific data. The alternative option of interpreting at-sea data gathered as part of the baseline characterisation surveys of the wind farm site (e.g. abundance peaks) is challenging and introduces considerably uncertainty. In the case of HornseaThree and FFC pSPA, for the species where connectivity in the breeding season has been established at FFC pSPA (kittiwake, gannet and puffin) a peak in bird numbers can variously be interpreted as birds on passage passing through the project site to colonies further afield, breeding birds from FFC pSPA using the project site in higher numbers during a period in the breeding season when central place foraging constraints are relaxed and/or when both birds of a pair can forage (e.g. Robertson et al 2014), immature birds returning to the colony they intend to recruit into (e.g. Votier et al 2010), or failed/non-breeders associated with FFC pSPA. In reality the birds observed at Hornsea Three are likely to be a combination of all these categories, and it is important to note that the last three categories (breeding birds, immatures, non-breeders) are all components of the FFC pSPA population to some extent. Natural England accept that during the FFC pSPA breeding season, a proportion of the birds present at the project site will be 'non-FFC' birds, this should be addressed in the approach to apportioning and not in the definition of Annex C of our Written Representations. In terms of defining the length of the breeding season at a colony, using observations from the colony in question is more defensible and provides greater certainty than attempting to interpret at-sea data. At-sea data (e.g. abundance peaks, flight direction, fish carrying behaviour) combined with other evidence sources (e.g. tracking data, ringing recoveries) can however help build a picture of how birds are using the project site throughout the breeding season.	

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			NE have referred to a number of evidence sources to determine the appropriate breeding length definitions for FFC pSPA (summarised in Table 7.1 in Annex C of our Written Representations). It should be noted that data on colony attendance and breeding observations are found predominantly in the grey literature (in monitoring reports and observer records) and are not commonly peer-reviewed. In the case of Flamborough and Filey Coast pSPA it is closely managed and monitored by the RSPB. The RSPB reserve managers are well versed in standard monitoring practices and are best placed to advise on breeding colony attendance periods for this colony (these are included as *pers comms* and by reference to monitoring reports (e.g Aitken et al 2017, Babcock et al 2016) in the table). The use of colony observations to define the length of the breeding season for kittiwake, gannet and puffin results in breeding seasons at FFC pSPA that are closely aligned to the breeding seasons described in Furness (2015) for the UK. The interpretation provided by the applicant of at-sea data to define the breeding seasons for these species results in reduced breeding seasons (see Table 7.1 in Annex C of our Written Represenations). The use of colony data therefore results in a longer breeding season for these species. In the breeding season collision and displacement effects are apportioned at a higher rate to FFC pSPA than in the non-breeding season, therefore a longer breeding season will result in a greater impact to FFC pSPA. To use gannet as an example, NE advise that a breeding season of March–Sept is defined for FFC pSPA while the applicant has selected April – August (see below). The apportioning rates defined by the applicant for gannet are: 40.4% in breeding season, 4.8% in post breeding and 6.2% pre-breeding (NB NE have yet to reach agreement on the appropriate apportioning rate in the breeding season, this example is for illustration only). This would mean that in March (when breeding gannets are in attendance at FFC	

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			pSPA) only 6.2% of birds observed at the project site are considered likely to be part of the nearest breeding colony. Likewise in September (when gannets are still breeding at FFC pSPA) only 4.8% of birds recorded at the project site would be apportioned to FFC pSPA. In terms of collision mortality this would mean that in March an extra 34.2% (40.4-6.2) of collisions would be apportioned to FFC pSPA and likewise in September an extra 35.6% (40.4-4.8) of collisions would be apportioned. In the case of displacement, the magnitude of the effect is calculated based on a seasonal 'mean of peak' calculation. A longer breeding season (March – Sept) results in these months being included in the calculation, and may result in a higher mean of peak in the breeding season (this is dependent on whether the peak count is in March or Sept). The use of the applicant's shorter proposed breeding seasons will either have no effect or lead to an under-estimate in the breeding season. Overall, the use of colony data would significantly increase Natural England's confidence in the methodology, but concerns would remain in relation to the underlying data.	
Q1.2.52	NE	The RSPB [RR-113] considers that herring gull should not have been scoped out of the impact assessment. Please can the Applicant comment on this point.	Natural England considers that Herring gull should be included as a Valued Ornithological Receptor (VOR). Natural England has previously requested that the Applicant includes Herring gull as VOR in their assessments and included comments about the approach to identifying VORs in Annex C of our Written Representations (Section 10.)	The Applicant has provided collision risk modelling for herring gull in Appendix 12 to the Applicant's submission at Deadline I (REP1-189). The modelling confirms that there is no indication of a significant impact on this species.

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		Does NE think that herring gull should have been identified as a Valued Ornithological Receptor? If not, why not?		
Q1.2.53	NE	Paragraph 5.9.2.12 of the ES [APP-065] states that displacement effects along the cable corridor were assessed using seasonal mean population data derived from Lawson and others (2015). Do you agree that this survey data should be used to calculate displacement from the export cable corridor?	NE RESPONSE: On the basis that Natural England understand that the densities of birds used to inform the displacement assessment have been derived from the under-lying density estimate data for the ECR for all 1x1km squares that cover the ECR and 2km buffer from the individual surveys, rather than extracted from the overall mean density surface modelled data presented in Lawson et al 2016 as shown in Figure 7.4 of the RIAA, then Natural England consider this to be acceptable in the context of displacement effects in the cable corridor.	The Applicant notes Natural England's agreement that the survey data from Lawson *et al.* (2016) are appropriate to inform the assessments for relevant species
			RSBP RESPONSE: The surveys detailed in Lawson et al., (2016) were carried out between October 2002 and March 2008 and so the most recent survey was carried out more than 10 years ago. The RSPB therefore do not think that these are appropriate data to use for the assessment of displacement from the cable route corridor.	The Applicant notes that Natural England have agreed that the use of data from Lawson *et al.* (2016) is appropriate. The use of these data for that purpose were discussed and agreed through the Evidence Plan process.
Q1.2.54	NE	Paragraph 5.2.5 of NE's representation	The use of displacement matrices, presenting a range of displacement and mortality rates, allows consideration of the uncertainty in these rates.	The Applicant has responded to the points made in this response as part of the Applicant's response to Natural England's relevant representation (RR-097). The Applicant notes Natural England's

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		[RR-097] states that there is a need to account for uncertainty associated with natural variability and the underlying data sources. Please explain how you would expect to see the information on uncertainty and the variability of input parameters, such as bird densities, incorporated into the assessment of displacement effects?	Displacement effects require the calculation of seasonal mean of peaks – the peak abundance is selected from the monthly population estimates within a season (per year), this approach seeks to account for peak usage of the site within a season while accounting for inter-annually variability. In the case of Hornsea Three, there are four missing months, which will lead to some seasons having a number of missing months (this will vary depending on the season/species). As such, the calculation of mean of peaks will not capture the intra or inter-annual variability in bird numbers at Hornsea Three and therefore there will be additional uncertainty associated with these estimates that cannot be quantified. Consequently there will only be limited confidence in the outputs and any conclusions drawn from them. While it is not possible to fully address this additional uncertainty, Natural England advises that it would be precautionary to place greater weight on using the upper confidence intervals of the density estimates for these months, in order to try and reduce the likelihood that impacts are underestimated. Natural England advise that displacement matrices of the upper and lower confidence intervals (following a mean of peak process as for the mean population estimates) should be presented.	suggestion to use the upper confidence limits and seeks further engagement with Natural England to further discuss this approach.
Q1.2.56	NE	Paragraph 5.9.3.4 of the ES [APP-065] refers to the use of mean estimate/maximum likelihood methods to estimate collision risk.	It is well documented that the use of the mean estimate/maximum likelihood values to estimate collision risk does not account sufficiently for variability and uncertainty within the CRM process (e.g. Band (2012), Masden (2015), McGregor et al. (2018)). As acknowledged by the Applicant in paragraph 5.9.3.4 of the ES there are varying levels of uncertainty/variability around many of the input parameters used in the collision risk model as well as uncertainty that is intrinsic to the model itself.	The Applicant has provided measures of uncertainty and variability throughout the analyses and assessments conducted in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP-051). The variability associated with relevant impacts has been discussed in an appropriate way throughout these documents. The stochastic collision risk model (McGregor *et al.,* 2018) was not available prior to the submission of the Hornsea Three application. The Applicant notes that the model has not been endorsed or recommended for use at this time by any of the UK SNCBs and

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		Please explain in more detail why you consider that these methods do not account sufficiently for variability and uncertainty within the collision risk modelling (CRM)?	However, Natural England do not agree with the Applicant's statement that "*the collision risk estimate calculated using the mean* *estimate/maximum likelihood scenario for all parameters is therefore the estimate that best describes the likely magnitude of collision risk…*". In the case of the various input parameters like bird density or flight speed, the mean or central value of the parameter generated from a sample is not a measure of the most likely value of that parameter, and due to uncertainty in the estimates that arise from imperfect knowledge of the parameter and measurement/sampling errors – the mean estimate may also not be an accurate value. Therefore there is no basis for selecting this single value to use in the collision risk model. The mean value for a parameter does not reflect the natural, ecological variability in the distribution of the parameter (e.g. flight heights) or the probability that a sample mean (e.g. of bird density calculated from a transect sample at a project site) is representative of the real population mean for that parameter. For example, confidence intervals calculated around a sample mean only indicate the probability that the confidence interval actually contains the real population mean – so they do not represent values that encompass the extremes of a parameter value – or even the variability in a particular parameter value. They reflect information about the likely size of mean parameter values. There is also a lack of knowledge about the values of some parameters and/or a lack of data to calculate the parameter values (e.g. flight behaviour in different weather conditions or time of day) which mean it may be mis-leading to rely on a mean parameter value. Additionally, collision risk predictions are known to be more sensitive to variation in some input parameters compared to others and the mean	therefore the Applicant does not propose to use this model in relation to this application.

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			value for a particular parameter may not reflect the effect that variability in that parameter might have on the resultant collision calculation. For this reason Band (2012) recommended that collision model outputs "*should convey the uncertainty in the collision risk estimate, by indicating, in addition to a 'best estimate', a range of confidence around that estimate*". Band (2012) goes on to suggest that "*worst case*" assumptions should not be applied at each stage of the CRM process but that the aim should be to present a range of figures such that there is 95% likelihood that the collision risk falls within the specified range. Recently the Band (2012) model has been developed to allow variability and uncertainty in input parameters to be explicitly incorporated into the collision risk modelling process, providing a more robust and transparent method of accounting for uncertainty in the estimation of seabird collision rates (McGregor et al 2018). This is done by specifying mean (or some other central tendency measure) parameter values and either standard deviations around these values or confidence intervals. The resultant collision risk predictions are reported as predicted mean collisions with an associated standard deviation and confidence intervals.	
Q1.2.57	RSPB	Paragraph 5.9.3.4 of the ES [APP-065] states that it would be inappropriate to apply lower and upper confidence intervals for all parameters in the CRM.	There are potentially high levels of variability in all the input parameters of the Band collision risk model, and accompanying guidance to the model recommends that these are taken into account, although it did not provide a statistically robust method for doing so. This variability can be temporal and spatial variability in bird density and variability in flight height, but can also be in flight speed as well as abiotic parameters such as wind speed. Since Masden's (2015) 'proof of concept' stochastic formulation of the Band model, a statistically robust method of carrying out the modelling process incorporating variability in all model parameters had been developed, overseen by a scientific steering group, and	The stochastic collision risk model (Mackenzie *et al.,* 2018) was not available prior to the submission of the Hornsea Three application. The Applicant notes that the model has not been endorsed or recommended for use at this time by any of the UK SNCBs and therefore the Applicant does not propose to use this model in relation to this application. The Applicant has presented collision risk estimates incorporating the variability surrounding density data, flight height data and avoidance rates in Volume 5, Annex 5.3:Collision Risk Modelling (APP-109).

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		Please explain why, with reference to statistical inference, this would provide unrealistic estimates of the collision risks associated with the proposal. Why were only bird density and flight height selected as the parameters for the upper and lower confidence intervals of the CRM?	published. This is the Marine Scotland Science funded Stochastic Collision Risk model, Mackenzie *et al.,* (2018), and it should have been presented here.	

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Q1.2.59	NE, RSPB	Paragraph 5.2.3 of NE's representation [RR-097] questions the way in which nocturnal activity factors (NAF) have been applied to some species in the CRM. Please explain why you consider that the parameterisation of NAFs is wrong. How do you say it should be improved? Can you refer to any appropriate peer reviewed literature to support your view?	NE RESPONSE: The Applicant has used nocturnal activity factors (NAF) of 3 for lesser black-backed gull and great black-backed gull, 2 for kittiwake and 1 for gannet in the CRM (see Table 1.3 of Annex 5.3 of the Applicant's ES). Band (2012) advises that NAFs derived from Garthe and Hüppop (2004) and King et al (2009) are used in the absence of actual night-time survey data or other empirical evidence of nocturnal activity levels for a species within the Band Model. These sources give lesser black-backed gull, great black backed gull and kittiwake NAFs of 3, and gannet a NAF of 2. Recent offshore windfarm submissions and papers (e.g. MacArthur Green 2015, MacArthur Green 2018 and Furness et al. 2018) have looked at data from tagging studies (in particular relating to gannet and kittiwake) to investigate whether empirical data on nocturnal activity levels relative to daytime activity levels can be derived from the tag data and therefore whether empirical NAFs can be produced for use in CRM. The Applicant refers to MacArthur Green (2015) as the basis for changing the NAF for gannet from 2 to 1, and for kittiwake from 3 to 2 in the ES documents. A NAF of 1 equates to zero nocturnal activity compared to daytime and a NAF of 2 to 25% nocturnal activity relative to daytime. However MacArthur Green (2015), MacArthur Green (2018) and Furness et al (2018) make different recommendations regarding the nocturnal activity of gannet – one concludes that nocturnal activity is higher in the non-breeding season compared to the breeding season, whereas the other papers conclude that nocturnal activity is higher in the breeding season. The three papers suggest different levels of nocturnal activity are used – but they also do not suggest that levels of	The Applicant has responded to the points made in this response in Appendix 10 to the Applicant's submission at Deadline 1 (REP1-188), as part of the Applicant's response to Natural England's relevant representation (RR-097), as part of the Applicant's response to the RSPB's relevant representation (RR-113) and the Applicant's response to the Examining Authorities questions (REP1-122). . The Applicant would advise that the nocturnal activity factors historically used for collision risk modelling were not taken directly from Garthe and Hüppop (2004) but are instead based on an incorrect quantification of the scores provided in Garthe and Hüppop (2004) by Band (2012). However, Band (2012) also recommends that, if available, empirical data should be used. As there are now empirical data relating to the nocturnal activity levels for certain species (gannet and kittiwake) the Applicant has used these in preference to the more general assumptions made in Band (2012). Appendix 10 of the Applicant's submission at Deadline I provides collision risk estimates calculated using the nocturnal activity factors for gannet (Furness *et al.,* 2018) and kittiwake (Furness, unpublished.). The Applicant considers that the nocturnal activity factors derived in these studies represent the best available evidence against which collision risk modelling should be conducted. Although the Applicant disagrees with the final statement made by Natural England (that values derived from the analysis of the tagging studies referenced above can be applied to the site specific Hornsea Three survey data on day-time activity levels), it is worth noting that Natural England's criticism applies equally to both the analyses presented in Furness *et al.* (2018) and the nocturnal activity factors assumed by Band (2012).

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			nocturnal activity are zero – which is what a NAF of 1 relates to in the CRM. Natural England also queries the way the information from the tagging studies has been used in relation to definitions of daytime, night-time and twilight periods and the way these are incorporated in the Band Model, and the lack of consideration of variability and uncertainty in activity levels across the studies, across sites and different times of day and night. Natural England also do not agree with the Applicant that the proportional night-time activity levels calculated from the tagging studies can be applied to the monthly day-time activity levels from the Hornsea Three survey data. MacArthur Green (2015) was commissioned by the East Anglia Three offshore windfarm developer and MacArthur Green (2018) was commissioned by the Norfolk Vanguard OWF developer therefore are not in the peer-reviewed literature. Furness et al (2018) – which is not cited in the Applicant's ES is a peer reviewed paper, but was only published in July 2018. To Natural England's knowledge these analyses have not been peer reviewed. Natural England has provided details of the approach that we advise in relation to use of NAFs within the CRM assessment in paragraphs 3.9-3.13 of Annex C of our Written Representations. We agree that levels of nocturnal activity for kittiwake and gannet are likely to be lower than 50% and 25% of daytime activity levels respectively, but we do not consider that the values derived from the analysis of the tagging studies referenced above can be applied to the site specific Hornsea Three survey data on day-time activity levels.	

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			The RSPB Response: For kittiwake and large gulls, there is no peer reviewed evidence for a change in the factor that is being used. The current factor is derived from the expert opinion collected by Garthe and Huppop (2004) and this use is endorsed by Band (2012). A review of seabird vulnerability to offshore wind farms (Furness *et al.,* 2013) recommended that no changes be made to the nocturnal activity scores for these species, and an update, including the same authors (Wade *et al*., 2016) maintained this recommendation. Partial analysis of data from thermal imaging cameras was carried out in the Skov *et al.,* 2018 ORJIP Bird Collision Avoidance report, but was incomplete and did not fully account for the distinction between the definition of daylight as used in the Band model and with the official concept of 'twilight' and 'night'. This is an issue as the Band (2012) model considers the nocturnal period as between sunset to sunrise and so treats flight activity that occurs at twilight as being within the nocturnal flight period. Evidence from tagging shows that a number of seabirds actively forage at twilight. We therefore do not consider that any change be made in the recommended NAFs. The latest published evidence of a Nocturnal Activity Score for gannet (Furness *et al*., 2018), recommends 8% in the breeding season and 3% in the non-breeding season. The value suggested by the applicant in the assessment corresponds to 0% nocturnal activity, and will result in a prediction of fewer collisions. Furthermore, while we welcome the Furness *et al.* review, we are concerned that the mortalities predicted using revised nocturnal activity rates for gannet (and this is applicable to other species) are potentially underestimated because they do not account for the interaction between survey timing and diurnal behavioural patterns, whereby peaks in foraging activity at first and last light (see Fig. 3 in Furness *et al.* 2018) will not be accounted for in the assessment if these did not coincide with surveys (the timings of which	The Applicant has submitted a clarification note at Deadline I (REP1-188) that updates the collision risk modelling undertaken for the project utilising the nocturnal activity factors derived by Furness et al. (2018) and those presented in the Norfolk Vanguard planning application which are yet to be published (Furness, unpublished). The Applicant highlights that Garthe and Hüppop (2004) did not provide nocturnal activity factors for use in the Band model rather they categorised species based on the level of flight activity exhibited. Band (2012) then took these non-linear categories and provided quantification. It is therefore incorrect to say, as the RSPB have done so, that Band (2012) endorsed the use of the nocturnal activity scores in Garthe and Hüppop (2004). The aim of Furness et al. (2018) was to provide nocturnal activity factors for gannet that could be used in the Band (2012) CRM. The report therefore takes account of all of the issues raised by RSPB in their response (i.e. length of day and night, different definitions of twilight and dawn). It is worth noting that the data used to inform the nocturnal activity factor score for gannet in Garthe and Hüppop (2004) is incorporated into the analysis presented in Furness et al. (2018), the issues raised by the RSPB in their Written Representations therefore apply equally to the scores derived by Garthe and Hüppop (2004) and the quantification of these scores by Band (2012). The Applicant has provided Furness et al. (2018) as part of their Deadline I submission (REP1-143) but would like to highlight a few relevant sections from that peer-reviewed paper. In relation to the quantification of the nocturnal activity scores in Garthe and Hüppop by Band (2012): "*These scores* [from Garthe and Hüppop, 2004] *simply indicated that bird species that scored higher were likely to show more nocturnal flight activity than bird species that scored lower on the scale*."

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			are currently unknown, but likely to be midday if aerial), and the survey may have been carried out at a time of much lower activity. Thereby the application of the revised nocturnal activity factor recommended by Furness *et al*., (2018) could result in inaccurate underestimates of collision risk.	"*It is important to note that these suggested percentages[from Band (2012)] were not based on evidence. It is also clear from Garthe and Hüppop (2004) that many of the scores for other seabird sensitivity metrics that they assigned were categorical rather than linear*". In relation to definitions of day and night: "*Garthe and Hüppop (2004) did not provide an explicit definition of day and night*." Based on evolving evidence, an understanding of the derivation of the nocturnal activity factor scores by Garthe and Hüppop (2004) and the subsequent non-evidence based quantification of these scores by Band (2012) the Applicant considers that the nocturnal activity factors recommended by the RSPB for gannet and kittiwake provide for a false accounting of uncertainty representing a non-evidence based over-estimation of the nocturnal activity of gannet and kittiwake. The Applicant would also highlight that the RSPB have advised the use of a nocturnal activity factor of 2 for kittiwake as part of their Scoping advice for projects in the Firth of Forth (Inch Cape, Neart na Gaoithe and Seagreen).
Q1.2.61	NE, RSBP	Appendix B of the ES [APP-109] outlines the approach to CRM that was applied to migratory seabirds. Notwithstanding your concerns	NE RESPONSE: Natural England considers that the migratory front approach that the Applicant has used for CRM for migratory seabirds is an appropriate method for these species.	The Applicant notes Natural England's agreement that migratory front approach used for migratory seabirds is appropriate

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		about the baseline data and model parameterisation, do you agree with the underlying approach that was used for the CRM for migratory seabirds? If not, why not?	RSBP RESPONSE: We agree with the underlying approach.	The Applicant notes the RSPB's agreement with the underlying approach.
Q1.2.62	RSPB	Paragraph 1.3.2.2 of the ES [APP-109] states that ongoing research is looking at the avoidance behaviour of seabirds at offshore wind farms. Please can you provide a summary of any peer reviewed publications or empirical observations that have been published since the application was submitted	Cook, A. S., Humphreys, E. M., Bennet, F., Masden, E. A., & Burton, N. H. (2018). Quantifying avian avoidance of offshore wind turbines: Current evidence and key knowledge gaps. *Marine environmental research* is a peer reviewed paper based on the Cook *et al.,* (2014) avoidance rate review. It does not suggest any changes to the previous reviews rates, and this remains largely in agreement with the advice of the SNCBs and the RSPB. Results of the Offshore Renewables Joint Industry Programme (ORJIP) Bird Collision Avoidance project (which the RSPB has been supportive of and in which we have been involved as a member of the Expert Panel) were published before submission of the application, as Skov *et al.,* (2018), although not included in the application and not published in a peer reviewed manner. The study used a number of largely novel technologies to record bird behaviour at and around a small number of turbines at the edge of Thanet wind farm, located 12km off the coast of Margate, Kent, in the UK. Data were collected between July 2014 to April 2016 and the final project report was published on Thursday 19th April 2018. Whilst, as the report acknowledges, there were considerable limitations to the collected data, it did use a novel approach to shed new light on seabird avoidance behaviours in and around offshore wind turbines.	The Applicant would highlight that the Cook *et al.* (2018) recommends avoidance rates for kittiwake and lesser black-backed gull that are different to those proposed by JNCC *et al.* (2014) and the RSPB. The Applicant notes the RSPB's comments on the ORJIP avoidance study with the results of this study and how they are best incorporated into collision risk modelling for Hornsea Three. The ORJIP study and relevant results are discussed in Appendix 10 to the Applicant's submission at Deadline I. The Applicant has calculated collision risk using the agreed collision risk model (Band, 2012).

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		and highlight any implications that this might have for the CRM parameterisation.	"Avoidance Rate" accounts for the discrepancy between predicted collision mortality and actual collision mortality. Such discrepancy arises because of natural variability and uncertainty in the input parameters, such as flight height and bird density, errors in the modelling process, errors in the model itself as well as any avoidance behaviour of the birds in response to the turbines. As such, "Avoidance Rate" is a misnomer; it is not exclusively related to avoidance behaviour *per se*. A number of studies have shown that Avoidance Rate has a disproportionate influence on the number of mortalities predicted by Collision Risk Modelling and there has been considerable debate around what its actual value should be (it is largely estimated) and how it could be better measured and refined. Improving understanding of the true value of the correction factor termed "Avoidance Rate" would allow us to predict collision mortality with greater confidence in the accuracy of models. In contrast, the Bird Collision Avoidance project calculated what it called Empirical Avoidance Rates in order to distinguish these from the traditional Avoidance Rates as used in Collision Risk Modelling and described above. The project attempted to account for some sources of the variability and uncertainty that influence Avoidance Rates but was unable to quantify all of these. Therefore it is clear that the Empirical Avoidance Rates calculated as part of the BCA project are not yet compatible with those used in the Band CRM and therefore cannot be used in that modelling process. In addition to calculating these Empirical Avoidance Rates, the project report also presented data on some of the other input parameters of the Band CRM, notably flight speed and height, and to a limited extent nocturnal activity, although this later variable was incompletely explored. While all these data have still to be properly peer reviewed, they are informative in discussions around parametisation of the Band model.	

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			One aspect of the BCA project that is of interest is that it facilitated for the first time validation of the Band model itself. At its core the Band model calculates "pColl", that is the probability of birds flying through the rotor swept area of a turbine that will be struck by the rotating blade. For seabirds this is typically 7-12%, that is 7 to 12% of birds passing through the rotor swept area will collide. For the first time at an offshore wind farm actual data of birds passing through a rotor swept area were recorded. There were 15 birds passes through the rotor swept area, of which 6 collided. This gives a probability of 40%. This discrepancy results in a four fold increase in the number of actual collisions from those predicted. As such it suggests that the Band model may be producing a large underestimate of collision mortalities and that predictions derived from it be treated with a sufficient degree of caution.	
Q1.2.64	NE, RSBP	Appendix C of the ES [APP-109] outlines the approach to CRM that was applied to migratory water birds. Notwithstanding your concerns	NE RESPONSE: Natural England considers that the migratory front approach that the Applicant has used for CRM for migratory waterbirds is an appropriate method for these species.	The Applicant notes Natural England's agreement that migratory front approach used for migratory waterbirds is appropriate.

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		about the baseline data and model parameterisation, do you agree with the underlying approach that was used for the CRM for migratory water birds? If not, why not?	RSBP RESPONSE: We agree with the underlying approach.	The Applicant notes the RSPB's agreement with the underlying approach.
Q1.2.65	NE, RSBP	Paragraphs 5.11.2.84, 5.11.2.205 and 5.11.2.221 of the ES [APP-065] identify the potential impacts associated with habitat loss, barrier effects and lighting. Notwithstanding your concerns about the baseline data, do you agree with the underlying approach that has been used to	NE RESPONSE: Habitat loss Natural England is not clear what the Applicant's approach to the assessment of indirect effects on seabirds from changes in habitat or distribution of prey are. For example paragraph 5.11.2.84 of the ES [APP-065] refers to the Benthic Ecology and Fish and Shellfish Ecology chapters as the source of detailed assessments of the effects of indirect impacts on seabird prey resource and habitats, however these chapters only consider impacts in relation to the habitats or fish populations themselves and not on the seabird species that may depend on them. Whilst the overall conclusions regarding supporting habitats and prey species in their own right are highly relevant to understanding the impacts on seabirds, there are additional factors that may need to be considered before drawing overall conclusions. Natural England acknowledges that this is a complex area and difficult to quantify, but we believe that the ES would benefit from further qualitative analysis, relating the conclusions drawn in the Benthic and Shellfish Ecology chapters back to Seabird ecology. Barrier effects	The approach taken to the assessment of habitat loss, barrier effects and lighting is consistent with the approach previously applied by numerous offshore wind farm projects and subsequently accepted by Natural England and the Secretary of State when granting consent for these projects (e.g. Hornsea Project One and Hornsea Project Two). The approach used is also more detailed than has been used at other offshore wind farms (e.g. East Anglia Three). The Applicant therefore considers that the assessment undertaken for these impacts is appropriate and that no significant impact will occur for any receptor. In relation impacts in relation to lighting, it is considered that the assessment conducted by the Applicant, including the designed-in measures adopted as part of Hornsea Three, are already consistent with the OSPAR guidance quoted by Natural England, especially Section 3.2 of that guidance. The assessment of indirect impacts on seabirds due to changes in habitat or distribution of prey are presented in paragraphs 5.11.1.79 to 5.11.1127 for the construction phase, paragraphs 5.11.2.84 to 5.11.2.94 for the operational phase and paragraph 5.11.3.4 for the decommissioning phase.

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		assess these impacts and the resulting conclusions? If not, why not?	The Applicant has assessed barrier effects in a qualitative way on seabird species where Hornsea Three is within foraging range of a colony and also for species for which Hornsea Three may be a barrier to migration. Due to a lack of evidence on barrier effects on seabird species, Natural England agrees that only a qualitative assessment can be undertaken. Lighting Evidence relating to the impacts of lighting in the o9ffshore environment is limited, therefore it is not possible to say with any certainty that the lighting associated with offshore turbines and ancillary structures would have a negligible or minor adverse effect on receptor populations. The Applicant suggests that most of the species likely to be present in large numbers are not generally active at night, but does not consider the possibility that the presence of offshore lighting at night could promote increased activity of these species. The Applicant has not provided information about the nature of the offshore lighting or potential mitigation that could be incorporated into the design. For example, the Applicant states that "*Lighting of wind turbines will meet minimum requirements, namely as set out in the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation O- 117 on 'The Marking of Offshore Wind Farms' for navigation lighting and by the Civil Aviation Authority in the Air Navigation Orders (CAP 393 and guidance in CAP 764). In keeping with the minimum legal requirements, this will minimise the risks of migrating birds becoming attracted to, or disorientated by turbines at night or in poor weather.*" However, these minimum legal requirements have not been developed with reference to migrating birds, so it cannot be concluded that these measures will 'minimise the risk'.	

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			As the level of risk associated with lighting is largely unknown, Natural England advise that the Applicant considers the OSPAR *Guidelines to reduce the impact of offshore installations lighting on birds in the OSPAR maritime area* (OSPAR Agreement 2015-08) (source: OIC 15/15/1, Annex 5) and develops a suitable protocol aimed at minimising potential impacts as far as possible.	
			RSBP RESPONSE: We agree with the underlying approach	The Applicant notes the RSPB's agreement with the underlying approach.
Q1.2.66	NE, RSPB	Paragraph 5.13.3.29 of the ES [APP-065] outlines the difficulties of evaluating the cumulative effects on the non-breeding component of the	NE RESPONSE: Natural England acknowledge that there are complexities in conducting a cumulative assessment for any species. However razorbill are not more challenging than other seabird species. For razorbill, Natural England recommend using a North Sea UK waters population scale to define the projects and population scale at which impacts should be assessed. Further information is provided in our response to Q1.2.82.	The Applicants refers the Examining Authority to paragraphs 5.13.3.28 to 5.13.3.58 in Volume 2, Chapter 5: Offshore Ornithology (APP-065) which provide the assessment for non-breeding razorbill and discuss the population structure of razorbill at Hornsea Three. The Applicant would also highlight that the impact attributable to the razorbill population at FFC pSPA from Hornsea Three is considered to be negligible.

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		North Sea razorbill population. Do you agree that the complexities of the razorbill population structure preclude attempts to compare predicted displacement effects? If you do not agree, how might such an assessment be undertaken?	RSPB RESPONSE: The RSPB acknowledge that there are considerable complexities in the structure and distribution of all non-breeding seabirds and that these complexities lead to uncertainties in the assessment procedure. However, the correct manner in which to deal with uncertainties is through properly a quantified precautionary approach that involves not just acknowledgement but scientific, qualitative evaluation of the degree of uncertainty. Therefore by taking a qualitative approach the applicant is not properly dealing with the uncertainty in the assessment of cumulative effects of non-breeding razorbill.	The Applicant welcomes the RSPB's acknowledgement of the complexities in relation to the assessment for razorbill. While the Applicant maintains that its approach is appropriate, the Applicant would welcome further engagement with the RSPB in order to discuss how any alternative approach could be best quantified given the inherent uncertainties.
Q1.2.67	NE, RSPB	Paragraph 5.9.2.9 of the ES [APP-065] highlights guidance that recommends the use of a 4km buffer for divers and sea ducks. Paragraph 5.9.2.10 goes on	NE RESPONSE: SNCB guidance (MIG-Birds, 2017) recommends the use of a 4 km buffer for divers and sea duck when estimating displacement caused by the presence of turbines (i.e. an offshore wind farm). Natural England accept the use of a 2km buffer for divers and sea duck (including common scoter and red throated diver) when estimating displacement caused by cable laying. The displacement driver in this context is assumed to be disturbance due to vessel presence, and based on current evidence, a 2 km buffer is sufficient to estimate displacement effects from shipping disturbance.	The Applicant notes Natural England's agreement that the use of a 2 km buffer is appropriate for the assessment of relevant impacts. For cable laying.

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		to state that the displacement analysis for the cable corridor only included a 2km buffer. Do you agree with the choice of buffer zone for the cable corridor given the presence of common scoter and red-throated diver?	RSPB RESPONSE: The RSPB has limited concerns about the likely impacts of the installation and operation of the cable corridor. However, the RSPB is concerned about the potential displacement of birds from the corridor route which will be used by the regular support vessels servicing the turbines during its operational life. We also highlight that increasingly evidence shows that divers can be displaced from a greater distance, not only from operational wind farms but also from the associated boat traffic. (e.g. Mendel, B., Schwemmer, P., Peschko, V., Müller, S., Schwemmer, H., Mercker, M., & Garthe, S. (2019). Operational offshore wind farms and associated ship traffic cause profound changes in distribution patterns of Loons (Gavia spp.). *Journal of environmental management*, *231*, 429-438.) As such we consider that 4km is an absolute minimum and that impacts are possible over an even greater scale.	The approach used by the Applicant is consistent with that advised by Natural England.
Q1.2.69	NE, RSPB	Paragraph 1.3.3.2 of the ES [APP-108] outlines how predicted displacement mortality was evaluated when it exceeds a 1% background threshold. Paragraph 5.9.4.1 of the ES [APP-065] sets out the impact	NE RESPONSE: Natural England consider that comparing predicted mortality against background mortality is a useful tool, and advises that predicted mortalities that exceed 1% of baseline mortality for a population require further investigation as to the likelihood of significant impact. However, NE highlight that we have a number of concerns regarding the applicants approach to assessing displacement (see section 4 of Annex C in our Written Representations). SNCB advice is to conduct assessments at appropriate seasonal population scales and to sum seasonal assessments across the year. The applicant has presented comparisons on a seasonal basis alone (meaning the population scale, and hence background mortality alters between seasons). Additionally, as stated previously, NE does not agree with the definition of the	The Applicant notes that Natural England consider the use of the 1% baseline mortality threshold to be a useful tool for impact assessment and the approach advised is that followed by the Applicant in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP-051). Further information on this point is provided in Applicant's response to Natural England's relevant representation (RR-097) and the Applicant's response to the Examining Authorities questions (REP1-122).

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		assessment criteria. Please can the Applicant explain how these two approaches relate to one another in the determination of the significance of effects in section 5.9.4 of the ES [APP-065]. Please can the Applicant explain how the levels of background mortality have been derived and outline any peer-reviewed, empirical evidence that supports the approach. Do NE and RSPB agree with the comparison of predicted mortality against background mortality as a means of	seasons for gannet, puffin and kittiwake (kittiwake is not assessed for displacement, so in this case only puffin and gannet apply) Annual assessments should refer to the largest population scale used within the seasonal assessments. Notwithstanding our concerns regarding a) baseline data and b) seasonal definitions, we require that seasonal impacts are summed and presented at an annual level (at an appropriate population scale) and that uncertainty around the estimates are presented as secondary tables (upper and lower confidence intervals). We further note that Natural England does not agree with the selection of differing mortality rates for displacement in different seasons.	
			RSPB RESPONSE: Please can the Applicant explain how these two approaches relate to one another in the determination of the significance of effects in section 5.9.4 of the ES [APP-065]. Please can the Applicant explain how the levels of background mortality have been derived and outline any peer-reviewed, empirical evidence that supports the approach. 1% is an arbitrary value which has no biological meaning and therefore cannot be used as a measure of significance of negative effect. The RSPB consider that that any additional mortality on a protected species is significant, and it is a societal rather than scientific decision as to the acceptability of this loss. Furthermore, the results in section 1.4 have been presented using mean seasonal peaks. As the RSPB do not agree with the definitions of season used, we cannot agree with the calculated seasonal peaks. The RSPB preferred definitions of season are based on onsite evidence from staff working at Bempton and are March to September	A response in relation to the seasonal definitions used for relevant species and baseline data are provided in the Applicant's response to Natural England's Written Representation (REP1-211). The Applicant does not agree that seasonal displacement impacts as this is likely to result in an over-estimation of the total impact on relevant populations. However, information to enable Natural England to conduct a combined assessment is presented throughout the assessments provided in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP-051).

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		determining the significance of any negative effects on bird populations? If NE and/or RSPB do not agree, how might such an assessment be undertaken? Are NE and RSPB satisfied with the way in which the predicted seasonal mortality has been presented in section 1.4 of the ES [APP-108]?	for gannet (although we note that birds are present on the cliffs in October), for kittiwake, March to August and for puffin April to July. The applicant has used April to August, April to July and May to July respectively for these species.	
Q1.2.70	NE, RSPB	Table 5.9 of the ES [APP-065] summarises the assessment criteria for displacement effects and mortality rates for the array area.	NE RESPONSE: In regards Table 5.9 of the ES [APP-065], we agree with the range of displacement rates identified under the column titled 'Displacement rate based on guidance interpreting Wade et al. (2016) sensitivity scores (%)' aside from Fulmar where we recommend a range of 30-70%. We do not however recommend the selection of a single 'evidence based' rate (the evidence base is equivocal) and instead recommend a matrix approach encompassing a suitable range of displacement rates (as per SNCB guidance, MIG-Birds 2017). In regards mortality rates we do not agree with the application of mortality	The Applicant would query the suggested use of a 30-70% range for fulmar. Wade *et al.* (2016) assigns fulmar a disturbance susceptibility score of 1. Displacement guidance produced by Natural England JNCC *et al.* (2017) uses this score and states: *"Some species with 'Disturbance Susceptibility' scores of 1 (e.g. northern fulmar) may not be displaced or hardly displaced. If assessment of these species is recommended in a particular case, usually a displacement level of 10% or less is assumed."* The Applicant would therefore request that Natural England provide a reason for this apparent disparity in their advice.

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		Do you agree with the displacement and mortality rates and if not, what values would you recommend?	rates for different seasons and again advise a range of mortality rates (e.g. 1-10%) are presented.	The Applicant considers that the evidence based displacement rate defined for fulmar (10-30%) is appropriate.
			RSPB RESPONSE: We agree with the ranges used, although we consider that these are indicative rather than extremes so greater or lower effects could occur. We do not agree with the "evidence based displacement rates", given the considerable uncertainties and high variability in displacement recorded across studies.	The Applicant has presented displacement mortality using a range of displacement and mortality throughout the assessments presented in Volume 2, Chapter 5: Offshore Ornithology (APP-065)) and the RIAA (APP-051). Using an evidence-based approach the Applicant has selected displacement and mortality rates that are considered appropriate for each species.
Q1.2.72	NE	Paragraph 5.2.4 of Natural England's representation [RR-097] highlights a concern over the mean seasonal peaks that were used to calculate displacement mortality for gannet and puffin. Please explain why you consider that the values	NE have two key concerns over the calculation of seasonal mean of peaks. The second of which impacts assessments for all species subject to a displacement assessment (puffin, gannet, guillemot, razorbill, and fulmar) 1. Definition of seasons. Displacement assessment requires the calculation of mean seasonal peaks (i.e. peak abundance in one year and peak abundance in the following is averaged to produce a mean peak abundance). NE do not agree with the breeding seasons presented for gannet and puffin, and recommend longer breeding seasons (which would therefore include more data points). This may lead to a higher mean peak in the breeding season, or may make no difference to the calculation, depending on when the peak month falls. Conversely, the non-breeding mean of peaks may be either reduced or remain the same. The applicant's seasonal definitions therefore may	The Applicant has responded to the points made in this response in Appendix 8 to the Applicant's submission at Deadline 1 (REP1-141), as part of the Applicant's response to Natural England's relevant representation (RR-097), as part of the Applicant's response to the RSPB's relevant representation (RR-113) and the Applicant's response to the Examining Authorities questions (REP1-122) and the Applicant's response to Natural England's Written Representation (REP1-211).

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		that have been used are inadequate. What effect do you think this is likely to have had on the impact assessment and the HRA?	lead to an under-estimate in the breeding season and an over-estimate in the non-breeding seasons. 2. As detailed in answer 1.2.38 above (and in section 2 of Annex C of our Written Representations) the baseline data set is incomplete (with only 20 months of data). This will result in population estimates for December, January, February and March being presented for a single survey year alone. Displacement effects require the calculation of seasonal mean of peaks – the peak abundance is selected from the monthly population estimates within a season (per year). In the case of Hornsea Three, there are four missing months, which will lead to some seasons having a number of missing months (this will vary depending on the season/species). As such, the calculation of mean of peaks will not fully capture the inter-annual variability in bird numbers at Hornsea Three and therefore there will be additional uncertainty associated with these estimates that cannot be quantified. In order to ensure that impacts are not underestimated as a result of this, Natural England advise that greater weight is placed on using the upper confidence intervals of the abundances in the calculation of appropriate displacement effects (see section 4.4 in Annex C of our Written Representations).	

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Q1.2.75	NE , RSBP	Paragraph 5.7.2.95 of the ES [APP-065] states that the maximum foraging distance for kittiwake was determined from published evidence in Thaxter and others (2012). Could the Applicant explain how these estimates have been derived and to what extent they have been validated by satellite tracking data for the Valued Ornithological Receptors that may be affected by the project? Are NE and RSPB satisfied that the estimated maximum foraging	NE RESPONSE: Natural England do not consider that the maximum foraging distance for kittiwake in Thaxter et al. (2012) is a robust estimate to use for the Flamborough and Filey Coast (FFC) SPA colony. Colony specific tracking data are available from this colony and indicate that maximum foraging distances are significantly greater than those presented in Thaxter et al (2012) (and noting that no data from FFC pSPA is included in the Thaxter et al (2012) estimate for kittiwake).	The Applicant refers to its response in the Applicant's response to the Examining Authorities questions (REP1-122) where this point is dealt with.
			RSPB RESPONSE: Could the Applicant explain how these estimates have been derived and to what extent they have been validated by satellite tracking data for the Valued Ornithological Receptors that may be affected by the project? The RSPB is not satisfied that the estimated maximum foraging distances are robust. The peer-reviewed analysis of FAME/STAR data presented by Wakefield *et al.,* (2016) presented a maximum foraging range for kittiwake of 300km.More recent and site specific kittiwake tracking data from Flamborough and Filey Coast pSPA has shown even larger kittiwake foraging ranges, with a maximum of 342 km recorded from a successful nest. (Wischnewski, S., Sansom, A., McCluskie, A. & Wright, L. 2018. Seabirds and Windfarms: New	The Applicant is aware that there is an error in the maximum foraging range presented by the RSPB and that this will be highlighted in further submissions from the RSPB. The Applicant has also asked the RSPB to confirm if the bird that undertook this foraging trip was a successful breeder as this has significant implications for considering if this foraging range is representative of foraging behaviour from FFC pSPA.

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		distances are robust?	Insights from a Kittiwake Case Study. Oral presentation. International Seabird Group Conference, Liverpool, UK.). These increased ranges are likely to be both a function of larger sampling size and longer tagging period.	
Q1.2.82	NE	Paragraph 5.2.7 of NE's representation [RR-097] states that the CEA should be applied across the whole annual cycle for each species at an appropriate scale. Please explain how you would expect to see such an assessment undertaken?	In order to undertake a CEA for a particular species it is necessary to define an appropriate population scale over which to assess predicted impacts. This geographic scale defines the "population" of individual birds that will be impacted as well as the identity of the plans and projects which have the potential to impact on these individuals. For the key species the Applicant needs to assess for CEA, Natural England consider that this spatial scale is broadly defined as the North Sea UK waters (but should be based on the relevant BDMPS scales defined in Furness (2015) for each species (which for some species, for example, includes English Channel waters)). This geographical scale will then encompass impacts from current North Sea UK projects from Beatrice to Thanet and Rampion in the English Channel as well as planned projects that fall within the UK North Sea scale. Natural England expects that for a CEA, impacts on all birds present across this spatial scale are considered, and impacts from all plans and projects within this North Sea BDMPS spatial scale are included across the whole annual cycle.	The Applicant has responded to the points made in this response as part of the Applicant's response to Natural England's relevant representation (REP1-131) and the Applicant's response to the Examining Authorities questions (REP1-122)..

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			At different times of the year, the North Sea BDMPS scale will include different numbers of birds and the origins of these birds will vary across seasons. During the breeding season a North Sea UK waters population scale broadly encompasses (depending on the species) birds breeding in colonies from Hermaness in Shetland, southwards down the North Sea east coast of the UK. Individuals present in the North Sea BDMPS scale during the breeding season months (and therefore potentially impacted by projects within this scale) will predominantly be birds deriving from these colonies. During the non-breeding season months a proportion of these breeding birds will have moved to waters outside the North Sea BDMPS, but individuals from colonies outside the BDMPS scale will also have moved into the region e.g. from colonies in Russia, Iceland, Norway, Faeroes as well as UK colonies that lie outside of the North Sea BDMPS scale, e.g. on western coasts. The number of birds present in the North Sea BDMPS scale for the non-breeding seasons can be derived from Furness (2015). The total number of birds that are predicted to be impacted by all plans and projects within the BDMPS spatial scale (e.g. UK North Sea) across the whole annual cycle should be summed and the significance of the impact assessed by reference to the population size of birds associated with the BDMPS scale. As the number of birds within the BDMPS scale will vary with season, Natural England advises that the annual impact should be assessed against the largest population size present across any season. Additionally predicted impacts for each season can be compared against the total BDMPS population size for that particular season as a means of identifying if impacts on specific sub-populations could be significant.	

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Q1.2.87	NE	Paragraph 5.5.1 Paragraph of NE's representation [RR-097] refers to a lack of 'at source' mitigation of piling noise. Paragraph 4.11.1.39 of the ES [APP-064] refers to the Joint Nature Conservation Committee piling mitigation protocol. Why do you consider that this would not ensure adequate mitigation?	The JNCC piling mitigation protocol was published in 2010 and while it still contains useful mitigation, it is out of date considering the scale of proposed new developments and the size of potential auditory injury and disturbance zones. The protocol only considers injury zones and only details the use of marine mammal observers (MMOs), passive acoustic monitoring (PAM) and soft starts as mitigation (i.e. no detail on 'at source' mitigation). There is a range of other alternatives which are being used in other European countries to reduce the underwater noise impact of piling (injury and disturbance). It is Natural England's view these should be detailed within the ES. However, Natural England does note the applicant's commitment to mitigation (including reduction at source technology) as part of the conditions in relation to the harbour porpoise Southern North Sea SCI. NE welcomes this condition, but further discussion will be required on mitigation options in a suitable timescale to be implemented if required.	The Applicant notes that no significant effects on marine mammals are predicted within the ES. The Applicant notes that the MMMP is required given the protected nature of marine mammals and not as a result of the EIA findings. The Applicant notes that the JNCC are updating the piling mitigation protocol, and understands (from the JNCC) that the updated version is unlikely to be released for consultation this financial year. Naturally, Hornsea Three will have due regard to any update to the protocol if it is released before the MMMP for the project is issued for approval prior to the commencement of works. Given that the final scheme design is yet to be defined and the fact that the protocol is being updated, the Applicant does not see the need to detail potential measures that may or may not need to be included within the MMMP at this stage. When the final scheme design is developed, the Applicant will need to demonstrate that it has included appropriate measures to reduce the risk of PTS effects to acceptable levels. The Applicant's commitment to a robust MMMP is clear, it will need to consult on this document with all relevant stakeholders and the MMO will need to be comfortable that risks are mitigated to acceptable levels before approving the protocol.
Q1.2.93	NE	Please provide up-to-date conservation objectives, site improvement plans and supplementary advice for all offshore European sites which you	Please refer to Section 5 of the Written Representations for all the up to date information on the European Sites and their Conservation Objectives.	This is acknowledged by the Applicant.

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		consider are likely to experience significant effects as a result of the proposal.		
Q1.2.94	RSPB	**Paragraphs 5.11.1.50 and 5.11.1.61 of the ES [APP-065] state that the effect of construction disturbance on razorbill and guillemot are currently unclear.** **How can you rule out adverse effects on the integrity of associated European sites when such impacts are uncertain?**	The RSPB notes that the initial version of the In-Principle Monitoring Plan supplied with the DCO Application does not include any proposals to monitor construction (see Table 3.4: In-principle monitoring – offshore ornithology). The RSPB considers that the statements in paragraphs 5.11.1.50 and 5.1.1.61 of the ES highlighted in this question demonstrate why it is essential that this omission is rectified and that satisfactory monitoring of construction impacts is undertaken.	The Applicant has responded to the points made in this response in the Applicant's response to the ExA's First Written Questions (REP1-122).
Q1.2.96	NE	Section 2 of NE's representation [RR-097] lists the European site features for which	In reference to the Flamborough Head And Bempton Cliffs SPA, the inclusion of assemblage features is an error. The only qualifying feature should be the breeding population of black-legged kittiwake.	The Applicant considers that the screening approach employed has identified all sites and associated features for which there is potential LSE.

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		outstanding concerns remain. The features listed for Flamborough Head and Bempton Cliffs SPA include several which are listed as part on an overall assemblage. However, the conservation objectives for this site only refer to one qualifying feature which is a breeding population of black-legged kittiwake. Please explain this apparent discrepancy. A number of qualifying features are noted for which likely significant effects have been excluded:	Thank you for highlighting this discrepancy and for providing Natural England the opportunity to clarify. Natural England has previously raised concerns around the approach to LSE screening within this application. The structure of the HRA screening within this application means that features are effectively screened out if they are deemed to be no LSE alone, and therefore are not considered in-combination. Natural England considers that the Likely Significant Effect (LSE) should be applied as a 'coarse filter' identifying potential effect pathways that warrant further consideration through appropriate assessment. A feature should not be screened out unless it can be clearly demonstrated that there is no impact alone and/or in combination. Natural England also notes that some features have been screened out of further assessment based on the numbers of birds identified within the Hornsea Three site specific surveys. As this baseline information is incomplete, Natural England would not consider it possible to rule out LSE in some cases. Particularly for features such as Herring gull that are more likely to occupy the site in the winter period. Natural England is not in a position to undertake our own screening exercise, but based on our concerns around this approach, we are unable to confirm that Table 2 [RR-097] provides a complete list of features and European sites that require consideration within the HRA. Natural England considers that there are potential effect pathways that require further consideration through Appropriate Assessment for the following SPA features specifically listed in the ExA question 1.2.96: Flamborough and Filey Coast SPA - fulmar, puffin and Herring gull as part of the overall assemblage;	The Applicant identified the potential for LSE on fulmar at FFC pSPA, Coquet Island SPA, the Farne Islands SPA and the Forth Islands SPA with these sites considered in the RIAA (APP-051). Potential in-combination impacts on fulmar at these sites have been considered qualitatively in the RIAA (APP-051) (see paragraphs 7.6.2.7, 7.7.2.1 to 7.7.2.2, 7.7.3.1 to 7.7.3.2, 7.7.4.1 to 7.7.4.2 and 7.7.5.1 to 7.7.5.2 of the RIAA (APP-051)). The Applicant identified an LSE on puffin at FFC pSPA with this site considered in the RIAA (APP-051) (see paragraphs 7.5.2.55 to 7.5.2.68 and paragraphs 7.7.2.39 of the RIAA (APP-051)). The Applicant submitted a clarification note at Deadline I (REP1-189) which supports a conclusion of no LSE on the herring gull feature of FFC pSPA. The Applicant notes the agreement of Natural England that there would be no LSE on the cormorant of shag features of the FFC pSPA. The Sandwich tern feature of the Greater Wash SPA has been considered within the RIAA (see paragraphs 7.5.1.36 to 7.5.1.43 of the RIAA (APP-051)). The Applicant produced an additional screening exercise which was submitted as part of the application (APP-053) which provided additional information in relation to the common tern and little tern features of the Greater Wash SPA. The report concluded that there was no connectivity and therefore no LSE between the foraging areas of these features and Hornsea Three.

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		Flamborough and Filey Coast proposed SPA (pSPA) - fulmar, puffin, herring gull, cormorant and shag as part of the overall assemblage; Greater Wash SPA - common tern and little tern; and North Norfolk Coast SPA - sandwich tern, common tern and little tern. Please explain why you consider that these features would be subject to likely significant effects. Please confirm that there are no other European	For fulmar, the Hornsea Three project is within foraging range of FFC pSPA and there is a therefore a potential impact pathway e.g. from displacement of birds from the project area. Whilst fulmar may be considered as having low sensitivity to disturbance, it is Natural England's view that it is premature to rule out an LSE on fulmar from displacement effects, given i) the potential impact pathway; ii) unresolved issues with the adequacy of the baseline survey data which means the importance of the array site for this species cannot be adequately quantified and iii) that there has been no consideration by the Applicant of in-combination impacts from multiple offshore windfarms within the distributional range of the fulmar feature of FFC pSPA. For puffin there is potential connectivity between Hornsea Three and FFC pSPA in both the breeding and non-breeding seasons as acknowledged by the Applicant in Annex 3 of their RIAA, and therefore potential impact pathways e.g. from displacement of birds from the project area. It is therefore Natural England's view that an LSE on puffin from FFC pSPA cannot be excluded given i) the potential impact pathway; ii) unresolved issues with the adequacy of the baseline survey data which means the importance of the array site for this species cannot be adequately quantified and iii) that there has been no consideration by the Applicant of in-combination impacts from multiple offshore windfarms within the distributional range of the puffin at FFC pSPA. For Herring gull there is potential connectivity and an impact pathway (collision risk) between Hornsea Three and FFC pSPA in the non-breeding season as some birds present in the project area will be from FFC pSPA (Furness 2015). It is therefore Natural England's view that an LSE on Herring gull from FFC pSPA cannot be excluded given i) the	

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		sites or features that should be included in the HRA other than those listed under Section 2.	potential impact pathway; ii) unresolved issues with the adequacy of the baseline survey data which means the importance of the array site for this species cannot be adequately quantified and iii) that there has been no consideration by the Applicant of in-combination impacts from multiple offshore windfarms within the distributional range of Herring gull at FFC pSPA. Natural England do not consider there to be an impact pathway between the shag or cormorant population of FFC pSPA and Hornsea Three and therefore they would not be subject to likely significant effects from the project. (These features were included in Table 2 due to our overarching concerns regarding the screening processes). • Greater Wash SPA – common tern, little tern • North Norfolk Coast SPA – Sandwich tern, common tern, little tern For the tern features of the Greater Wash SPA and North Norfolk Coast SPA (Sandwich tern, common tern and little tern are all qualifying species at both SPAs) the offshore cable corridor maximum design scenario overlaps with the boundaries of the SPAs where these species are features. Further, based on the location of the cable corridor there is the potential for overlap in key areas of usage within the SPAs by these species. Potential impact pathways on these SPA features include displacement and disturbance impacts, as well as indirect effects on prey availability associated with construction/laying of the cable. Natural England therefore considers that it is not possible to conclude no LSE for Sandwich tern, common tern and little tern features of North Norfolk Coast SPA and the Sandwich tern, common tern and little tern features of the Greater Wash SPA.	

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Q1.2.97	RSPB	**The RSPB [RR-113] states that the exclusion of likely significant effects on breeding guillemot and razorbill from Flamborough and Filey Coast pSPA is not supported by survey evidence because the Hornsea Project Three area is utilised by juveniles and non-breeding individuals.** **Please explain why you consider that the approach set out in the Report to Inform Appropriate Assessment, Annex 2 – Additional SPA Screening**	The RSPB acknowledge that razorbill and guillemot present in the Hornsea Project Three area during the breeding season are unlikely to be breeding individuals from the Flamborough and Filey Coast pSPA rather are most likely to be juveniles and non-breeding adults. However such individuals will all at some point in their life cycle be associated to a breeding colony and the significant proportion that go on to breed will do so at a colony. Consequently effects on these birds, even when not breeding, will impact on the future breeding at the colony. As the Flamborough and Filey Coast pSPA colony is the largest and closest one to the Hornsea Project Three area, it is probable that a significant proportion of these birds will go on to breed at the pSPA, and therefore have a Likely Significant Effect. Such effect could be easily incorporated into a PVA to understand the potential scale of impact. (There appears to be an error in the question: Report to Inform Appropriate Assessment, Annex 2 – Additional SPA Screening Exercise refers to the Greater Wash SPA. Annex 3 covers the Flamborough and Filey Coast pSPA. Given the context of the question the RSPB have focussed our response on Annex 3 instead. If this is an error we will rectify it as soon as is practicable.)	The Applicant welcomes the acknowledgement from the RSPB that there is unlikely to be breeding adult razorbill or guillemot present at Hornsea Three during the breeding season and that any birds present will be juveniles and non-breeding adults. The Applicant has provided text relevant to the assessment of immatures in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP-051) to the RSPB.

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		Exercise [APP-053] does not justify the exclusion.		
Q1.2.98	NE	Paragraph 5.4.7 of NE's representation [RR-097] refers to sub-features associated with the Wash and North Norfolk Coast Special Area of Conservation (SAC). Please list the sub-features of the sandbank feature. In your view, how should the assessment of site integrity take account of these sub-features?	Please see Section 5 of the Written Representations that provides a link to Natural England's designated Sites system, where it lists all of the Annex I features of the site and then if you click on those it lists all of the sub-features of the site – which in particular include coarse and mixed sediments as sub features to both Large shallow inlets and bays and Annex I habitats slightly covered by sea water all of the time. Under Natural England's advice on operations for cabling (including protection) within the conservation advice package both of these sub-features are demand to be sensitive to the many of the pressures resulting from cable activities. This will need to be considered further when considering the conservation objectives for the site and supplementary advice on conservation objectives which states 'Maintain the existing distribution of sediment composition across the feature.'	The Applicant acknowledges Natural England's response to this question and agrees that the relevant sub-features have some sensitivity to impacts related to cable installation and cable protection. Full consideration of these sub-features over the lifetime of Hornsea Three has been presented at the Applicant's response to the Ex.A question Q1.2.103, presented at Appendix 17 to the Applicant's response to Deadline I (REP1-178).
Q1.2.99	NE	Paragraph 5.4.7 of NE's representation [RR-097] states	Natural England has provided further detailed comments on cable installation challenges in the present Written Representations (Annexes D1, D2 and D5).	Please see the Applicant's response to Natural England's Written Representation and associated annexes (REP1-213). The Applicant would also refer the Ex.A to the Applicant's response to Q1.2.3 (REP1-122) which notes that lessons have been learned from previous

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		that other offshore wind farms that have routed their cables through The Wash and North Norfolk Coast SAC have had to undertake remedial works which may have caused further damage to the SAC. Please provide further details of the nature of the remedial works, the extent of the damage and the effect that you consider this has had on the integrity and conservation status of the SAC.		offshore wind farms, with many of the remedial works which were not anticipated at the time of consenting those earlier projects, now fully considered within the Hornsea Three DCO application.

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Q1.2.101	NE, MMO	Paragraph 5.6.2.35 of the Report to Inform Appropriate Assessment [APP-051] states that the North Norfolk Sandbanks and Saturn Reef SAC sandbanks are dynamic and mobile and are therefore considered to have moderate levels of recoverability. Do you agree with this assessment of the recoverability of the SAC sandbank feature? Please refer to any peer reviewed evidence that may be available in support of your response.	NE RESPONSE: We refer the examining authority to the site Supplementary Advice on Conservation Objectives (http://jncc.defra.gov.uk/pdf/NNSSR_SACO_v1_0.pdf) for consideration of recovery and its peer reviewed evidence base. We note that levels of small-scale sandwave recovery are being seen associated with cabling activities at Race Bank (provided in the clarification note for sandwave levelling). However, we remain unsure of the full extent and distribution of likely recovery. We are also unsure how this would relate to recovery from Hornsea Three cabling operations. We also note that overall feature recovery rates and amounts remain uncertain, and should be assessed on a site-wide basis. Please see Annex D3 in relation to the Sandwave levelling clarification note received from the Applicant on 9th October 2018. MMO RESPONSE: The literature states that, although the sandbanks are dynamic and sediments are highly mobile, they are thought to be progressively, although very slowly, elongating in a north-easterly direction (Cooper et al 2008). Therefore, the MMO is in agreement that they will have moderate levels of recovery. Reference: Cooper, W. S., Townsend, I. H. & Balson, P. S. 2008. A synthesis of current knowledge on the genesis of the Great Yarmouth and Norfolk Bank Systems. The Crown Estate, London, 69 pp.	The Applicant is pleased to note the MMO's agreement on the recoverability of the Annex I sandbank feature and has nothing further to add. The Applicant notes that Natural England has provided further comments on the Sandwave Clearance Clarification Note (Appendix 11 to the Applicant's response to Deadline I; REP1-183). The Applicant has provided further clarification on these points in the Applicant's response to the Natural England Written Representation (REP1-213).

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.2.102	NE	Paragraph 5.4.1 of the NE's representation [RR-097] states that the sandbank and reef features of the North Norfolk Sandbanks and Saturn Reef SAC are in an unfavourable condition. Do you consider that any other features of offshore European sites that are relevant to this application are currently in an unfavourable condition?	There are only two Annex I features of North Norfolk Sandbanks and Saturn Reef SAC namely 'Sandbanks slightly covered by seawater all of the time' and Annex I *Sabellaria spinulosa* reef. For you information and to provide context The Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 contains national level information on sandbanks covered by seawater all the time. This conclude that for Specific structures and functions (incl. typical species), condition is inadequate (declining) because 10.9% of the resource is considered to be in unfavourable condition based on SAC data, SSSI/ASSI data and vulnerability assessments for this habitat in UK offshore waters. Available site condition data indicate that more of the habitat in unfavourable condition is declining than recovering (for SACs and SSSI/ASSIs = 8847 ha declining and 0 ha recovering. The Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 contains national level information on reefs. This conclude that for Specific structures and functions (incl. typical species), condition is inadequate (declining) because 16.1% of the resource (2.4.1) is considered to be in unfavourable condition based on SAC data, SSSI/ASSI data and a vulnerability assessment in UK offshore waters. Available site condition data indicate that more of the habitat in unfavourable condition is declining than recovering (for SACs and SSSI/ASSIs = 95803 ha declining and 35010 ha recovering). NNSSR reefs and sandbanks are expected to contribute to national-level recovery of feature.	The Applicant acknowledges the response from Natural England to this question and would direct the Ex.A to the Applicant's response to Natural England's Written Representation (REP1-213). The response to the Written Representation notes that the Applicant confident that there is no risk of adverse effect on the integrity of the North Norfolk Sandbanks and Saturn Reef SAC but given JNCC's perceived risks to qualifying features, is willing to work with Natural England and JNCC to identify measures which could minimise the impacts of Hornsea Three on the features of the North Norfolk Sandbanks and Saturn Reef SAC and identify measures which may aid in the achievement of the conservation objectives of the site (i.e., to restore the site to favourable condition).
Q1.2.107	TWT	TWT [RR-047] considers that	Fishing is a licensable activity that has the potential to have an adverse impact on the marine environment. This is supported in the leading	The Applicant recognises that fishing has an impact on certain receptors. However, this is considered within and is inherent to the

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		fishing activity should be included in the in-combination assessment rather than in the ES baseline. What is the justification for concluding that the effects of fishing activity are not captured by the current baseline assessment?	case C-127/02 Waddenzee [2004] ECR I-7405, the CJEU held at para. 6 "The act that the activity has been carried on periodically for several years on the site concerned and that a licence has to be obtained for it every year, each new issuance of which requires an assessment both of the possibility of carrying on that activity and the site where it may be carried on, does not itself constitute an obstacle to considering it, at the time of each application, as a distinct plan or project within the meaning of the Habitats Directive" This caselaw demonstrates that fishing is considered a plan or a project and therefore not part of the baseline. Fishing should be included in all in-combination assessments where there is an interaction with a designated feature. In-combination impacts must be taken into account in the same way as if they were removed and the total impact of all human activities considered. In addition to this, current Defra policy[2] is to ensure that all existing and potential fishing operations are managed in line with Article 6 of the Habitats Directive. The current, risk-based, 'revised approach' to fisheries management in European Marine Sites is a compromise agreed by all to prevent the closure of fisheries during assessment. This approach further supports that fishing is considered a plan or a project and therefore must be included in the in-combination assessment in line with Article 6(3) of the Habitats Directive. **Please provide further details of the judicial review proceedings you refer to in relation to what you refer to as 'Dogger Bank Wind Farms'.** On the 3rd September 2015, TWT entered a pre-action letter to the Department for Energy and Climate Change (DECC) against the approval of Dogger Bank Teesside A and B Offshore Wind Farms. This was on the basis that fishing has not been included in the in-	environmental baseline against which the assessments have been carried out. It is not possible to robustly determine what the baseline conditions would be on a hypothetical basis without the impacts that fishing imposes on such receptors and therefore there is no means by which the Applicant can undertake such an assessment. The approach taken by the Applicant is consistent with that taken by other offshore wind projects to date. The Applicant was not privy to any private discussions or assurances which may have been given by Defra officials to TWT in the context of the litigation referred to, nor is the Applicant aware that such discussions have translated into any new or revised guidance or any ministerial statement or other public documentation mandating that in future fishing should be approached in the manner suggested by TWT.

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			combination assessment for Dogger Bank SCI (now SAC). A copy of this letter is included in appendix A. **Who is it that you say gave assurances that fishing would be included in future offshore wind farm assessments?** Assurances were given through verbal discussion with Defra (which involved John Clorley). We have included correspondence in appendix B from George Eustice MP dated 20th October 2015 and our response, dated 22nd October 2015, which highlights the assurances in relation to the inclusion of fishing in future offshore wind farm assessments. [2] Defra Policy to ensure that all existing and potential commercial fishing operations are managed in line with Article 6 of the Habitats Directive https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmentdata/file/345970/REVISEDAPPROACHPolicyandDelivery.pdf	
Q1.2.108	NE, RSPB	TWT [RR-047] considers that fishing activity should be included in the in-combination assessment rather than in the ES baseline.	NE RESPONSE: When assessing the effects of a plan or project it is a requirement of the Habitats Directive that consideration is given to whether those effects are likely to be significant either individually or in combination with other plans or projects. In seeking to avoid deterioration and to properly assess the likely effects of a plan or project it is appropriate to take account of the prevailing factors acting on the site to the extent that they are capable of influencing the conservation objectives for the site. Where there is ongoing fishing activity on the site, it is appropriate to consider the effects of the plan or project that is the subject of the	This is acknowledged by the Applicant; please see the Applicant's response to TWT's Relevant Representation (RR-047) submitted at Deadline 1.

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		What is your view on this point?	assessment in the context of those prevailing conditions, of which fishing impact may be one.	
			RSPB RESPONSE: The RSPB agree with TWT's view that fishing activity should be included in the in-combination assessment rather than in the ES baseline. Including fishing as part of the baseline assumes that the pressure is constant and the same in a year-on-year basis. This is untrue, evidenced by the different catch limits which are set each year.	This is acknowledged by the Applicant; please see the Applicant's response to TWT's Relevant Representation (RR-047) submitted at Deadline 1.
Q1.2.109	NE	Paragraph 5.5.9 of NE's representation [RR-097] identifies the potential importance of considering the in-combination effects of other cable and pipeline installations in terms of UXO detonations within the Southern North Sea cSAC. Please explain how this effect could be meaningfully addressed given the significant uncertainties	Natural England suggests that the HRA could review recent cable/pipeline applications where work has been undertaken to remove UXOs to get an idea of the average number being found and/or detonated. This would allow a general assessment to be added into the HRA based on the projects that could overlap with the Hornsea Three development.	The Applicant has responded in detail on this point at Appendix A of the SoCG (All other Matters) between Natural England and the Applicant as submitted at Deadline I.

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		associated with the specific locations of UXO?		
Q1.2.111	TWT	TWT [RR-047] states that the science underpinning underwater noise management is weak, difficult to deliver and does not encourage noise reduction. Please provide further information on the reasons for your concerns. In your view, what alternative noise impact mitigation would be effective?	TWT do not agree with the proposed SNCB advice on underwater noise management3. The approach is based upon the carrying capacity of the Southern North Sea SCI. We have no understanding as to what the carrying capacity of harbour porpoise is in the Southern North Sea SCI. Therefore, there is weak scientific information underpinning the proposed area-based approach to management. The SNCB underwater noise management proposal was discussed at a stakeholder workshop in February 2017 and both developers and regulators highlighted the difficulties in delivering the proposed approach. For example, to ensure that the area-based thresholds would not be breached, a piling schedule would be required for offshore wind farm development. Discussions on how this would be implemented are still ongoing and to our knowledge, no resolution has been found. The lack of progress on underwater noise management not only puts the conservation status of the Southern North Sea SCI at risk, but also future offshore wind farm development, especially due to the in-combination effects of underwater noise. Due to the difficulties in the deliverability of the current approach and the uncertainty on the scientific evidence base which underpins it, TWT are currently advocating the underwater management approach used in Germany4. The approach sets noise limits at which piling activity must not exceed. The noise limits are based upon scientific evidence. This approach ensures that noise emitted from offshore wind farm construction is reduced using methods such as bubble curtains. Germany has stricter noise protection outside their SACs to what is	The Applicant has responded to TWT's view on how the UK manages under water noise under point 2 of TWT's Relevant Representation (RR-047) as presented at 1.2.47 of the Applicants Comments on Relevant Representations as submitted at Deadline I.

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			being proposed within UK harbour porpoise SACs. Noise limits are also used in the Netherlands and Belgium. [3] A potential approach to assessing the significance of disturbance against conservation objectives of the harbour porpoise cSACs. Discussion document. Version 3.0. Distributed by JNCC for the noise management in harbour porpoise cSACs workshop 27th February 2017. [4] German Sound Protection Concept http://www.ascobans.org/sites/default/files/document/AC21Inf3.2.2.aGermanSoundProtectionConcept.pdf	
Q1.2.112	TWT	TWT [RR-047] considers that management of underwater noise, detailed monitoring of noise levels and harbour porpoise population activity and strategic mitigation and monitoring should be managed at a regional or strategic level. In your view, how should this application	TWT proposes that developers should be conditioned to pay into an underwater noise levy which would fund strategic monitoring and mitigation along with the establishment of a group to coordinate underwater noise management. TWT has produced a draft working document on the underwater noise levy which is included in TWT Written Representation in appendix C. TWT has shared this proposal widely and feedback suggests that there is support for a strategic approach to monitoring but that a mechanism for delivery is lacking.	The Applicant has responded to TWT's view on the underwater noise levy approach under point 6 of TWT's Relevant Representation (RR-047) as presented at 1.2.47 of the Applicants Comments on Relevant Representations as submitted at Deadline I

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		contribute to such activities?		
Q1.2.113	NE	Paragraph 5.5.3 of NE's representation [RR-097] states that, in addition to a Marine Mammal Mitigation Protocol, there should be a Site Integrity Plan to mitigate the impact of the proposal on harbour porpoise. Please explain what you would expect to see covered by such a plan and what additional benefits it would offer?	Natural England would refer to the example of the outline site integrity plan (SIP) submitted in support of East Anglia Three OWF Application. The outline plan was able to give more detailed information on the potential mitigation that could be used, ruled out mitigation that was not applicable and thus reduced the area of uncertainty. This is not possible or appropriate to do within a licence condition. The outline SIP also addressed the need for additional consents such as EPS licences and Marine Licences for UXO detonations. In addition, the outline plan gave a timetable for the development of the final plan, it included when and where it would consult Natural England and non-statutory stakeholders, to give a clear indication of what could be expected and assurances that advice would be sought in an appropriate and timely fashion. The East Anglia Three outline SIP also included timeframes for provision of updated information and assessments to allow for consideration of further HRA within a timely fashion i.e. twelve months prior to construction an updated plan would be submitted, nine months prior to construction an updated noise assessment and confirmation of project design and installation techniques, final plan to be submitted four months prior to construction. This gives an appropriate timeframe for consideration of the updated information, significantly reduces the risks of delay of authorisation and gives clear time for concerns to be raised and addressed. We would like to note that since submitting our Relevant Representations, the Applicant has issued an in-principle Southern North Sea SCI SIP. Natural England has not provided any comments on the draft SIP, as it is our view that agreement on the HRA conclusions needs to be achieved in the first instance, as those are carried over into the SIP.	As noted by NE, the Applicant has submitted an in-principle Southern North Sea SCI SIP that has been developed in line with other publicly available examples (including East Anglia Three). We also cross refer to the Applicant's comments to NE's Written Representation as submitted at Deadline II (Section 6.8.2) on the matter of NE's position on the SIP mechanism.

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Q1.2.114	NE,TWT,WDC, MMO	Conditions 11(4) and 11(5) of the Generation Assets DML and 12(4) and 12(5) of the Transmission Assets DML [APP-027] seek to mitigate potential effects on marine mammals from piling operations. To what extent do you consider that this would be an effective approach?	NE RESPONSE: Natural England would refer to its comments above and in our Relevant Representation paragraph 5.5.3. Natural England considers that a site integrity plan and conditions provides a better approach to ensure appropriate mitigation. The conditions may provide the bare minimum assurance needed that impacts will be mitigated. However, the timeframe for the submission within four months of construction does not, in Natural England's opinion, provide sufficient time for appropriate consideration of the updated information or to conduct a review of these impacts and a potential HRA, or appropriate time for consultation on an HRA. It also does not ensure that appropriate information will be included within the final report submission to allow a sufficiently detailed HRA to be conducted.	The Applicant confirms that in response to the request from the MMO and Natural England that is has removed the referenced condition (that sought to capture how the need for any necessary mitigation would be established and implemented) with a commitment to a SIP. A draft version of the SIP was submitted at Appendix 15 to the Applicants response to Deadline I, and this was provided on request to NE, WDC and TWT in advance of that submission. The SIP retains the mitigation options presented in the original condition and provides an appropriate level of detail as to how they could be effective, if determined necessary at the appropriate future juncture. It is the Applicant's view that a final assessment of the effectiveness of the various mitigation options in ensuring no adverse effect on site integrity cannot be carried out until final design and the detail on other overlapping activities more certain. The Applicant notes that the MMO consider the commitment to the MMMP and the SIP provides appropriate control measures to mitigate effects on marine mammals.
			TWT RESPONSE: As the conditions stands in the DML, we do not consider this adequate to conclude no adverse effect. The applicant has shared a copy of the in-principle Site Integrity Plan (SIP) and we are pleased that this commitment has been made. However, the current in-principle SIP lacks details. Further information should be provided on the effectiveness of the proposed mitigation as outlined in the SIP. This should include referenced examples of how the implementation of mitigation will reduce underwater noise disturbance impacts within the SNS SCI. Noise modelling should also be undertaken to demonstrate the degree of noise reduction which could be achieved through mitigation.	
			WDC RESPONSE: <FILE CORRUPTED>	
			MMO RESPONSE:	

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			The MMO is content with the list of mitigation measures as outlined under condition 11(5) and 12(5). Furthermore, the MMO consider that conditions 11(4) and 12(4) would be an effective approach to mitigate potential effects on marine mammals as long as they are followed in conjunction with the approval of a Marine Mammal Mitigation Protocol and the Site integrity Plan. Discussions with the applicant have continued to inform a Statement of Common Ground between the Applicant and the MMO and the inclusion of a condition to set out the requirement for the submission of a Site Integrity Plan has been agreed. This should be included in the updated draft DCO.	
Q1.2.115	Applicant	Paragraph 5.2.10 of the NE's representation [RR-097] states that data relating to monthly age classes for breeding birds and the proportions of unaged birds were not provided. Please comment on NE's concerns and provide any additional data that may assist.	Please refer to section 7.16 - 7.17 of Annex C in our Written Representations.	This is acknowledged by the Applicant.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.2.116	RSPB	**RSPB [RR-113] does not agree with the apportioning rates used to evaluate the proportion of the guillemot, kittiwake and razorbill populations that have come from the Flamborough and Filey Coast pSPA, as specified in Annex 3 of the Report to Inform the Appropriate Assessment [APP-054].** **Please provide further explanation of your concerns about the apportioning rates that have been used.** **In your view, how should the**	For the apportioning of impacts on kittiwake to the Flamborough and Filey Coast pSPA the applicant has taken a somewhat complex and scientifically unjustified approach. Recent tracking of kittiwake from the pSPA has shown that the Hornsea Project Three area is well within the maximum foraging range of kittiwake, so a higher proportion of the adults present will be associated with the pSPA than is suggested by the applicant. Furthermore the values used in the calculation of apportionment in table 1.6 of Annex 3 are not the most appropriate. For example the survival rates used are from SmartWind (2015) as opposed to the peer-reviewed and widely adopted Horswill and Robinson (2015) the value for percentage of birds assigned as one year olds, 22.5%, is taken from historical boat based survey rather than the recent aerial surveys which provide a much lower figure of 4.7%. The justification for this is scant, using an unproven relationship between distance from colony and numbers of immatures. It would have been preferable to use the most recent data. For the apportioning of guillemot and razorbill the applicant has not included non-breeders and juveniles in the breeding season as components of the pSPA. We disagree with this approach for reasons detailed under question 1.2.97 and consequently do not agree with the apportioning to the pSPA.	The Applicant requests that the RSPB provide any information that would suggest the Applicant's apportioning rates are incorrect or lead to an under-estimation of the likely impact. The Applicant has no further response on this comment until such time as further information is received from the RSPB.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		apportioning rates have been established? **What additional tracking data do you consider should have been taken into account?**		
Q1.2.117	NE	Paragraph 5.2.8 of NE's representation [RR-097] states that the use of population viability assessment from Hornsea Project Two was not suitable to determine the impacts on the Flamborough and Filey Coast pSPA. Please could NE provide further detail on this point and indicate how it considers that the long-term effects on bird populations	Natural England has provided detailed comments on the Applicant's population viability assessment in Annex C of our Written Representations (Section 6). In summary Natural England does not consider the Hornsea Two PVA models to be suitable for the assessment of impacts on FFC pSPA arising from Hornsea Three because: 1. The Hornsea Two PVA models were projected over 25 years whereas Hornsea Three has an operational lifetime of 35 years; 2. The metrics of population impact and confidence intervals were not generated by a matched runs approach in the stochastic versions of the model; 3. The model outputs are based on adding the windfarm mortality as adult currency only, whereas for Hornsea Three there are some species where potential impacts are predicted for immature age classes only; 4. The counterfactual of growth rate metric has been measured using median growth rate over the population trajectory period (from year 5 to 25) but should be measured using the growth rate in the final year of the projection;	The Applicant has provided additional PVA modelling incorporating those requests made by Natural England as part of EWG meetings. This is included in Appendix 9 of the Applicant's submission at Deadline 1.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		associated with the pSPA should be assessed? Why is the population viability analysis for kittiwake and gannet for 25 years when the project would have a 35 year operational phase? Would the Applicant's approach lead to an underestimate of impact?	5. It is not possible to derive (and the Applicant has not provided) information on the model outputs across the range of predicted impacts that Natural England thinks should be considered for Hornsea Three (including in-combination impacts with other plans and projects). Natural England considers that the longterm effects on bird populations associated with Flamborough and Filey Coast pSPA should be assessed using the counterfactual of final population size and counterfactual of growth rate derived from PVA models that are structured in the way outlined in Annex C of our Written Representations (Section 6). Natural England recommends interpreting the metrics from population modelling against a framework of considerations including the Conservation Objectives for that site/population, focal and wider population status, threats and pressures acting on the population and policies which may change the wider population status. The Applicant's approach whereby PVA models are run over 25 rather than 35 years would lead to an underestimate of impact, given that if the windfarm has an operational period of 35 years, then potential impacts occurring in the last ten year of operation are not being accounted for in the models. Natural England note that the Applicant has tried to account for this by extrapolating the impacts predicted after 25 years to 35 years. It is less clear what effect this will have on the predicted impact and whether it would be an underestimate, as the result would depend on details such as whether the model is a density independent or density dependent one. The solution to this would be for the Applicant to present models and outputs that have been run over 35 years and are therefore applicable to Hornsea Three.	

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.2.117	RSPB		The RSPB acknowledge that the applicant has gone some way to addressing concerns with the manner in which Population Viability Analysis has been carried out, including the operational timespan and the use of matched pair run (see Population Viability Analysis Clarification Note). In order to best make an assessment of population scale impacts the RSPB prefers the use of the counterfactual of population size output metric of density independent model formulation following the advice contained in the peer reviewed papers Green *et al.,* (2014) and Cook and Robinson (2017). The applicant has included this, but has based their conclusions on whether the projected change will result in the future impacted population being lower than the cited population. This is to entirely miss the rationale behind the use of the counterfactual metric. It is scientifically impossible to make an *absolute* prediction of a population size 35 years into the future, hence why it is necessary to take the counterfactual approach which makes a *relative* prediction, which is scientifically robust, as highlighted in the two papers cited above. This misinterpretation of the PVA outputs is further compounded for kittiwake since the PVA used has not used up to date productivity data. Recent census data (see Bempton Seabird Reports 2012-2017, available at http://publications.naturalengland.org.uk/publication/6026131045089280?category=4660672258375680) has shown that kittiwake productivity has declined rapidly at the pSPA and this will have severe impacts on the population growth. Not only does this mean the PVA requires reparametisation but highlights that it is impossible to predict whether the population in 35 years will be below or above the cited population, either with or without the additional mortalities arising from the Hornsea Project Three, alone or in-combination.	The Applicant has nothing further to add on this point in addition to the response provided above to Natural England.
Q1.2.118	Applicant, NE	The European Court of Justice	Natural England is currently reviewing this recent ruling and considering its implications. We are not able to provide further	This is acknowledged and the Applicant has nothing further to add.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		has made a recent ruling which may have implications for the assessment of the integrity of European sites (case C-164/17 - *Reference for a preliminary ruling from Supreme Court (Ireland) made on 3 April 2017 — Edel Grace, Peter Sweetman v An Bord Pleanala*). Please could the Applicant and NE comment on any implications they think this judgement has for the appropriate assessment of this application in relation to offshore European sites.	comment at this time, but will provide our view on this matter as soon as we are able.	

1.3 Written Question - Marine Processes

No questions received for section 1.3 Marine Processes

1.4 Written Question - Ecology - Onshore

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.4.5	Natural England (NE)	Paragraphs 5.6.1 and 5.6.2 of NE's representation [RR-097] state that there is insufficient information on groundwater flows to determine the hydrological impact of a nearby crossing point [HDD 53] on Booton Common Site of Special Scientific Interest and Norfolk Valley Fens Special Area of Conservation. Why do you consider that section 4.7 of the ES [APP-127] is not sufficient in this regard? What further information do you think is required to determine whether there would be a hydrological impact on any of the interest features?	It is Natural England's view that the Outline Code of Construction Practice (CoCP) is too general and does not provide specific information in relation to individual protected sites. Clear signposting to other parts of the ES should have been provided as it is currently difficult to determine if all the potential impacts have been identified. The information currently focuses on the flood risk and not ecological impacts of flooding and runoff, which has been overlooked in our view. The assessment focuses on 'typical' rain events and we do not have certainty that the proposed systems will be fit for purpose on the ground, under conditions of heavy/'non-average' rainfall events, that have been occurring more and more frequently in the past years. The ES should have accounted for such events and acknowledged the likelihood of their occurrence. Natural England would like to see *commitment to address* our concerns and to deliver appropriate mitigation if required. We advise that further information is obtained from the Environment Agency and used in a detailed appraisal of groundwater effects, e.g. WetMex data	The outline Code of Construction Practice is necessarily a high level document. The detail will be provided in the final Code of Construction Practice, which must accord with the outline Code of Construction Practice [REP1-142], and which must be approved by the relevant planning authority, the Environment Agency and the relevant highway authority [Requirement 17 of the draft DCO (REP1-133)]. The final Code of Construction Practice will include more detailed information based on detailed design features and any pre-construction surveys or site investigations. The Applicant's position on the issue of ecological impacts of flooding and runoff, including for heavy rainfall events, has been clarified through the SoCG process and there is now agreement between the Applicant and Natural England [REP1-218]. The outline approach for the protection of groundwater from Hornsea Three works has been agreed with both the Environment Agency [REP1-203] and Natural England [REP1-218] through the respective SoCGs.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			showing the water supply mechanism for all the component sites and/or Environment Agency's groundwater modelling. If the updated appraisal shows that the installation of the cable route would affect the groundwater supply to these sites, then a detailed assessment should be undertaken and mitigation measures implemented to minimise any identified effects.	
Q1.4.9	SNC	Paragraph 2.2.7.3 of the Outline Ecological Management Plan [APP-180] states that a hedgerow survey was conducted along the cable corridor route according to the Hedgerow Survey Handbook Methodology 2007. What information is absent in relation to the identification of 'important' hedgerows under the Hedgerows Regulations 1997?	The Defra (2007) Hedgerow Survey Handbook methodology differs to that set out in the Hedgerows Regulations 1997, for example the 30-metre sampling is different (paragraph 7(3) of Schedule 1 to the Regulations. Furthermore, we require testing against all the criteria of the Regulations, which include historical and archaeological considerations too. We require a full assessment of all the potentially implicated hedgerows using the methods prescribed by the Hedgerows Regulations and the associated guidance.	The Applicant would refer the Examining Authority to the Applicant's clarification note on important hedgerows [REP1-160], and the accompanying plans [REP1-152 and REP1-155]. Further details are noted in the Applicant's response to SNC's Local Impact Report submitted at Deadline 2.
Q1.4.10	Norfolk Wildlife Trust	Norfolk Wildlife Trust's representation [RR-045] states that habitat disturbance would be less if the high voltage direct current (HVDC) option were used. Please explain why you consider that this would be the case. How do you think the findings of the ES would be altered if HVDC were selected?	No response provided.	The Applicant has agreed with the Norfolk Wildlife Trust that the proposed mitigation and enhancement for habitat disturbance, which is based on a worst-case scenario, is appropriate. There are no outstanding issues between the Applicant and the Norfolk Wildlife Trust as demonstrated in the SoCG [REP1-227].
Q1.4.16	NE	Paragraph 4.3.2.1 of the Outline Ecological Management Plan [APP-180] states that if a district-	Strategic licensing utilises species distribution models, supported by surveys carried out by Natural England to determine great crested newt (GCN)	The Applicant, as described in the SoCG with Natural England [REP1-218], is currently developing a draft licence based on the new EPS policies which

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		wide licensing approach for great crested newts is available to the project then this might reduce the requirement for pre-commencement surveys and specific mitigation measures such as exclusion fencing. What are your views on this statement? What is the likelihood that such a license would be granted in this instance?	presence in the landscape, and as such pre-commencement surveys are not required. The modelling will create risk zones in the strategy area which predict the likelihood of impacting GCN populations. On-site mitigation is also not a requirement, as conservation effort is focused on increased habitat improvements at a landscape scale, which are funded by the developer paid tariff. The tariff is calculated based on the predicted impacts of the development to ponds and the risk zone which the site sits in. At present, survey data and modelling has not begun in Norfolk and the strategy here is not expected to be rolled out until 2020, at which point tariff costs could be estimated. The traditional licensing approach will still be in operation at this point and includes use of the New Licensing Policies, which may also potentially facilitate reduced survey and mitigation in return for increased compensation. The different approaches should be carefully considered based on costs and timings. In Natural England's Relevant Representation point 5.6.10 we make reference to submission of a draft licence application to the Natural England licencing team such that a Letter of No Impediment (LONI) could be provided at this stage if the proposed mitigation measures are agreeable. However we are yet to receive this from the applicant and therefore	involves creating and enhancing GCN habitat as opposed to the traditional exclusion and entrapment route. As the full district level scheme is not yet in use in Norfolk, the Applicant, based on comprehensive pre-Application surveys and collaboration with the Norfolk Ponds Project, is developing a proposal to create and enhance GCN habitat based on the affected metapopulations along the Hornsea Three cable corridor. Natural England has stated 'this approach is appropriate, but at this stage it is not possible to comment on the content of the licence as no LONI has been issued.' [REP1-218]. As stated and agreed in the SoCG [REP1-218], "If Natural England do not agree that a LONI can be issued with the principles outlined in the ghost licence application, Hornsea Three propose to submit a revised ghost licence application based on the traditional exclusion route".

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			cannot fully comment on the likelihood of a licence being granted at this time.	
Q1.4.16	RSPB	Paragraph 4.3.2.1 of the Outline Ecological Management Plan [APP-180] states that if a district-wide licensing approach for great crested newts is available to the project then this might reduce the requirement for pre-commencement surveys and specific mitigation measures such as exclusion fencing. What are your views on this statement?	The RSPB considers that the potential efficacy of a district-wide licensing approach for great crested newts would depend upon a number of factors: i) It is important to note that there is currently no district-wide licensing scheme which Hornsea Project Three could avail itself of; ii) ii) If a district-wide licensing scheme is introduced it would be essential that the export cable route fell within areas that the licensing scheme specifically covered (it is our understanding that the term "district-wide" in this context is something of a misnomer as it actually only covers areas within the district allocated for development rather than the whole district); iii) Whether the areas affected by the export cable route are 'green' (meaning no newts), 'amber' (there are newts but it is mitigatable) or 'red' (there are significant populations of newts); and iv) Whether the district-wide licensing approach has been in place long enough for there to be sufficient functioning habitats in place to	The Applicant notes that while it is intending to submit a licence incorporating the new EPS policies, it is not attempting to use a district wide licencing scheme as there is currently no district-wide licensing scheme in Norfolk, as the RSPB state. Instead, the Applicant, as advised by Natural England (see SoCG with Natural England [REP1-218] for full details) will submit a ghost licence application which proposes mitigation for the project's impact on GCN by creating and enhancing alternative habitat rather than through the traditional exclusion and entrapment approach. This will be based on the Applicant's pre-Application GCN survey [APP-133] and collaboration with the Norfolk Ponds Project.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			address the scale of impacts in place to address the scale of impacts associated with this development.	
Q1.4.16	RSPB	What is the likelihood that such a license would be granted in this instance?	The RSPB is unable to comment on this part of the question.	Noted.
Q1.4.21	NE	Paragraph 5.6.1 of NE's representation [RR-097] states that there is insufficient information to determine groundwater impacts on the Norfolk Valley Fens SAC either alone or in combination with the Norfolk Vanguard cable corridor route. What additional information do you think is necessary for you to comment on the alone and in combination effects of the proposed cable corridor on the SAC? What mitigation measures do you think might be appropriate?	We advise that further information is obtained from the Environment Agency and used in a detailed appraisal of groundwater effects, e.g. WetMex data showing the water supply mechanism for all the component sites and/or Environment Agency's groundwater modelling. If the updated appraisal shows that the installation of the cable route would affect the groundwater supply to these sites, then a detailed assessment should be undertaken and mitigation measures implemented to minimise any identified effects. An 'in-combination' assessment with Norfolk Vanguard should also be undertaken as this cable route passes about 600 m to the north of Booton Common and construction periods may overlap. Until further assessment is provided Natural England is unable to advise on any potential site specific mitigation measures,	The Applicant has agreed an approach to the crossing [as stated in the Natural England SoCG [REP1-218] of Blackwater Drain, which is the crossing adjacent to the Booton Common SSSI, part of the Norfolk Valley Fens SAC. As Natural England are comfortable with the approach taken [see SoCG], they have agreed that no additional in combination assessment is necessary at this site. All matters relating to hydrogeology, groundwater and surface water have been agreed with both Natural England [REP1-218] and the Environment Agency [REP1-203].
Q1.4.22	NE	Please provide up-to-date conservation objectives, site improvement plans and supplementary advice for all onshore European sites that you consider likely to experience significant effects as a result of the proposal.	Please see Section 5 of the WR which provides a link to the conservation advice packages for European protected sites. Please note that both the River Wensum SAC and the Norfolk Valley Fens SAC conservation advice	Noted.

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			packages are currently being updated. The Examining Authority should refer to the published Conservation Advice in the meantime, as referred to in Section 5 of the WR.	
Q1.4.24	Applicant, NE	The European Court of Justice has made a recent ruling which may have implications for the assessment of the integrity of European sites (case C-164/17 - *Reference for a preliminary ruling from Supreme Court (Ireland) made on 3 April 2017 — Edel Grace, Peter Sweetman v An Bord Pleanala*). A previous question seeks views on any implications this judgement may have for appropriate assessment in relation to offshore European sites. Do you have any further or different comments in relation to onshore European sites?	Natural England is currently reviewing this recent ruling and considering its implications. We are not able to provide further comment at this time, but will provide our view on this matter as soon as we are able.	Noted.

1.5 Written Question - Navigation and other offshore operations

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.5.1	MCA	*Section 18.2 of the Navigational Risk Assessment [APP-112] describes the collision risk modelling undertaken. The modelled vessel to vessel collision risk in the Hornsea Project Three array area is a major collision return period of 1 in 193 years. Following construction of the proposed array the risk would increase to*	The MCA is content with the approach to the collision risk modelling undertaken as part of the Navigation Risk Assessment for Hornsea Three. We note the 21.4% increase in collision frequency compared to the pre-windfarm result. We further note the cumulative effect assessment which incorporates Hornsea Projects One, Two and Three giving a	1)The Applicant notes that the MCA are content with the approach to collision risk modelling. The Applicant would also refer to the 'Applicants Response to the ExA's First Written Questions [REP1-122].

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		1 in 152 years. Paragraph 7.11.2.39 of the ES [APP-067] characterises this as a negligible effect. Is the MCA in agreement with the approach to collision risk modelling and do you consider the outputs of the modelling to be realistic?	major collision return period increase of 9.72%, an increase of one in 116 years to one in 105 years. This increase in risk is only tolerable with the appropriate risk mitigation as detailed in the Navigation Risk Assessment, and a layout of wind turbine generators (and other associated windfarm infrastructure) which is in accordance with our Marine Guidance Note (MGN) 543. The layout is of significant concern for MCA going forward, and the design principles have not yet been agreed by MCA. Although we support the establishment of the design principles, we should not be held to account should we not have considered every possible future eventuality based on the information provided within the current design principles. Therefore, the MCA requests the option and ability to consider any layout plans on a case by case basis in line with MGN 543. This includes our strong recommendation that at least two lines of orientation are included within the layout design. This is not only for search and rescue purposes; multiple lines of orientation provide alternative options for vessel passage planning. We know that by far the safest way to navigate through a windfarm is when the turbines are in straight lines, with multiple lines of orientation, which gives a clear line of sight of entry and exit. If a master/skipper decides to go through a windfarm, they tend to place themselves equidistant between the turbines on either side, and this helps counter the environmental effects on handling, and this is compromised with a random turbine layout.	The Applicant would refer to the Volume 5, Annex 7.1: Navigational Risk Assessment [APP-112] which identifies 'Measures Adopted as Part of Hornsea Three' in section 23 and 'Additional Mitigation Measures Required to Bring Risks to As Low As Reasonably Practicable Parameters' in section 24 which have been considered as part of the impact assessment Volume 2: Chapter 7: Shipping and Navigation [APP-067] of the Environmental Statement. 2) As above the Applicant notes that discussions are ongoing with the MCA regarding Array Design (development) Principles 5 and 8 as they specifically relate to Search and Rescue access and not surface navigation. The Applicant does not agree with the statements in relation to surface navigation, notably that: • *'by far the safest way to navigate through a windfarm is when the turbines are in straight lines, with multiple lines of orientation, which gives a clear line of sight of entry and exit'; or* • *'If a master/skipper decides to go through a windfarm, they tend to place themselves equidistant between the turbines on either side, and this helps counter the environmental*

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
				effects on handling, and this is compromised with a random turbine layout'. The Applicant notes that no representations were received from the operators of commercial vessels, recreational vessels or fishing vessels. Consultation contained within section 14 of Volume 2: Chapter 7:Shipping and Navigation [APP-067] demonstrated a consensus that commercial vessels would not navigate through the array, given that there are no time or distance benefits to doing so. The Applicant would refer to section 22 of the NRA (Volume 5, Annex 7.1: Navigational Risk Assessment [APP-112]) which discusses evidence from existing wind farms which shows that vessels navigating within an array do not 'opt to remain fully within the available straight lines of orientation'. Marine traffic survey evidence from existing wind farms also does not suggest that vessels remain equidistance from structures when navigating within an array. The Applicant believes this to be in contravention of good seamanship whereby vessels proceeding along a course within a defined area (typically a narrow channel or fairway) will keep as near to the outer limit which lies on the vessel's starboard side as is safe and practicable (reference the International Regulations for the Prevention of Collisions at Sea as Amended

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
				1972). Should adverse 'environmental conditions' require otherwise, it is likely the vessel would position itself to mitigate the effects, i.e., close to the direction of the wind/tide within the channel and therefore allow sufficient room to alter course and speed as required. When considering Hornsea Three specifically, it is noted that the minimum internal turbine spacing of 1 km committed to, is significantly larger than other Round Three developments, which will provide vessels more sea room to navigate and manoeuvre within the Hornsea Three array area (when considering turning circles and rate of turn). Further, the Applicant notes that straight line course can be achieved across development lanes again to best mitigate the effects of weather and tidal conditions (Section 22 - Volume 5, Annex 7.1: Navigational Risk Assessment [APP-112]). The Applicant notes that this view is in line with the predominant fishing fleet within the area. During consultation, the Dutch Fishing Association VISNED noted that the minimum 1,000 m spacing (and designed in measures) would ensure that fishing vessels are able to safely passage plan transits and activity within the Hornsea Three array area. (Volume 2, chapter 6: Commercial Fisheries of the Environmental Statement [App-066].

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.5.4	MCA, TH	*The MCA [RR-060] considers that the 150m tolerance referred to in Principle 8 of the Layout Development Principles [APP-091] is excessive and would impede search and rescue (SAR) coverage.*	MCA RESPONSE: What would the MCA regard as an acceptable tolerance? The MCA request that turbines are constructed in straight lines, with a minimum of two lines of orientation, to maintain the safety of navigation and our search and rescue obligations. Access to windfarms by helicopter and vessels during an emergency situation, and by vessels should they decide to transit through a windfarm, is a complex process, especially in poor weather conditions, and therefore mitigations are required to ensure it is as safe and feasible as possible. Standard search patterns are linear to allow for an effective coverage of an area, and wind turbines will degrade the search capability by restricting search spacing and increasing crew workload - therefore reducing search effectiveness. Within Principle 8, the developer may build turbines in an irregular layout anywhere within that 300m corridor, which would significantly impact the ability to search and/or rescue. As a result, the MCA would be content with a tolerance of 50m with the understanding that the developer aims to construct turbines along the centreline and only deviating if conditions/seabed do not allow for a straight line.	RESPONSE TO MCA: The Applicant would refer to the 'Applicants Comments on the ExA's First Written Questions [REP1-122] which disagrees with the position referred to in Principle 8 that a 300 m Development Lane (± 150 m of the centreline) would result in 23% of the array not being searchable. In the Applicant's opinion the statement that a 300 m Development Lane (± 150 m of the centreline) would result in 23% of the array not being searchable is incorrect and takes neither account of the systems fitted to the MCA SAR helicopter nor the widely spaced infrastructure (spaced at least 1km apart) as required under condition 2(1)(c) of the dDCO [APP-027]. The Applicant would direct the ExA to Appendix 11 to Deadline 2 submission for supporting technical assessment. RESPONSE TO TH:

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			TH RESPONSE: TH consider the stipulated 150m tolerance to be excessive. A development lane of 300 metres is somewhat unworkable for TH, when working towards agreeing a final layout with the developer and subsequently providing advice to the MMO. In order to assist safe marine navigation; including search and rescue craft, TH submit that a tolerance of 50m should apply.	The Applicant would refer to the 'Applicant Responses to the ExA's First Written Questions [REP1-122]. The Applicant notes that discussion on Principle 8 concerning the acceptable tolerance for +/- 150 Development Lanes are ongoing with the MCA in relation to concerns with Search and Rescue access. However, the Applicant does not agree with the statements from the TH in relation to safe marine navigation. Minimum turbine spacing committed to for Hornsea Three within the array is significantly larger than for other Round Three developments, giving vessels more sea room to navigate and manoeuvre within the array area (when considering turning circles and rate of turn), and that a straight line course can be achieved across development lanes to best mitigate the effects of weather and tidal conditions (Section 22 - Volume 5, Annex 7.1: Navigational Risk Assessment [APP-112]). The Applicant notes that this view is in line with the predominant fishing fleet within the area. During consultation, the Dutch Fishing Association VISNED noted that the minimum 1,000 m spacing (and designed in measures) would ensure that fishing vessels are able to safely passage planned transits and activity within the Hornsea Three array area. (Volume 2, chapter 6: Commercial Fisheries [App-066].

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
				Trinity House state that 'A development lane of 300 metres is somewhat unworkable for TH', however it is the Applicant's understanding that Trinity House would not mark structures internally within the array as per the guidance contained with the International Association of Lighthouse (IALA) O-139.
Q1.5.5	MCA	*The MCA [RR-060] considers that, in the interests of SAR capability, an assessment should be made of the feasibility of providing a helicopter refuge area perpendicular to the turbine development corridors.* What would be the advantages and disadvantages of incorporating a helicopter refuge area as suggested by the MCA?	As raised in response to Q1.5.4 access into windfarms is complex, and the MCA must maintain the capability to deliver an effective SAR service anywhere within the UK Search and Rescue Region. A SAR lane which is of significant length (c10nm) is a concern as it limits the manoeuvring options for a helicopter whilst in the lane, e.g. when the aircraft can either climb out of, or transit to the end of the lane before making a turn and continuing its search. For a lane of 10nm, it would take 12 minutes before the helicopter could change track at ~50kts, which is a significant amount of time during an emergency situation. For Hornsea Three, at least one of the proposed lanes was in excess of 20nm. Generally, helicopters also have to enter a windfarm from low level and along a SAR lane, rather than dropping down from above, particularly through cloud, and a helicopter refuge area serves a number of key purposes; 1) it can allow additional routes into a windfarm improving the access options;	The Applicant would refer to the 'Applicant Comments to the ExA's Written Questions [REP1-122] which lists disadvantages to the requirement for a helicopter refuge lane. The turbine spacing in Hornsea Three of at least 1km gives the helicopters sufficient space to manoeuvre within SAR lanes or between lanes. It has been suggested to the MCA that the conspicuity of some turning points could be enhanced by installing AIS on key turbines as SAR helicopters are equipped with AIS. It is believed that the widely spaced turbines on Hornsea Three combined with the SAR helicopter equipment, which includes radar, AIS, moving maps, electro-optical sensors and a Terrain (and obstacle) Awareness Warning System will allow the SAR helicopters to clearly

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			2) it allows for an area in which the helicopter can turn along a search leg, so an aircraft doesn't necessarily have to climb out and go back to the start of the next lane; and 3) it also allows for a 'safe' area for an aircraft to re-familiarise with the surroundings, re-orientate their position within the windfarm or during an aircraft emergency. This is a fundamental requirement when windfarms are over c10nm and is particularly important when there is less than two lines of orientation.	identify obstacles without the need for a refuge area. Appendix 14 to the Deadline 2 submission (SAR Technical Note) summarises that based upon consultation with the MCA a relatively high angle of bank will be used operationally by a SAR helicopter when undertaking a turn within the Hornsea Three array. This will result in a diameter of turn of less than 0.5 nautical miles which challenges the need for a 1 nautical miles wide Helicopter Refuge Area, particularly given the low likelihood of the Helicopter Refuge Area being near to a rescue location.
Q1.5.5	MCA	Are there examples of offshore windfarms with turbine development corridors of a length comparable to this proposal?	There is nothing currently constructed of this scale that has required a refuge area. However as more developments are constructed, refuge areas will continue to be requested where the lanes are sizeable, and they are assessed as being required by SAR and navigation safety specialists.	The Applicant would refer the ExA to the Applicants comments to ExA's First Written Questions (REP1-122); whereby they note that of publicly available projects Hornsea Project One have SAR lanes of around 10nm in length. Given the shape of Hornsea One only two SAR lanes are near this 10nm length and no additional mitigations were included (outside of those mentioned in MGN 543 i.e., turbine ID marking).
Q1.5.5	MCA	If there are, what approach was taken to maintaining SAR capability in those examples?	See above.	See above.
Q1.5.8	ConocoPhillips	Q1.5.8: Please provide further detail about the specific assets which are of concern and their respective distances from the proposed	The proposed route of the offshore cable corridor results in the crossing, at three separate locations, of the following ConocoPhillips operated infrastructure:	The Applicant acknowledges ConocoPhillips infrastructure assets and would refer the ExA to

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		development. What further mitigation measures do you consider to be necessary?	The Saturn ND to LOGGS PR pipeline and piggy backed methanol line The Viking AR to Theddlethorpe Gas Terminal (TGT) pipeline and piggy backed methanol line The LOGGS PP to TGT pipeline and piggy backed methanol line In addition to the above pipelines we have a general concern over i) the safety and integrity of the ConocoPhillips operated platforms in the area and ii) that any construction or operational activity on Hornsea should not act as an impediment or interfere with ConocoPhillips' required access to the platforms for maintenance and/or decommissioning purposes. The closest of these to the Hornsea 3 array area is the Caister CM platform at a distance of a little over 13 nautical miles. The closest platform to the offshore cable corridor is the Tethys TN platform which is around 1 nautical mile from the corridor. Whilst there is a 500m Safety Zone around the installation, some of our activities will take place outside of this area (such as pipeline inspections, use of standby or stand-off locations), as such there may be an impact on operations from Project activity within the corridor. Registered in England & Wales No 524868. Registered Office, Portman House, 2 Portman Street, London VV1H 6DU To be able to fully consider all possible implications and to ensure satisfactory mitigations are in place for the continued safety and integrity of ConocoPhillips' pipelines and	Q1.5.8 of the Applicant's response to the ExA's First Written Questions (REP1-122).

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			infrastructure we need to be provided with all necessary technical information. Crossings of the pipelines noted above should be kept to a minimum through bundling or other appropriate methods where possible, with sufficient measures taken to ensure at the crossing points that the design is such that there is no scouring around the crossed pipelines or exposure of the pipelines where they have been buried/trenched. Crossing Points should be designed such that the crossing angle be as close to 90 degrees as possible with a minimum 300mm physical separation between the cable and pipeline and at the midpoint between anodes to minimise the potential for adverse mechanical loads and electrical interference with the pipeline Cathodic Protection system. There should also be no impediment to access to ConocoPhillips' facilities that may compromise or complicate decommissioning activity. To assess potential crossing/proximity issues, ConocoPhillips must be appraised of the proximity of wind farm construction and maintenance operations to infrastructure as well as any construction or maintenance vessels, to determine the requirement for any additional protection measures. The execution of offshore agreements is required to appropriately address all issues raised in this consultation including those outlined above; similar agreements with ConocoPhillips have been entered into previously between the parties. These agreements will also require to be reviewed and accepted by the other infrastructure owners, on behalf of whom ConocoPhillips operate. Please note that further concerns may be raised following review of technical detail as it becomes available.	

1.6 Written Question - Commercial fishing

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.6.2	EIFCA	Paragraph 6.11.1.54 of the ES [APP-066] states that reduced access or exclusion of the local potting fleet from the offshore cable corridor route would be eligible for justifiable disturbance payments. Do you agree that the mitigation, as outlined in the Fisheries Liaison with Offshore Wind and Wet Renewables Group guidance, in combination with the proposed Fisheries Coexistence and Liaison Plan [APP-183], would be effective?	Eastern IFCA note and agree that the mitigation outlined in the Fisheries and Liaison with Offshore Wind and Wet Renewables Group Guidance (FLOWW), in combination with the proposed Fisheries Coexistence and Liaison Plan (PINS reference A8.10), would be effective, provided close and continued engagement with the fishing community is maintained. Although EIFCA has a remit to support a viable fishing industry, we do not represent commercial fishing interests. Eastern IFCA would not get involved in discussions about disturbance payments.	The Applicant welcomes the Eastern IFCA's agreement that the Fisheries Coexistence and Liaison Plan (FCLP) (APP-183) in combination with Guidance from FLOWW would provide effective mitigation. Further, the Applicant notes that the appointment of a Fisheries Liaison Officer/Fisheries Industry Representative (FLO/FIR) in conjunction with the FCLP provides a mechanism for continued engagement with the fishing community through the construction and operational life of the wind farm. The Applicant notes that the remit of the Eastern IFCA does not extend to representing commercial fishing interests.

1.7 Written Question - Landscape, seascape and visual impacts

No questions received for section 1.7 Landscape, seascape and visual impacts

1.8 Written Question - Historic environment

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.8.2	Historic England (HE)	Table 1.2 of the Screening Assessments for both the onshore high voltage direct current (HVDC) convertor/high voltage alternating current (HVAC) substation [APP-152] and the onshore HVAC booster station [APP-153] sets out the listed buildings for which further assessment is said to be provided in the Historic Environment chapter of the ES [APP-077]. However, it is not clear where such an assessment has been provided for each relevant listed building. This is particularly in relation to the HVAC booster station for which only Salle Park appears to have been assessed in detail. Please provide an assessment for each listed building where the Screening Assessments indicate that a further assessment is provided in the ES.	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests; as such we refer you to paragraphs 2.1- 2.9 our written representation.	The Applicant would refer to the Applicant's response to Historic England's Written Representation, within the *Applicant's Comments on Written Representations submitted at Deadline 1*, which forms part of the Applicant's submission to Deadline 2.
Q1.8.3	Historic England	Figure 3.37 of the ES [APP-058] provides an illustrative layout/design of the proposed onshore HVDC convertor/HVAC substation. Paragraph 5.8.13 of the Overarching National Policy Statement for Energy (EN-1) states that account should be taken of the desirability of new development making a positive contribution to character and local distinctiveness of the historic environment and that the consideration of design should include scale, height, massing, alignment, materials and use. Please explain how this illustrative layout/design along with the design parameters in table 3.63 of	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests; as such we refer you to paragraphs 2.1- 2.9 our written representation.	The Applicant would refer to the Applicant's response to Historic England's Written Representation, within the *Applicant's Comments on Written Representations submitted at Deadline 1*, which forms part of the Applicant's submission to Deadline 2.

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		the ES [APP-058] have taken into account the desirability of sustaining the setting and significance of heritage assets in the vicinity of the onshore HVDC convertor/HVAC substation. What would be the differences in layout and design, along with any difference in effects, between a HVDC convertor and a HVAC substation? What scope is there to refine the parameters of the HVDC convertor/HVAC substation in order to minimise as far as possible any adverse effects upon heritage assets?		
Q1.8.5	Historic England	The photomontages from the Keswick Hall viewpoint [APP-155] show the proposed HVDC convertor/HVAC substation to be clearly visible. Representations have been made in this regard by South Norfolk Council (SNC) [RR-054] and Historic England (HE) [RR-078]. Please provide a more detailed assessment of the effect upon the setting of Keswick Hall, taking account of these representations.	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests; as such we refer you to paragraphs 2.1- 2.9 our written representation.	The Applicant would refer to the Applicant's response to Historic England's Written Representation, within the *Applicant's Comments on Written Representations submitted at Deadline 1*, which forms part of the Applicant's submission to Deadline 2.
Q1.8.8	The National Trust (NT)	Does the Applicant agree that Oulton Airfield is a non-designated heritage asset? Please can the Applicant and NT provide their respective assessments of the heritage significance of Oulton Airfield (including its association with the Grade I listed Blickling Hall) and the effects of the proposed construction compound on that significance.	NT RESPONSE: A construction compound is proposed at Oulton Street, which abuts the boundary of land owned by the National Trust. The National Trust has significant landholdings in Norfolk which attract large numbers of visitors each year who come to enjoy the heritage, wildlife and leisure opportunities that they provide. In the vicinity of the proposed construction compound the National Trust owns the	The Applicant confirms that the former RAF Oulton is a non-designated heritage asset. The Applicant's assessment of the significance of the former airfield is set out below and is summarised in paragraph 5.12 et seq, of the Main Construction Compound Briefing Note [REP1-176], which formed part of the Applicant's Deadline I submission. The Applicant notes the historic link between the former airfield and Blickling Hall. However, this

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			Grade 1 Listed Blickling Hall and its Grade II* Registered Park & Garden. Blickling Hall is a hugely popular tourist visitor destination. The Trust's ownership extends to the wider Blickling estate which includes land and property at Oulton Street village. The National Trust owns part of Oulton Airfield and within the parish of Oulton the National Trust owns land to the north and east of the old airfield and lets a number of residential properties in the village including the Grade 2 Listed Malthouse Farmhouse. At Malthouse Farm the National Trust provides accommodation for several small businesses including the National Trust Textile Conservation Studio. Due to the scale of the plan (No.35) within the 'Onshore Historic or Scheduled Monument Sites Plan' (PINS Document Reference: A2.8.2) the designated heritage assets close to the proposed compound are not identified or shown. The National Trust has included a map showing these with its Written Representation. The compound would be located on part of the former RAF Oulton airfield which was one of 16 wartime built airfields in Norfolk used by the RAF during WWII. The former RAF Oulton is inextricably linked with Blickling Hall (Grade 1 Listed), which provided further accommodation for the RAF and was perhaps the most impressive country house in the county to serve as a mess site for an operational airfield. Within the estate stand a number of "temporary" buildings that provided	association increases the evidential, historical and communal values of Blickling Hall, through its RAF mess, accommodation buildings and museum, rather the heritage value of the airfield. The Applicant notes that a Record Site Plan[1] produced by the Air Ministry in June 1945 shows the disposition of the airfield following the end of the Second World War in Europe, including the extent of the runways and perimeter track. The perimeter track is the most obvious boundary of the airfield. However, several structures are shown outside this boundary including dispersal sites and in particular the bomb stores. Four T-Type Aircraft Sheds are shown (Buildings 555a-d inclusive). A Blister Hangar is also shown close to the north-eastern end of Runway 3 (Building 545). The airfield technical area is shown to the east of Building 555a, one of the T-Type Aircraft Sheds. There has been considerable degradation of airfield structures since the end of the Second World War. This includes but is not limited to the removal of much of Runway One (particularly at its eastern end) with planting at its western end and the addition of a solar array immediately south of its western end; the removal of most of the northern part of Runway Two, with structures placed on its north-easternmost part; the removal of the northern third of Runway Three; and the removal of the perimeter track to the north of Runway One and most of the dispersal areas to its south. In addition, none of the four T-Type Aircraft Sheds survive intact

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			accommodation for personnel including barrack blocks and the station cinema and gymnasium. Blickling also houses a museum dedicated to the units at RAF Oulton and is a pilgrimage for those that served there and their families. Many more people also visit the RAF Oulton museum at Blickling Hall each year and are interested to see more of what remains of the air base. The airfield is therefore a valued heritage asset, albeit undesignated, and it is possible that appreciation of its significance will continue to increase over time. Appreciation of the value of heritage changes over time and WWII sites are still relatively undesignated despite representing a fascinating memorial to a hugely significant period of the history of our Country. Unusually the three intersecting concrete runways of Oulton remain substantially intact, as does the perimeter track which encompassed them and provided access for the aircraft. With the exception of Foulsham near Fakenham, the runways and tracks at Oulton are the most complete surviving examples of a wartime built RAF airfield in the county. In terms of its surviving buildings again a similar number survive to those elsewhere including hangars. Operationally too, Oulton was unusual in that during 1944 a combined RAF and USAAF unit operated radio countermeasures from there. Today only the fragmentary remains of RAF wartime built airfields survive across East Anglia. None survive intact, but the Oulton airfield site,	and Building numbers 555a, b and d have been demolished. Parts of Building 555c, located to the south of Runway One at the eastern end of the former airfield, may remain, but this structure has been much altered since the end of the Second World War. The Blister Hangar close to the north-eastern end of Runway Three (Building 545) has been removed, along with most if not all the nearby structures. Furthermore, all the technical buildings to the east of Building 555a have been removed. In 2000, English Heritage carried out a survey of military aviation sites and structures as part of their Thematic Listing Programme (Lake, J (2000) *Survey of Military Aviation Sites and Structures Thematic Listing Programme English Heritage English Heritage* unpublished report). This surveyed military airfields in England, provided an assessment of the relative importance of airfields and made recommendations for protection. In the summary table of sites where structures were considered for listing (Lake 2000: Table 1), at least two Norfolk airfields were included. These were Swanton Morley – a grass airfield where a "*fine example of a 1939 control tower*" was recommended for listing and West Raynham, described as "after Bicester the most complete surviving bomber station in Britain. Also, the most strongly representative of late Expansion Period architecture (flat roofed concrete for technical buildings). Here some 15 buildings were recommended for listing. The control tower at Swanton Morley airfield is listed at Grade II (List

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			along with its domestic accommodation provides sufficient tangible evidence to appreciate the scale, and ingenuity of their construction and the operations undertaken from them. Oulton has an interesting history being one of the few RAF airfields where RAF and USAAF units operated together. Unfortunately the significance and character of the airfield, its historic relationship to the village and the Blickling estate and thus the contribution it makes to the setting of the Blickling Conservation Area have not been acknowledged within the application. The operation of this site as the main compound with the level of facilities and transport movements set out should be considered in the context of the historic environment but is absent from any assessment in Volume 3, Chapter 5 (Historic Environment) of the Environmental Statement. There is reference to the comments of Norfolk County Council which states "The extended accesses area includes the only surviving aircraft dispersal area associated with former Royal Air Force Oulton Airfield. The surviving Second World War concrete hard-standings should be retained and their form not altered. The same is true of the section of former runway intended for storage". The response to this by the applicant was that 'The comment is noted'. There is no evidence to suggest that the applicant has carried out a thorough appraisal to ensure any harm caused to the heritage of the airfield is minimised.	Entry Number 1391586). At West Raynham airfield the control tower is also listed at Grade II (List Entry Number List Entry Number 1407941). Although not recommended for listing. East Wretham airfield was described as having "*the best preserved WWII clutches of dispersed accommodation*". The most complete airfields which survived in relation to historic fabric were also described (Lake 2000: paragraph 3.3.2). Eighteen airfields are described, including Swanton Morley and West Raynham in Norfolk. However, Oulton is not mentioned. Although some structures survive at the former RAF Oulton the airfield overall is not well preserved. There are no public rights of way (other than access roads) to the former airfield and therefore, opportunities for the public to visit the site are limited. The Main Construction Compound Briefing Note [REP-176] to the Applicant's Response to Deadline I notes at paragraph 3.15 that there would be some 30 months active use of the compound. Impacts in connection with Hornsea Three would be temporary and reversible. On this basis therefore, no significant effects to Oulton Airfield are anticipated. [1] Official Air Ministry Record Site Plan – Oulton Airfield Site 1945. Collection: The Eight in the East, Document 17676. Published September 2015 at http://www.americanairmuseum.com/media/17676

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			The airfield should not be looked upon as a negative influence on the overall character of the area but as an important part of the history of Oulton and Blickling. The proximity of the airfield to the Blickling Estate contributes to the appreciation of the historic significance and is a tangible connection to the Estate. The significance of Oulton Airfield can be found in its historic interest. The Historic Environment Good Practice Advice in Planning: 2 states that "Historic interest is an interest in what is already known about past lives and events that may be illustrated by or associated with the asset" (Historic England, 2015). The use of the site as a compound, the associated infrastructure and the significant amount of transport movements would erode the ability to appreciate the contribution of Oulton Airfield to the historic environment. The use of the airfield in this way would mask the historic relationship and significance between the two places. Having regard to the construction period, this is likely to occur for a significant period of time. The National Trust is supportive of the need for renewable energy but in this particular case, we are concerned that the site chosen for the compound would cause harm to the heritage asset (undesignated) of the airfield which has strong links with Blickling Hall and the wider Blickling estate. The use of Oulton Airfield as a construction compound would neither preserve nor enhance the	

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			historic environment; it would only erode the ability to understand the historic connection. Finally, there is a high potential for prehistoric settlement and ceremonial activity and also medieval activity associated with the early history of the local villages in this area. Should the proposal include any below ground activity in connection with the compound, a programme of archaeological work should be secured and any discoveries appropriately recorded. This would help to inform predictions for archaeological remains on the Blickling Estate, which will be of great importance in conjunction with the large piece of land being disturbed within the estate by the Norfolk Vanguard windfarm project.	
Q1.8.9	Broadland District Council (BDC), NT	NT [RR-056] and BDC [RR-057] refer to the impact of the main construction compound on the Blickling Conservation Area. The applicant, NT and BDC are requested to provide their respective assessments of the impact of the construction compound proposals on the setting and significance of the Blickling Conservation Area. Cont/d 4 Please can BDC also provide a plan showing the boundary of the conservation area.	NT RESPONSE: The National Trust's landholdings in the vicinity of the construction compound site are outlined above. In addition, Oulton Street village is within the designated boundary of the Blickling Conservation Area and as a key land and property owner the National Trust therefore plays an important role in upholding the historic integrity of the village as a designated heritage asset. The Conservation Area was designated on 1991 and extended in 2007 to include Malthouse Farm. A conservation area is an area which has been designated because of its special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. The	The Applicant would direct the Examining Authority to paragraph 5.12.et seq, of the Main Construction Compound Briefing Note [REP1-176], which summarises the effect of Hornsea Three on the Blickling Conservation Area. In addition, the Applicant notes that the conclusions of the Environmental Statement in terms of Traffic and Transport were summarised within Section 5 of the Main Construction Compound Briefing Note [REP1-176] to the Applicant's Response to Deadline I, in particular paragraphs 5 2 to 5.4. Further details of traffic management measures have been included within Section 6 of Appendix 20 Main Construction Compound Briefing Note to the Applicant's Response to Deadline I. A range of

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			'Blickling Conservation Area Character Appraisal' (Broadland Council, 2007) describes Blickling as one of a number of park or estate landscapes which occupy a belt between the rivers of Wensum and Bure North West of Norwich. It describes the surrounding land use as predominately arable with sinuous plantations around the park. It also states that the most historically interesting building in Oulton Street is Malthouse Farm (Grade II listed) and is one of the earliest surviving buildings in the area. The farmstead was absorbed into the Blickling Estate in the eighteenth century. In addition, it states that the character of the Conservation Area is heavily influenced by the presence of Blickling Park. Whilst the proposed compound would be located outside of the Conservation Area, the transport route would be the B1149 which leads in to Oulton Street and the Conservation Area from a southerly direction. The significant increase in vehicular movements to and from Oulton Street by construction traffic would impact the way in which the Conservation Area is experienced. It is understood that the main compound would operate as a central logistics base for the onshore construction works, and would house the central offices, welfare facilities, and provide a security hub, central health and safety monitoring, and equipment stores, as well as acting as a staging post and secure storage for equipment and component deliveries. This is likely to involve a significant amount of infrastructure and traffic movements.	baseline surveys have been undertaken. At paragraph 6.2 the Applicant notes that the additional data does not alter or amend the findings of the Environmental Statement submitted with the Application. At paragraph 6.9 it is noted that '"*the Applicant is confident that a solution acceptable to NCC as the local highway authority, taking into consideration the feedback received from OPC, can be reached and will be secured, once agreed, through the Outline CTMP (APP-176)*". The use of the main construction compound is described in Appendix 20 Main Construction Compound Briefing Note to the Applicant's Response to Deadline I, in particular in Section 3. The document notes at paragraph 3.12 that the site identified comprises hard standing suitable for the temporary placement of site facilities and to allow plant and materials to be stored safely and securely. Material and non-static plant will then be transported out to the active cable installation work locations. The Main Construction Compound Briefing Note [REP1-176] notes at paragraph 3.15 that there would be some 30 months active use of the compound. Impacts in connection with Hornsea Three would be temporary and reversible. Therefore on this basis, no significant effects to the Blickling Conservation Area are anticipated. In their Statement of Common Ground with the Applicant, Broadland District Council agrees with this conclusion and that details on the use and layout of

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			The airfield is located on 'The Street' which is accessed from the B1149, however, this is a rural road and the National Trust questions the appropriateness of this for use by the construction traffic. The 'Blickling Conservation Area Character Appraisal' indicates that settlements within the Conservation Area have a small, linear character. This is true of Oulton Street. It also states that the Conservation Area has a 'strong rural character'. Information within the application estimates the potential number of vehicle movements at the main compound at Oulton Street, would equate to a peak of 130 daily staff vehicle movements and a peak of 118 daily HGV movements. The applicant also acknowledges that this is a "narrow single carriageway". This number of vehicle movements would have an adverse impact upon the rural character of the Conservation Area. Furthermore, construction could last a number of years. The submission indicates that under a two-phase programme scenario, the sum of the durations of each phase would not exceed eight years assuming gaps between the phases of up to 3 years. Under a singlephase construction programme, the total duration of the onshore cable corridor construction would not exceed six years. The applicant acknowledges that there are concerns regarding the use of this site specifically in terms of access but considers that these can be overcome through suitable traffic management measures. Details of such measures have not been	the main construction compound will be agreed with the Council through the final CoCP during the detailed design stage.

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			included at this stage. It is stated that these measures will be developed as part of the subsequent Construction Traffic Management Plans (CTMPs) secured prior to the commencement of works and activities at the main compound, when the scope of the use of the main construction compound by the principal contractor is known. It is also stated that the traffic management measures may involve diversion routes. The National Trust is concerned about the impacts that the level of traffic using this rural road and the impacts the traffic management measures could have on its tenants, staff and visitors who use this road and the impact this would have on the character of the Conservation Area. As stated by the applicant, the scope of the use of the compound is not yet known; therefore it is difficult to fully assess the impacts upon the Conservation Area. It is considered that the scale and nature of activity indicated (notably the on-site infrastructure and large amount of transport movements) within the submission is likely to be significant, and the concentration of this activity on the edge of the Conservation Area would be harmful to the setting of the small, linear character identified in the Conservation Area Appraisal. Should this location be considered acceptable as a construction compound it is important that any construction traffic accessing this compound is aware that it should be accessed from the B1149	

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			and not from a northerly direction where it would pass through the village and Conservation Area.	
			BDC RESPONSE: Based on the available information it is considered that the position of the main construction compound at Oulton is unlikely to have a detrimental impact on the setting and significance of the Blickling Conservation Area. However further details in respect of the layout and use of the compound, including fencing and lighting are to be submitted and agreed with the District Council through the final Code of Construction Practice to allow a detailed assessment of these impacts including on heritage assets. In addition, the agreed route of staff and main construction vehicles, together with the likely number of traffic movements associated with these are still to be agreed with the District Council as the Access Strategy progresses – see later responses. A copy of the Blickling Conservation Area plan is attached.	Noted.
Q1.8.14	NT	The NT [RR-056] outlines what it considers to be the archaeological interest of the North Norfolk coast in the area of the proposed cable landfall. The applicant and NT are requested to provide further assessments of such archaeological interest together with further details of any mitigation that would be required in this regard.	NT RESPONSE: The landfall for the proposal would be at Weybourne to the west of land within the National Trust's ownership. This section of coastal land is important as there may be military defences within the coastal zone and also very old activity associated with deeper geological layers. The landfall area will see a large area of groundworks	The Applicant would direct the Examining Authority to the Applicant's Response to Q1.8.14 of the ExA's First Written Questions [REP1-122]. In addition, the Applicant notes the request from the National Trust that appropriate measures are put in place to investigate and record archaeological information from the prehistoric through to the modern period.

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			and would be very detrimental to archaeological remains. The Early and Middle Pleistocene deposits around Weybourne (the Cromer forest bed formation) are known for their association with ancient human occupation. Later activity in the area could include Roman fortifications and port settlements such as Branodunum (Brancaster) to the west, which is land owned by the National Trust. More abundant, but still of significance are the military fortifications, structures and earthworks. Given the National Trust's knowledge of the abundance of these on the Sheringham Estate, it is considered important that such investigations are carried out. As the coastal regions erode, it is important to understand and record any information on archaeological remains. We request that appropriate mitigation is in place to investigate and record this information. Information about the geological and archaeological potential and the Roman coastal archaeology from this site will enable the National Trust to more accurately predict the archaeological potential of its to the west and east at Sheringham.	As well as the measures described in the Outline Written Scheme of Investigation (WSI) for Marine Archaeology (Volume 5, Annex 9.2: Outline Written Scheme of Investigation of the Environmental Statement (APP-115)) the Applicant is preparing an Outline Onshore Written Scheme of Investigation in consultation with Norfolk County Council Environmental Services, which will be submitted at the ExA's Deadline 3. The Outline Onshore WSI will provide a suite of mitigation techniques which can be used both above MHWS and within the intertidal zone as appropriate, allowing for comprehensive mitigation regardless of the construction technique used within the landfall and surrounding area.
Q1.8.15	MMO, HE	The applicant has provided an Outline Written Scheme of Investigation (OWSI) [APP-115] in relation to marine archaeology. Are you in agreement with the OWSI? If not, what amendments would you suggest?	HE RESPONSE: The Offshore Outline WSI is generally sufficient for the purposes of the examination of this application. However, within our Written Representation (Paragraphs 8.1 to 8.40) we have identified a number of amendments that are required so that a	It is noted that Historic England considers that the Outline Offshore WSI (APP-115) is generally sufficient for the purposes of the examination of this application. The Applicant notes the comments with respect to the Outline Offshore WSI in Section 8 of Historic England's Written Representation [REP1-

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			sufficiently robust WSI can be produced should consent be obtained. We are also concerned that only the Offshore OWSI has been submitted within the Environmental Statement, as set out in paragraph 3.1 and 3.2 of our Written Representation. We would also have expected the applicant to have submitted an Onshore OWSI with the application. MMO RESPONSE: The MMO defers to Historic England's position.	107]. Further engagement with Historic England is actively being sought and it is intended that these detailed comments will be addressed through amendment of the Outline Offshore WSI and/ or dialogue prior to commencement. In addition, an Outline Onshore WSI has been prepared and is presented at Appendix 7 of the Applicant's Response to Deadline II. Norfolk County Council Environmental Service (NCCES) have been consulted and their comments have been addressed. This is the subject of ongoing dialogue with NCCES.
Q1.8.16	MMO, HE	Section 9.11.1 of the ES [APP-069] sets out an assessment of significance for the effects of the construction phase on marine archaeology. The magnitude of impacts is assessed as being negligible. Whilst impacts are predicted to be localised, given the total maximum area of proposed disturbance, what confidence is there that the magnitude of impacts would remain as being negligible? Do the MMO and HE agree with the applicant's assessment of magnitude of impact on marine archaeology?	HE RESPONSE: The Applicant's assessment of negligible impact is entirely predicated on the implementation, through the Development Consent Order (including deemed Marine Licences), of identified mitigation measures. Therefore any advice we offer regarding possible magnitude of impacts as assessed by the Applicant can only address what we presently know about the historic environment as revealed by investigations completed to date.	The Applicant's assessment of impact is assessed through a consideration of the baseline characterisation of Hornsea Three and the maximum design scenario. On this basis the assessment is not predicated solely on the adoption of mitigation measures, although these will aid minimising any impacts on heritage assets.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			MMO RESPONSE: The MMO defers to Historic England's position.	
Q1.8.17	Historic England	The OWSI [APP-115] refers to the role of the Archaeological Curator. Please provide further details of this role including how and by whom they would be appointed. What would be the process by which matters would be determined where the approval of the Archaeological Curator was required? What consultations would the Archaeological Curator carry out?	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests. We recommend that the Offshore OWSI names Historic England as the Archaeological Curator for all matters seaward of MHWS and that the relevant local authorities archaeologist for matters between MHWS and MLWS. We understand that formal 'approval' can only be given by the DCO competent authorities, e.g. the MMO, and therefore the MMO is responsible for consulting Archaeological Curators, such as Historic England.	This comment is noted and it is intended to update the outline offshore WSI [APP-115] accordingly, together with the other detailed amendments to be made prior to commencement.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.8.19	Historic England	The OWSI [APP-115] provides for the potential creation of Archaeological Exclusion Zones. Please provide clarification of the process for the establishment of new Archaeological Exclusion Zones (including Temporary Zones). How would these be safeguarded through the dDCO when the detailed siting of the offshore infrastructure is finalised?	We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests. This is an important matter than has been highlighted regarding the effective implementation of archaeological exclusion zones. We therefore request that the Applicant engages with us so that we may advise accordingly for appropriate measures to be agreed with the MMO.	Please see the Applicants Response to ExA Question 1.8.19. In addition, further engagement with Historic England is actively being sought and it is intended that these detailed comments will be addressed through amendment of the outline offshore WSI and/ or dialogue prior to commencement.

1.9 Written Question - Land use and recreation

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.9.1	SNC	Representations have been made regarding the potential implications of the on-shore cable route for future housing development sites [including RR-051, RR-067 and RR-147]. The Applicant and SNC are both requested to provide details of the location of potential housing sites, the stage they have reached in the planning process, the effects the proposal would be likely to have upon them and any appropriate mitigation measures that may be required.	The sites have no status in planning terms as they have been submitted under the call for sites and the initial Regulation 18 stage, which is the first stages of the Local Plan process. The sites have been subject to a high-level desk-top assessment in the Housing and Economic Land Availability Assessment (HELAA). Sites identified as potentially suitable in the HELAA still need to be subject to a full site assessment before a draft Regulation 18 plan is consulted on in autumn 2019.	Noted, the Applicant would refer to the Applicant's response to ExA First Written Questions Q1.9.1 submitted at Deadline 1 (REP1-122).

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.9.4	Norfolk County Council	The Outline Code of Construction Practice [APP-179] indicates that public accesses and routes would be reinstated. What measures would be required to ensure that these footpaths and routes are reinstated following closure or diversion, including any parts outside of the dDCO limits which may have become overgrown? How would such measures, including appropriate timescales for completion, be secured in the dDCO?	The OCoCP states that: "Any PRoW (public right of way) affected during the construction phase will be reinstated following completion of the works to ensure that no permanent effects remain" (paragraph 6.1.8.20). This is an important and necessary commitment. We would suggest that a process is put in place whereby the County Council's PRoW officers are notified when paths have been re-instated following closure or diversion to a standard to be agreed prior to the works, which may be on a case by case basis and which may include work outside of the working corridor, and so can confirm that the paths have been returned to an appropriate condition or can request additional remedial measures if necessary. In our experience, after works to reinstate paths, there is often a period of 'settling' of materials. This can result in a variety of problems, such as sinking of infilled areas, or localised compaction leading to surface water/flooding. Where re-seeding of paths is necessary, establishment of grass can take some time. Given this, NCC would suggest that the OCoCP includes a commitment to a one-off survey of affected PRoW at a period of 6 months after completion of works and, in consultation with PRoW Officers, to take any remedial actions necessary to address issues resulting from the works.	The Applicant would direct the Examining Authority and Norfolk County Council to paragraph 6.8.1.8 of Appendix 44: Outline Code of Construction Practice of the Applicant's submission at Deadline I (APP179/REP1-142) which confirms that a condition survey of affected PRoW routes will be undertaken during the pre-construction period to inform the reinstatement works. The Applicant has also committed to reinstate the affected PRoWs to a standard that is commensurate to that existing prior to the commencement of construction works. Paragraph 6.8.1.7 of Appendix 44: Outline Code of Construction Practice of the Applicant's submission at Deadline I (APP179/REP1-142) also confirms that the measures and timeframes for reinstatement will be set out in a PRoW Management Plan that will be approved by Norfolk County Council.

1.10 Written Question - Socio-economic

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.10.5	North Norfolk District Council (NNDC)	NNDC [RR-133] refers to potential community benefits being put forward by the applicant. What community benefits are envisaged? How would they be secured?	North Norfolk District Council considers that, in addition to a full suite of mitigation measures to be secured through the drafting of the Development Consent Order to ensure impacts from the development are or can be made acceptable in planning terms, there are likely to be opportunities to secure additional community benefits outside of the formal Development Consent Order process. These are likely to be secured through agreements between the applicant and the County Council District Council(s), Town and Parish Council(s) are other interested parties. North Norfolk District Council understands that the Race Bank scheme at 570MW is operating a Community Benefits scheme of £425,000 per annum for organisations in Grimsby, Lincoln-shire and parts of Norfolk round the Wash as far as Wells. Hornsea Project three at more than three times the size should be delivering as a mini-mum a proportionate rate of community bene-fits. Other offshore wind energy schemes have se-cured funding streams which have enabled improvements to town and village hall infrastructure and contributions to community projects through creation of Community Funds such as: - Sheringham Shoal Community Fund (administered by Norfolk Community Foundation);	The applicant would refer to the applicants responses to Q1.10.3, part B) and Q1.10.5, The Applicants response to Q1.10.5 advises that Ørsted has a strong track record for establishing voluntary Community Benefit Funds (CBFs) as part of its community engagement programme for its latest offshore wind farm projects in the UK. Any such funding scheme would be subject to Ørsted making a positive Financial Investment Decision (FID) and therefore would be put in place post consent. These funds are voluntary and are not therefore intended to be secured through the DCO. The Applicants response to Q1.10.3 advises Ørsted is committed to helping develop people with the right skills required to deliver the UK's offshore wind ambitions, specifically in the regions in which we operate. The Applicant has committed to develop and implement a Skills and Employment Plan for Hornsea Three which is secured by Requirement 22 of the draft DCO (submitted for Deadline 1). With regards to opportunities to identify and upgrade electricity grid connections, the Applicant refers to response to relevant representation [REP1-131] and the response at 1.2.57 to Broadland District Council. That response advises that matters relating to the transfer from the National Grid to the local network, or the capacity of the local transmission network is

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			- Dudgeon Community Fund; Other programmes include Dudgeon STEM Programme designed to inspire the next generation of scientists, innovators and inventors for pupils in school years 8-11 within the local Norfolk area. Under Hornsea Project Three it is expected that funding opportunities could help deliver wider benefits including: - Opportunities to identify and upgrade electricity grid connections and infrastructure which are currently serving to diminish opportunities for economic growth; - Enable delivery of a network of publically accessible rapid/fast electric vehicle charging points across North Norfolk and Norfolk in order to improve the take-up of electric and hybrid vehicles which in turn may improve business opportunities for UK plc to play a role in shaping the future of EV technology.	beyond the Applicant's control. Orsted understands however that the project will assist with local power needs as UK Power Networks has demand feeder connections at Norwich Main which already supply the local area with power. Over and above any Community Benefit Fund and the development of skills and employment opportunities and the delivery of renewable energy, whilst supportive of the wider initiatives, Orsted will not consider direct support for initiatives such as electric vehicle charging points.
Q1.10.7	Broadland DC	The ES [APP-082] concludes that there would be a minor adverse effect on tourism. Please provide further details of the economic effects on the tourist industry in Norfolk, including from: - seasonal traffic impacts; - impacts on public rights of way (including the Norfolk Coast Path National Trail); - the demand for accommodation; and - the implications of the proposed phasing options. Are there any local areas where economic effects would be concentrated?	It is considered that there is unlikely to be any impact in Broadland on seasonal traffic as it is noted that the main construction traffic is to avoid A-roads and the centre of Reepham. There is likely to be an impact on the use of public rights of way in Broadland during a specific phase of construction, but it is not considered to be significant. There is likely to be a small reduction in the demand	Noted With regards to measures to mitigate against Norfolk Vanguard and Hornsea Three crossing point – it is noted that Norfolk Vanguard has committed to installation by way of ducts and Hornsea Three has committed to the installation of ducts for the first phase, and installing ducts for the second phase as part of the first phase of works, should both phases

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		What measures could be proposed to mitigate any such impacts?	for accommodation in Broadland during a specific phase of construction, but it is not considered to be significant. The proposed construction period for a two phase build is estimated to be 8 years, this extended development period is a concern, however it is assumed that except for around the main construction compound, the impact will be transitory as the development moves along the cable corridor. There is potential for the economic effects of the proposal to be concentrated in Reepham as a result of the Hornsea Three and Norfolk Vanguard cable routes crossing at a point just north of the town. To mitigate against this the construction phases of the two separate cable routes at the crossing point should be co-ordinated to ensure that the construction period is not substantially elongated, this could include the installation of ducting at this point so that the cables can then be pulled through without requiring further excavation. In summary Broadland agrees that the effect on tourism in Broadland would be minor adverse.	be awarded a Contract for Difference in the same auction round. This approach means that trenching and cable installation can be de-coupled and will provide more flexibility for the installation process facilitating an improved ability to optimise works and delivery of components. Typically, this will result in the trenches being open for a shorter duration, which minimises the length of time subsoil is stored outside of the trench and makes the construction work less susceptible to poor weather conditions.
Q1.10.7	SNC	The ES [APP-082] concludes that there would be a minor adverse effect on tourism. Please provide further details of the economic effects on the tourist industry in Norfolk, including from: seasonal traffic impacts;	Unlikely to be any in South Norfolk	Noted

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		impacts on public rights of way (including the Norfolk Coast Path National Trail);	Unlikely to be any in South Norfolk but further information could be provided by the Public Rights of Way officer at Norfolk County Council.	Noted
		the demand for accommodation; and the implications of the proposed phasing options.	Unlikely to be any in South Norfolk	Noted
		Are there any local areas where economic effects would be concentrated?	Unlikely to be any in South Norfolk	Noted
		What measures could be proposed to mitigate any such impacts?	[left blank by SNC]	No response required.

1.11 Written Question - Transport and highway safety

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.11.1	Broadland DC	Do you agree with the methodology, baseline data and predicted traffic movements used to assess traffic and transport impacts in the ES [APP-079]? Please identify any outstanding issues.	Norfolk County Council as the Highway Authority is commenting on the Traffic and transport issues on behalf of the District Council.	Noted.
	Norfolk County Council		NCC have no specific points to raise in respect to planning policy, baseline or assessment methodology, however the following points still need to be addressed:- We are waiting for a report from the developer in relation to impact upon the A140/B1113 junction. At this stage NCC do not anticipate a significant impact	The Applicant has responded to each of the individual points below: • In respect to the A140/B1113 junction, the Applicant would refer to Appendix 33 of the Applicant's Response to Deadline 1 (REP1-157).

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			sufficient to warrant a recommendation of refusal (see below for more details). • **NCC maintains a holding objection on highway safety grounds until safe visibility at the permanent access point to the onshore HVAC Booster Station is clarified.** An earth embankment in private ownership needs to be re-profiled. The developers have indicated they have the landowners consent for the works but the land required falls outside the area covered by the application. Accordingly NCC will require a legal agreement to protect the visibility splay in perpetuity prior to consent being issued. • Abnormal loads will have to be made to the booster station, in particular for the delivery of transformers. As yet no assessment has been made to show that it is physically possible to deliver the transformers to the site. NCC will need to see a detailed route assessment prior to any attempt being made to deliver the abnormal loads, which can form part of the requirements under the CTMP. **Oulton Compound** • The developers still need to confirm any cumulative impacts arising from all three wind farm projects utilising the same access route to the main compound at Oulton. • NCC have reviewed an access strategy submitted by the developer and confirm that a possible option utilising passing places would be acceptable subject to the findings of a Stage 1 Safety Audit (RSA). **In**	• In respect to the access to the onshore HVAC booster station, the Applicant would refer to Appendix 30 of the Applicant's Response to Deadline 1 (REP1-156); • The Applicant notes NCC's position on AIL assessment. This point is captured within the Statement of Common Ground between Norfolk County Council and Hornsea Project Three (REP1-232). The Applicant will continue to engage with NCC in this regard. **Oulton Compound** • The Applicant would refer to Appendix 20 of the Applicant's response to Deadline 1 (REP1-176) which provides commentary on the main construction compound, particularly Annex A and Annex B which discusses the access options (including how the designs take the cumulative impacts associated with Norfolk Vanguard into account). Annex B also provides the findings of Stage 1 Safety Audits for all potential options, including Option 1: Passing Places. This confirms that taking account of the designer's response to the Stage 1 Road Safety Audit findings, Option 1: Passing Places provides an acceptable and workable solution which would provide access the main construction compound

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			the meantime, until the RSA has been reviewed, NCC maintains its holding objection on highway safety grounds. Obviously, if the location for the compound were to change, then the developer would need to re-assess the impact upon all of the highway links. If following submission of the RSA the off-site works are found to be acceptable, NCC will require any such scheme to the roadway to be temporary in nature with a commitment provided to (i) maintain the works for the duration of the project and (ii) remove and re-instate the land upon completion. However, NCC will require any works at junctions and the removal of a road hump (close to the residential property along The Street) to be permanent. Given highway improvement works will take place adjacent to a residential property which may affect drainage, we also require the developer to indemnity NCC against any compensation claims made against NCC arising from these works e.g. under part 1 of the Land Compensation Act. NCC would NOT accept an access solution to the Oulton compound that involves routing traffic through the village of Oulton due to safety concerns - eg pedestrians using narrow residential roads with a lack of pedestrian footways would come into conflict with HGV's. Following removal of the road hump, priority signage will be required along part of the route. The CTMP will need to make provision for this to be made permanent at the end of the construction	to/from the main road network, via The Street in a safe and efficient manner. • The Applicant has agreed with NCC's that elements of the access strategy will be temporary whilst others, such as junction works and works to the road hump to minimise its gradient would be permanent. This feedback is reflected in the Statement of Common Ground with Norfolk County Council submitted at Deadline 1 (REP1-232). The highways improvement works would fall under the terms of the DCO being outside of the Order Limits, Therefore, they would be undertaken either by NCC's contractor, or the Applicant's contractor under licence from NCC, pursuant to the terms of a section 278 agreement entered into prior to commencement of construction. It is usual for such an agreement to include and indemnity from the developer in respect of liabilities arising for the highway authority as a result of the works undertaken. Although the Applicant considers that significant progress has been made in demonstrating a workable access strategy for the main construction compound, it is acknowledged that the measures set out in Annex A and B in respect of Option 1: Passing Places are part of ongoing discussions with NCC (as local highway authority) and other interested stakeholders.

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			period if found to be necessary. This will be reviewed at the end of the construction phase.	Notwithstanding this, the Applicant is confident that a solution acceptable to NCC as the local highway authority can be reached and will be secured, once agreed, through the Outline CTMP (APP-176). The status of discussions regarding the main construction compound are reflected in the Statement of Common Ground between Hornsea Project Three and Norfolk County Council (REP1-232), as well as between Hornsea Project Three and Broadland District Council as submitted at Deadline 1 (REP1-099).
	SNC		South Norfolk Council would defer to NCC as Statutory Highway Authority	Noted
	North Norfolk District Council (NNDC)		North Norfolk District Council do not wish to comment and would defer such matters of consideration to Norfolk County Council, who are the Highway Authority covering North Norfolk and who are the technical experts who would normally give highway advice to the District Council.	Noted
	Highways England		Baseline and Assessment Methodology Highways England is content with the methodology used to inform the traffic and transport impacts of the proposals on the A47 and A11 trunk roads. There are no specific points to raise which would affect the outcomes of the assessment or its associated mitigation. Highway England has been in discussion with the applicant on the transport assessment and raised a number of comments to which responses were provided on 2nd November. They are in the course	The Applicant would refer to the Statement of Common Ground between Highways England and Hornsea Project Three where each of these matters are discussed (REP1-226). The Applicant continues to engage with Highways England with an aim to close out outstanding issues.

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			of being reviewed. These matters largely relate to collision analysis and Design Manual for Roads and Bridges (DMRB) compliance, including HGV swept path analysis to confirm there are no safety concerns resulting from the traffic impact of the proposals on the trunk road. It has been agreed that there will be no direct access to any construction sites directly off the trunk road. With respect to the use of the A47/A1074 Longwater, A47/ A140 and B1113/A140 junctions by workforce during construction, it is likely to be low proportionate to the existing movements on the network. It has been agreed between the parties that no further work beyond the provision of likely movements to inform a sensitivity test will be required. The outcomes of the sensitivity test will be used to identify site-specific measures to be included in the detailed Construction Traffic Management Plan (CTMP) post-consent. It is agreed that the CTMP will be developed to ensure those junctions mentioned will operate, as far as practicable in a safe and efficient manner. Subject to reviewing and agreeing the responses referred to above, Highways England will have no specific points to raise. Traffic and Transport Impacts Highways England has discussed the capacity and characteristics of the junctions along the A47 and A11 trunk roads affected by the proposals and is content that no junction capacity modelling is required except in the two locations listed below.	

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			A47/A140 junction The impact of the proposals on the local road A140/B1113 junction is a matter for Norfolk County Council (NCC). Highways England will require confirmation from NCC of their acceptance of the impact of construction traffic on this junction, in order to address the risk of a queue of traffic tailing back to, and affecting the operation of, the A47/ A140 junction. If the junction mentioned above is found not be operating in a safe and efficient manner, or where traffic modelling or on site monitoring during construction determines that there is an issue, suitable mitigation measures will be needed to be developed in consultation with Highways England and NCC. A47/Taverham Road Honingham Junction It has been agreed with the Applicant that analysis of the A47/Taverham Road Honingham junction should be undertaken which includes accident records, DMRB compliance checks and HGV swept paths. Highways England agrees that a transport modelling is not required. Highways England will review the analysis but does not foresee any concerns which could not be managed through the detailed Construction Traffic Management Plan CTMP. In order to minimise the risk of a queue of stationary traffic developing on the main carriageway of the A47, the CTMP should include measures to avoid a	

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			situation in which two HGVs (one arriving, one leaving the site) will attempt to use this junction at the same time. Construction Traffic Management Plan (CTMP) Highways England is content that a the CTMP can and will be developed to ensure any relevant junctions along the trunk roads will operate, as far as practicable in a safe and efficient manner. Where traffic modelling or on site monitoring determines that this is not the case, it will be necessary for suitable measures such working hours restrictions on construction sites in the vicinity, and/or the provision of queue length detectors on A47 slip roads linked to Variable Message Signs alongside the main carriageways of the A47 to advise drivers approaching these junctions of the risk of encountering excessive amounts of queueing traffic. It would be expected that on-site monitoring and mitigation measures such as those set out above will be implemented for the duration of the works to the satisfaction of Highways England and in compliance with its usual standards and policies in place at the time.	
Q1.11.9	Norfolk Vanguard	The main construction compound at Oulton Street would be located close to some construction and storage components of the proposed Norfolk Vanguard/Norfolk Boreas scheme. Please provide an assessment of the potential in-combination traffic and transport effects of the proposal in the locality of Oulton Street, including details of likely construction timetables for all	A joint response to Q1.11.9 from the Applicant and Norfolk Vanguard was provided in the SoCG between the Applicant and Norfolk Vanguard – submitted at D1.	Noted.

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		projects and proposed measures to minimise any impacts.		
Q1.11.12	Norfolk Vanguard	The on-shore cable route would cross with the proposed Norfolk Vanguard/Norfolk Boreas cable route to the north of Reepham. Please provide an assessment of the potential traffic and highway impacts arising from the construction of both projects and outline any measures that may be required to mitigate any impacts.	See response Q1.11.9	Noted.
Q1.11.14	Norfolk County Council	Section 1.6.6 of the ES [APP-159] (Section 1.6.6) states that the A140/B1113 signalised junction already operates in excess of capacity during peak hours and this will be exacerbated during construction works. How will the performance of this junction be monitored and what traffic management measures are likely to be appropriate? How would such measures be secured?	This was raised at the focused consultation stage. There are two elements for consideration:- 1. Traffic turning left from the A140 onto the B1113 at the signalised junction will increase queue lengths along the A140 in the AM peak. 2. Traffic turning right from the B1113 onto the A140 will increase queue lengths on the B1113 in the PM peak. We expect to control construction deliveries through the CTMP. Long term we do not foresee any issue with operational traffic. The only issue relates to traffic movements associated with the construction staff travelling to work. We are waiting for a report from the developer in relation to impact upon the A140/B1113 junction but at this stage NCC do not anticipate a significant impact sufficient to warrant a recommendation of refusal. We expect to reduce the impact to an acceptable level via the CTMP.	The Applicant would refer to Appendix 33 of the Applicant's Response to Deadline 1 (REP1-157) which focuses on matters relating to the A140/B1113 junction.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.11.22	Norfolk County Council	Access to the landfall construction site would be via the existing access from the A149 to Foxhills Campsite and the Muckleburgh Museum (with an additional parallel access road). Given the limited visibility at the existing access onto the A149, please provide details of any traffic management measures that would be required to ensure the safety of this construction access point.	NCC are satisfied that during construction, safety at temporary accesses can be controlled and managed through the CTMP. Temporary signage will be required in accordance with Traffic Signs Regulations and General Directions (TSRGD) as well as Temporary speed limits via Temporary Traffic Regulation Orders (TTRO's). The exact details can be confirmed within the CTMP.	Noted.
Q1.11.25	Broadland DC	Please comment on the Outline Construction Traffic Management Plan [APP-176] and set out any amendments or additions you consider are required.	The principles of the OCTMP are acceptable although concern has been expressed about the suitability of the route for staff and heavy construction vehicles in proximity of the main construction compound at Oulton and for this reason an alternative Access Strategy has been requested, the details of which are still to be agreed. Also see response to question Ref: Q1.15.16 below. The construction route through Cawston village is also an outstanding issue in this respect. See Local Impact Report and SoCG.	The Applicant would refer to the response to Broadland's Local Impact Report (REP1-053) where matters relating to the access strategy at the main construction compound, and traffic movements through Cawston are considered.
Q1.11.25	Norfolk County Council		We recognise it is not possible to produce a full CTMP until such time as a contractor has been chosen. Accordingly we have no objection in principle to the developer submitting an outline CTMP at this stage. Overall we are satisfied impacts can be managed via the submission of a detailed CTMP in due course. With regard to additions - we have set out specific requirements within the response to the individual	Noted.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
			questions covered elsewhere within this letter as a whole.	
Q1.11.25	North Norfolk District Council (NNDC)		Core working hours are generally acceptable. The Council would expect mobilisation hours to only include non-HGV traffic and to be closely controlled to minimise any noise impacts. In respect of continuous working hours, they should only be undertaken when there is a clear construction need and should be subject to stringent mitigation measures. There will be a need for a clear/robust complaints procedure and local authority and community liaison prior to and during construction. This is particularly important for the continuous working hours but may equally apply to other activities. It may be considered appropriate to include a community liaison article within the DCO that prevents certain work until a community liaison scheme has been submitted to and approved by the local authority. Measures to prevent noise from reversing warnings are requested either by designing deliveries to prevent reversing and providing low noise reversing warnings. NNDC welcome measures on dust suppression e.g. sheeting of loads and wheel washing facilities.	See applicants response to Q1.12.6, Q1.12.8 Regarding the mobilisation period, the Outline CoCP (REP1-142) has been updated to prescribe that mobilisation does not include heavy good vehicle (HGV) movements into and out of construction areas (i.e. HGV movements should only occur at the construction areas during the core working hours unless otherwise agreed), but suppliers can make use of the wider highway network outside these hours to travel. The use of the mobilisation period will be agreed with the relevant local authority EHO officer in consultation with relevant planning authority on a case by case basis. Regarding continuous working, as stated in paragraph 4.1.1.8 of the Outline Code of Construction Practice [APP-179], activities outside the core working hours would be agreed with relevant local authority Environmental Health Officer in consultation with relevant stakeholders as required. Any application would detail how noise is to be managed on-site and predicted noise levels at affected residential over the applied project (localised works) period. These predicted noise levels are calculated on the basis of the equipment being used (including HGV reverse warning noise – see below), at any part of the project programme and the length of time the equipment is used during

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
				any given period. It is agreed that a request for continuous working is an exception, undertaken when there is a clear construction need and should be subject to stringent mitigation measures. Regarding the establishment of a clear/robust complaints procedure and local authority and community liaison prior to and during construction. The Applicant agrees with this measure and has captured suitable requirements in Appendix A Communication Plan Framework to the Outline CoCP [REP1-142]. Regarding the appointment of a Community Liaison, this measure is captured in the Outline CoCP (REP1-142), and therefore must be secured prior to the commencement of works. Appendix A of the Outline CoCP (REP1-142) requires *"During the construction phase, a Community Liaison Officer (CLO) will be appointed by the Undertaker prior to the commencement of onshore works. The CLO will attend public meetings including liaison with community groups and will manage all contacts with local resident groups, schools, emergency services and local businesses with regard to general construction works issues in accordance with the parameters established in the Communications Plan."* Regarding the limitation of reversing audio vehicle warnings, whilst the Applicant appreciates that such safety mechanisms can have a localised noise impact, it is noted that they do serve an important HSE function on work sites. Rather than prescribing

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
				through the Outline CoCP (REP1-142) that the use of these safety mechanisms are prohibited, it is the Applicants strong preference to retain their ability to be used, subject to any secondary approvals already required to be secured (detailed above). This will allow a discussion and agreement to be reached between the construction contractor and relevant EHO officer on a case by case basis when the detailed works to be undertaken outside core hours and site-specific characteristics and proximity to any sensitive receptors are known.

1.12 Written Question - Living conditions for local residents

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.12.2	Broadland DC	Do you agree with the Applicant's noise assessment methodology, including the baseline monitoring [APP-080]?	Agree with the standard cable construction noise assessment methodology, including baseline monitoring; however the District Council has requested further evidence of the noise levels that can be expected from HDD, which has not been specified.	The Applicant would direct the ExA and Broadland District Council to Volume 6, Annex 8.2: Construction Noise Model Output (APP-168) which includes noise source levels from the manufactures of HDD equipment. The source levels have been used in the construction noise model.
Q1.12.2	SNC		South Norfolk Council agrees.	Noted.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.12.2	North Norfolk District Council (NNDC)		NNDC have no adverse comments in respect of the Applicant's noise assessment methodology, including the baseline monitoring.	Noted.
Q1.12.6	Broadland DC	Paragraph 4.1.1.1 of the Outline Code of Construction Practice [APP-179] sets out proposed core working hours for construction. These appear to extend beyond standard construction working hours, including starting at 07:00 on Mondays to Saturdays. Bearing in mind the proximity of some work sites to residential properties (and the period of construction of the HVDC convertor/HVAC substation), what is the justification for these working hours? Should provision be made for reduced hours or no working on Bank Holidays?	Standard construction working hours should be used which recommends a start time of 8.00am Monday – Saturday and there should be no working during Bank Holidays or national public holidays	Regarding BDC's proposed start time of 08:00am (Mon-Sat) rather than the Applicants request for a start time of 07:00am plus 1 hour mobilisation period. The Applicants response to Q1.12.6 advises why it considers this to be appropriate. The Applicant notes that a work start time of 07:00AM is consistent with other local National Infrastructure Projects such as The Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order 2015. On the second issue, of preventing or limiting working during Bank Holidays or national public holidays - as noted in the Applicant's response to Q.12.6, consent is required from the relevant authority EHO officer in consultation with relevant planning authority to work during these periods. This is secured through the Outline CoCP (paragraph 4.1.1.8, REP1-142). BDC therefore retains discretion if they choose to permit such working. Whilst requesting to undertake works on a public holiday is a last resort, prohibiting working outright on public holidays at this consenting stage may hinder the timely delivery of specific elements, even where it is to the benefit of wider stakeholders, for example it may facilitate the completion of a complex activity, or where it aligns with other works (for example railways line closures).

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.12.6	SNC		South Norfolk Council concurs with best practice which is to undertake any potentially noisy construction and demolition activities during the following times: 08:00 - 18:00 Monday to Friday 08:00 - 13:00 on Saturdays No work on Sundays or Bank Holidays	See Applicants response to Q1.12.6 BDC above. The Applicant will review restrictions set out in Outline CoCP regarding control over potentially noisy construction and demolition activities between 07:00AM and 08:00AM in response to BDC and SNC concerns.
Q1.12.6	NNDC		North Norfolk is an area which has a high level of dependence on tourism. There is an expectation for visitors and residents that working during non-standard construction hours (particularly bank holidays and sensitive night time hours) will be avoided (or, if unavoidable because there is a clear proven need, will be minimised and mitigated). Periods of extended continuous working over a prolonged duration affecting the same noise sensitive receptor is of serious concern and should be avoided. NNDC recommends reduced hours and no working on Bank Holidays, particularly in close proximity to noise sensitive receptors.	See Applicants response to Q1.12.6 BDC and SNC above. As noted in the Applicants response to Q.12.6 BDC, NNDC therefore retains discretion if they choose to permit such working on Sundays, Public Holidays or where authorisation for continuous working is sought.
Q1.12.7	Broadland DC	The Outline Code of Construction Practice [APP-179] allows for continuous working hours in certain circumstances. Under a maximum design scenario for continuous working hours, what would be the effects on the living conditions of local residents? Are further mitigation measures required in the Outline Code of Construction Practice to manage and mitigate the effects of continuous working hours?	Continuous working hours could have the potential for unacceptable effects on living conditions as a result of noise and disturbance. Further mitigation in the outline CoCP should state that any continuous working hours should only be in exceptional or emergency circumstances.	See Applicants response to Q1.12.7 B). The Applicant will review the wording to the Outline CoCP to recognise that any continuous working (already subject to consent from the relevant EHO), is only to be requested on an exceptional basis.
Q1.12.7	SNC		South Norfolk Council considers that rather than certain it should be exceptional.	See Applicants response to Q1.12.7 BDC above.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.12.7	NNDC		Some possible effects of continuous working include sleep disturbance and adverse business impacts. NNDC recognise and welcome the mitigation measures put forward including liaison with local stakeholders such as NNDC Environmental Health and Local Parish/Town Councils and residents and a Community Liaison Committee. It is recommended that quiet generators/equipment are selected so as not to cause disturbance. In respect of additional mitigation suggest consideration of additional noise monitoring to assess the impact of works and provide additional control measures as required.	See Applicants response to Q1.12.7 BDC above.
Q1.12.10	Norfolk Vanguard	Please provide a cumulative electromagnetic field assessment at the point where the onshore cable route would cross the proposed Norfolk Vanguard/Norfolk Boreas route.	A joint response between the Applicant and Norfolk Vanguard was provided in the SoCG between the parties submitted at D1. This response was then duplicated in the Applicants response to ExA questions. Ørsted and Vattenfall have jointly commissioned an independent study and resulting report which explores the 'worst case' electric and magnetic fields (EMFs) which may result where it is proposed the power cables from the large wind farms will cross. Appendix 19 Vattenfall and Ørsted Circuit Crossings- EMF Information Sheet to the Applicant's response to Deadline 1 [REP1-173].	Noted.
Q1.12.11	Broadland DC		Yes	Noted.

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.12.11	SNC	The applicant has provided an Electro-Magnetic Fields Compliance Statement [APP-087]. Do you agree with this statement?	South Norfolk Council agrees.	Noted.
Q1.12.11	NNDC		NNDC have no comments to make on this aspect, which is a public health issue for which Public Health (England) may be better placed to advise.	Noted.

1.13 Written Question - Content of the DCO

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.13.1	Marine Management Organisation (MMO), Natural England (NE)	The Applicant's additional submission [AS-003] sets out the relationship between the design parameters in the dDCO [APP-027] and those in the ES. Does this submission address your concerns regarding the relationship between the areas and volumes of material set out in the ES and those referred to in the dDCO?	NE RESPONSE: Natural England has reviewed the additional document submitted and our detailed comments are provided in Annex B of our WR. MMO RESPONSE: The MMO has reviewed this additional submission and has outstanding queries regarding the design parameters in the DCO and the ES. A detailed description of our outstanding queries can be reviewed in our Written Representation (Point 4.3 and 4.4). The queries raised are in relation to disposal volumes and cable protection.	The Applicant has responded to each of these documents separately.
Q1.13.5	Historic England	The definition of 'commence' in Article 2 excludes offshore site preparation works. Consequently,	HE RESPONSE:	As set out in the Applicant's response to Q1.13.5, it has considered the representations of the MMO and

		boulder clearance and sandwave clearance would not amount to commencement. This is a broader definition than ones used in some recent orders, such as East Anglia Three and Dogger Bank Teeside A and B. The MMO and NE [RR- 085, RR-097] express concern that works with potentially significant environmental effects could be carried out in advance of pre-construction plans and any associated documentation being approved. Moreover, table 2.18 of the ES [APP-062] identifies the use of pre-construction surveys as a designed-in measure to reduce the impact of the proposal on benthic features. What is the justification for adopting a broader definition, (in relation to offshore works), than that used in comparable projects? How would pre-construction surveys be secured through the dDCO if boulder clearance and sandwave clearance would not amount to commencement?	We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests. We note that this interpretation is different to the definition used by other offshore developments, and this is crucial to the delivery of archaeological mitigation. For further information, see paragraph 7.3 and 7.5 of our Written Representation in which we explain the importance of agreed timeframes for the preparation of a project-specific WSI sufficiently ahead of preparatory works so that all elements of this project have embedded and enforceable mitigation measures in place.	Natural England on this point and has removed the wording "*offshore site preparation works*" from this definition in Article 2 of the draft DCO (Version 1, submitted for Deadline 1).
Q1.13.8	Broadland DC	The definition of 'onshore site preparation works' in Article 2 includes site clearance, demolition and archaeological investigations. It is noted that similar drafting has been adopted in some other projects. Nevertheless, these may well be substantial works in their own right, particularly in relation to the clearance of vegetation along the cable corridor. Vegetation clearance could take place in areas which have yet to be subject to ecological surveys. What is the justification for excluding site clearance and demolition from the definition of 'commence' in the particular circumstances of this application? How would preconstruction surveys be secured through the dDCO if site clearance would not amount to	Norfolk County Council is commenting on the archaeological issues on behalf of the District Council.	Noted.
Q1.13.8	NCC		This question rightly identifies a potential conflict between the categorisation of the archaeological investigations as part of the site preparation works and the implementation of those archaeological investigations. We recognise that there is potential that some onshore site preparation works could adversely impact the historic environment (specifically, in response to this question, heritage assets with archaeological interest) and appropriate safeguards need to be in place to minimise this risk.	The Applicant has addressed this issue by amending Requirement 16 as follows (new wording underlined): ***1.***—*(1) No phase of the connection works may commence until for that phase a written scheme of archaeological investigation (which must accord with the outline onshore written scheme of investigation) for Work Nos. 6 to 15 has been submitted to and approved by the relevant planning authority.*

		commencement? How would Requirement 16, relating to archaeological investigations, operate if those investigations were themselves excluded from the definition of commencement?	It is suggested that this can be addressed through the rewording of the proposed Requirement 16 as follows; In para. 1.51 of the NCC RR the phrase, "*(A) No development shall take place until an archaeological written scheme of investigation has been submitted to and approved by Norfolk County Council in writing*" could be replaced with, *"(A) No onshore site preparation works or development shall take place until an archaeological written scheme of investigation has been submitted to and approved by Norfolk County Council in writing*" and para. 1.52 of the NCC RR, *"(B) No development shall take place other than in accordance with the archaeological written scheme of investigation approved under (A)"* could be replaced with *"(B) No onshore site preparation works or development shall take place other than in accordance with the archaeological written scheme of investigation approved under (A)".* This amendment would ensure that any onshore site preparation works, such as site clearance, would be subject to the requirements of the approved onshore archaeological written scheme of investigation. This would then secure the implementation of the archaeological surveys and investigations required at both the pre-commencement and post-commencement stages. The archaeological investigations should therefore comprise part of the precommencement works so that they can be carried out ahead of or in tandem with the other onshore site preparation works as set	*(2) The term commence as used in requirement 16(1) only shall include any onshore site preparation works.* *(3) ~~(1)~~Any archaeological works or watching brief must be carried out in accordance with the approved scheme.* *(4) ~~(2)~~In the event that site investigation is required, the site investigation and post investigation assessment must be completed for that phase in accordance with the programme set out in the written scheme of archaeological investigation and provision made for analysis, publication and dissemination of results and archive deposition secured for that phase.* The effect of this change is that site preparation works cannot be undertaken prior to the WSI being approved by NCC.

			out in the written scheme of investigation where required.	
Q1.13.8	SNC		South Norfolk Council considers that there is no justification as a blanket provision	Noted – see comments on NCC's response above.
Q1.13.8	NNDC		NNDC have concerns that 'onshore site preparation works' include a broad sphere of activities, many of which could have adverse impacts on the local community (including from noise, dust, light and landscape impacts). NNDC would have a preference for such works to be included within the definition of devel-opment. There is also concern that preparation works could result in harmful ecological impacts ahead of surveys. NNDC consider there are two possible options, One would be to remove some of the more trou-blesome aspects of "site preparation works" from the definition (eg "site clearance"), so that would be a "material operation" under s155 of the 2008 Act and would be included within commencement of the work. Or specific works now defined as "site preparation" could be carved out by being included in the description of the Authorised development in Schedule 1, perhaps in Work No 6.	Noted – see comments on NCC's response above regarding the onshore WSI. Regarding ecology, the Applicant has amended requirement 10 of the draft DCO (Version 1, submitted for Deadline 1) so that a separate Ecological Management Plan is required ahead of site preparation works just in relation to that phase.
Q1.13.9	Broadland DC	The definition of 'onshore site preparation works' in Article 2 appears to be broader than the equivalent wording within the definition of 'commence' in the Hornsea Two Offshore Wind Farm Order 2016. Specifically, it includes diversion and laying of services and the creation of site accesses. What is the justification for adopting a broader definition in this case? How would relevant mitigation measures	It is considered that the works described as onshore site preparation works are unlikely to have a significant adverse effect in Broadland District.	Noted.
Q1.13.9	SNC		South Norfolk Council at this point in time does not see a justification but will consider further before the hearing.	The Applicant notes SNC's position. As set out in the Applicant's Deadline I response to Q1.13.9, the Applicant would state that the reason for this list of works is in order to shorten the project programme, and to build upon lessons learned from previous

		be secured, such as those in the Outline Code of Construction Practice [APP-179], given that the detailed versions of mitigation documents may not be approved until after the 'onshore site preparation works' have taken place?		projects in relation to works needed at the pre-commencement phase.
Q1.13.9	NNCD		Construction works or activities can have adverse impacts and should be subject to appropriate mitigation.	The Applicant has considered fully and assessed effects from all aspects of the project as set out in the Environmental Statement.
Q1.13.16	MMO	Article 5(7) provides that, where the benefit of the order is transferred, no obligations remain with the undertaker. The MMO [RR-085] advises that DML conditions should remain effective against the undertaker should any assets be transferred. Would Article 5(7) provide adequate protection for the marine environment in the event that a transferee failed to carry out its obligations under the DML? Please can the MMO comment on the statement in the Explanatory Memorandum [APP-028] to the effect that this approach has been followed in the East Anglia Three Offshore Windfarm Order 2017.	The MMO is content that precedent for transfer of benefit would follow the procedures outlined by the Applicant in the approach taken for the East Anglia Three Offshore Windfarm Order 2017.	Noted.
Q1.13.21	Broadland DC	Article 10(2) would enable the undertaker to use streets that have been temporarily stopped up as temporary working areas. Would the drafting of Article 10 provide satisfactory mitigation for any potential impacts on the living conditions of local residents?	It is noted that the use of a street that has been temporarily stopped up could be used as a temporary working area but only once the street authority has been consulted and they may attach reasonable conditions. Therefore it is considered that any potential impacts on the living conditions of local residents could be safeguarded by the imposition of 'reasonable conditions' by the street authority.	Noted.
Q1.13.21	Norfolk County Council		Roads used as temporary working areas. The CTMP needs to make provisions to ensure residential access is maintained at all times and also measures for the control of mud/site debris to prevent it from being deposited onto the highway.	The Applicant would refer to paragraph 2.1.5.3 of the Outline CTMP (REP1-146) which notes that "Where there is a risk of mud from the construction works being transported onto the highway network by HGVs, wheel wash facilities will be provided at each construction site to ensure that HGVs do not deposit mud and dust onto the highway network. In order to

				minimise environmental impact upon the site and to reduce the need for water, a dry wheel 'wash' facility (rumble grids) will be used where practical, such as 'DriveOn V-Tech' solution, which is available from Eco Plant Hire. If required (and safe to operate) road cleaners may be required to be deployed along public highway in the locality of actively used site access points." Thus, should roads be utilised as temporary working areas, the same principles will apply. All private residential accesses will be maintained during the construction of Hornsea Three. This will be secured through a newly added paragraph 2.1.3.7 of the Outline CTMP as follows: *"All private residential accesses will be maintained during the construction of Hornsea Three."*
Q1.13.21	SNC		Yes	Noted.
Q1.13.21	NNDC		If sites are to be used then they should be subject to a noise assessment and mitigation measures as required, particularly, if located near to noise sensitive receptors.	Any works in a street would be minimal as all export cables are to be installed by way of HDD under all roads. However, some limited works may be required, for example through the installation of highways access points or at the request of a third party asset owner, may extend to identifying depths of existing utilities. Such works are therefore expected to be localised and short term. Where highways are to be stopped up to do these works, the measures to be deployed to undertake these works can be secured with the local planning authority in consultation with the highway authority by way of a construction method statement – referenced in the Outline CoCP [APP-179].

Q1.13.23	Broadland DC	Article 12 would enable the undertaker to seek approval for accesses to the highway, other than those listed in Schedule 5. Approval would be deemed to have been given if no decision was notified within 28 days. Would the drafting of Article 12 provide a reasonable timescale for such requests to be properly considered?	Norfolk County Council as the Highway Authority is commenting on the Traffic and transport issues on behalf of the District Council.	Noted.
Q1.13.23	Norfolk County Council		Timescale for access approval We are able to confirm 28 days is an acceptable time scale to us. If I can be of any further assistance then please let me know.	Noted.
Q1.13.23	SNC		Defer to NCC as statutory Highway Authority	Noted.
Q1.13.23	NNDC		It is suggested that Article 12 (2) should refer to requiring a decision within 25 working days starting from the next working day after receiving an application for approval under paragraph 1(b). It might be sensible to specify how the application should be made	NCC is the Highway Authority and has confirmed in its response to this question at Deadline I that 28 days is acceptable. There is no need to set out criteria relating to how the application should be made and this has not been requested by NCC.
Q1.13.24	Environment Agency	Article 14 would enable the undertaker to discharge water into watercourses, drains or sewers with the approval of the owner. Approval by the owner would be deemed to have been given if no decision was notified within 28 days. Would the drafting of Article 14 provide a reasonable timescale for such requests to be properly considered?	We are content that the timescale drafted in Article 14 of deemed approval if a decision has not been notified within 28 days.	Noted.
Q1.13.24	Norfolk County Council as Lead Local Flood Authority		There do not appear to be any issues for NCC regarding flood and water management. However : If they needed consent for 'works to ordinary watercourses' (i.e open cut not HDD), it would be deemed if no response from us 8 weeks from receipt of any payment. With regard to discharge we would wish to see proof of connection to the wider network and capacity to convey flow. But this should be within their FRA / Drainage strategy.	The Applicant notes NCC's comments on works to ordinary watercourses and will continue to consult with NCC on its drainage strategy. The Applicant would refer to the Statement of Common Ground between Orsted and Norfolk County Council as it relates to drainage and flood risk measures (REP1-232).

Q1.13.46	Applicant, (Historic England)	Requirement 16 provides for a scheme of archaeological investigation to be approved by the relevant planning authority (defined as district planning authority in Article 2). NCC [RR-035] has proposed alternative, more detailed drafting in which NCC would be the determining authority. Please can the applicant comment on the drafting suggested by NCC. Which authority (or authorities) should be responsible for approving the scheme?	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests. For further information, see paragraph 3.2 of our Written Representation in which we explain the importance of agreed timeframes for the preparation of a project-specific WSI sufficiently ahead of preparatory works so that all elements of this project have embedded and enforceable mitigation measures in place.	The Applicant notes HE's comments. Regarding timing of the WSI, the Applicant has amended Requirement 16 so that a WSI is required prior to commencement of site preparation works. See response to NCC on question 1.13.8 above.
Q1.13.46	Broadland DC		Norfolk County Council is commenting on the archaeological issues on behalf of the District Council and would be the authority responsible for approving the scheme.	Noted.
Q1.13.46	Norfolk County Council		Norfolk County Council Environment Service provides historic environment planning advice to all of the relevant planning authorities (Broadland District Council, North Norfolk District Council, South Norfolk Council and Norfolk County Council). In this capacity we have an overview of the archaeological requirements of the whole scheme and consider that Norfolk County Council is best placed to approve the onshore archaeological written scheme of investigation on behalf of all of the planning authorities concerned.	Noted.
Q1.13.46	SNC		NCC	Noted.
Q1.13.46	NNDC		Matters of archaeology are usually considered by the County Council and therefore NNDC would have no objection to NCC determining matters of archaeology so long as such investigation findings/reports are shared with the relevant District Council.	Noted.

Q1.13.60	Applicant (Historic England)	The definition of 'commence' includes offshore site preparation. A previous question regarding the definition of 'commence' in Article 2 of the dDCO also applies to this definition. Are there additional comments in relation to the definition in the Deemed Marine Licence (DML)?	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests. It is crucial that the Offshore OWSI and the DMLs encompass all 'pre-commencement' works and surveys, as well as any work conducted pre- and post-consent. For further information, see paragraph 7.3 and 7.5 of our Written Representation in which we explain the importance of agreed timeframes for the preparation of a project-specific WSI sufficiently ahead of preparatory works so that all elements of this project have embedded and enforceable mitigation measures in place.	The Applicant has considered the representations of the MMO and Natural England as well as HE on this point, and has removed the wording "*offshore site preparation works*" from this definition in Article 2 the draft DCO (Version 1, submitted for Deadline 1).
Q1.13.64	Defence Infrastructure Orgaisnation (DIO), TH	*Condition 6 provides for aids to navigation. The MoD [RR-086] has commented that the DML should ensure that aviation warning lighting will be fitted to relevant offshore structures for the duration of the construction and operation of the scheme.* *Does the drafting of this condition meet your concern relating to aviation warning lights? If not, what alternative drafting would you suggest?*	DIO RESPONSE: In reply, I can advise that the MOD considers that the current version of condition 61 (Aids to navigation) does not sufficiently address the department's concern relating to the provision of aviation warning lighting to maintain the safety of military aircraft engaged in low flying training activities. It is noted that paragraph 6-(1) of the drafted condition does define a requirement for the undertaker to maintain lighting and other aids to navigation on the seaward element of the authorised project for the prevention of danger to navigation. The condition as drafted identifies that the undertaker will receive direction on the relevant requirements from Trinity House (in consultation with Defence Infrastructure Organisation Safeguarding). However, it is not made clear whether this specifically relates to aviation.	RESPONSE TO TH: As Condition 6 relates to aids to navigation and not aviation lighting, the Applicant notes and agrees with Trinity House's suggestion to amend Condition 6 as set out in Trinity House's response. RESPONSE TO DIO: "The Applicant considers that the points raised by DIO can be addressed by amending Schedule 11, Conditions 8 and 10 and Schedule 12, Conditions 9 and 11 of the draft DCO (numbering as per Version 1 submitted for Deadline 1) so as to remove the DIO from the Aids to Navigation condition, and placing an obligation on the undertaker to exhibit lights in accordance with relevant legislation. The Applicant proposes the following amendments to the above conditions (removals of text shown with a strike thorough, new text underlined): *Aids to Navigation*

			Condition 11- (1) (j) defines a requirement for the undertaker to submit an aid to navigation management plan to fulfil the requirements of condition 6. The discharge of this condition is to be undertaken by the Marine Management Organisation (MMO) following consultation only with Trinity House.	*8/9 The undertaker must during the whole period from commencement of the licensed activities to completion of decommissioning of the authorised project seaward of MHWS exhibit such lights, marks, sounds, signals and other aids to navigation, and take such other steps for the prevention of danger to navigation as Trinity House ~~in consultation with Defence Infrastructure Organisation Safeguarding~~ may from time to time direct.* *10/11 .—(1) The undertaker must exhibit such lights, with such shape, colour and character as are required in writing by Air Navigation Order 2016 and determined necessary for aviation safety in consultation with the Defence Infrastructure Organisation Safeguarding and as directed by the Civil Aviation Authority."*
			Regulation of the operation of the approved navigation aids for the duration of the approved project is implemented through conditions 6 -(3) and 6 – (4) which respectively obligate the undertaker to report on the availability of navigational aids and to provide notification of any failure of navigational aids. These conditions are discharged exclusively by the MMO and Trinity House. This, in conjunction with the assignment of a separate sub section on Aviation safety (condition 8), indicates that condition 6 is designed to only implement requirements for maritime navigation.	[see above]
			To address this issue, it is recommended that an additional requirement is added to condition 8 along the following lines: *The undertaker must, no later than 6 months prior to the commencement of the authorised project* seaward of MHWS*, submit an aviation lighting plan*	[see above]

			("ALP") for the written approval of the MMO, in consultation with Defence Infrastructure Safeguarding. The ALP must provide that the authorised project, seaward of MHWS, *be lit in accordance with the current Ministry of Defence military low flying lighting guidance that is in place as at the date of the MMO approval of the ALP. The authorised project must, at all times, be constructed and operated in accordance with the approved ALP.*	
			This should serve to make it clear to the undertaker that there is a need for them to install and maintain relevant aviation warning lighting on the offshore element of the of the approved project for the duration of its operation in addition to those aids required to maintain maritime navigational safety. This also provides a dedicated mechanism for the submission and approval of aviation lighting. I can confirm the safeguarding positon of the MOD in relation to the application to construct and operate the Hornsea Offshore wind farm project remains as stated in my response of 20 July 2018. Therefore, the MOD is not submitting any further comments or written representation on this application. TH RESPONSE: TH submits that Condition 6 should not reference MoD / Defence Infrastructure Organisation Safeguarding. We suggest that the standard wording, as set out below, is used instead: *"The undertaker shall during the whole period from the commencement of construction of the authorised project to the completion of decommissioning exhibits such lights, marks, sounds, signals and other aids to navigation, and to take such other*	[see above] [see above]

			steps for the prevention of danger to navigation as Trinity House may from time to time direct"	
Q1.13.66	MCA, TH	*Condition 11(1)(a) states that the approval of the MMO shall not be required where the proposed design is in accordance with the design principles. The MMO [RR-085] objects to that approach.* Please comment on the MMO's objection to this aspect of the condition.	MCA RESPONSE: The MCA agrees entirely with the MMO's objection to this aspect of the condition. We cannot rely solely on the design principles to deliver an acceptable layout in accordance with MGN 543. The design principles are a tool for the applicant, the layout must still be approved by the MCA, Trinity House and the MMO despite following the design principles. TH RESPONSE: We do not agree with Condition 11(1)(a). The final layout should be agreed by the MMO, who would consult with the MCA and TH accordingly. We suggest that the standard wording, as set out below, is therefore incorporated: " A plan to be agreed in writing with the MMO following appropriate consultation with Trinity House and the MCA setting out the proposed details of the authorised project, including the: a. Number, dimensions, specification, foundation type(s) and depth for each WTGs, offshore platforms, substations and meteorological masts; b. The grid coordinates of the centre point of the proposed location for each WTG, platform, substation and meteorological mast; c. Proposed layout of all cables; and	RESPONSE TO MCA AND TH: The Applicant would refer to the 'Applicants Responses to the ExA's Written Questions [REP1-122] where condition 13(1)(a) in the draft DCO (updated and submitted at Deadline I (Rep1-133)) has been amended to state that a design plan is required to be submitted for approval by the MMO.

			d. Location and specification of all other aspects of the authorised project."	
Q1.13.67	MCA, TH	*Condition 11(1)(a)(v) provides for the indicative layout of the WTGs to be approved.* Why would the layout only be indicative? At what stage (if any) would the MMO approve the actual layout?	MCA RESPONSE: The actual layout should be approved by the MMO once the MCA and Trinity House have confirmed that they accept the layout in accordance with MGN 543. TH RESPONSE: see Q1.13.66	RESPONSE TO MCA AND TH: The Applicant would refer to the 'Applicants Responses to the ExA's Written Questions [REP1-122] where condition 13(1)(a)(i) in the draft DCO DMLs (updated and submitted at Deadline I [Rep1-133]) has been amended to clarify approval of the final layout by the MMO.
1.13.69	Applicant, (Historic England)	Condition 11(2) provides for a written scheme of archaeological investigation to be submitted. Does the drafting make clear that this scheme would be subject to the approval of the MMO? At what point would the decision be made to micro-site around a wreck? Is it intended that the actual siting would be subject to MMO approval?	HE RESPONSE: We note that this question is directed to the applicant, but we recognise that this topic has relevance to our interests; as such we refer you to our written representation. (Refer to paragraph). Under the Marine and Coastal Access Act 2009, the MMO were established as the competent authority for all decisions regarding marine licences within English Territorial waters and the Exclusive Economic Zone. In their discharge of this duty, they will seek advice from Historic England, as the National Curator of the historic environment, on any matters related to offshore archaeology. For example, should subsequent survey programmes reveal the presence of previously unknown archaeological materials it is crucial that any Consent Holder follows procedures, as provided through any dML, that avoids unnecessary impact to any identifiable heritage assets, as explained within NPS EN-3 (renewable energy	The Applicant has modified this condition in both DMLs in the draft DCO (Version 1, submitted for Deadline 1) to make clear that the MMO must approve the WSI. Consultation would be for the MMO to undertake under its statutory requirements on consultation, as highlighted by HE.

			infrastructure). This would include the consultation of the MMO and their advisors, Historic England, in order to establish agreed steps to ensure that adequate protection is afforded to such materials.	
Q1.13.71	MMO	Would it be appropriate, in the interests of mitigating impacts on benthic ecology, to include a condition limiting the footprint of foundations and scour protection for each type of foundation contemplated in the application? If so, should there be different limits for the differing sizes of WTG which are proposed?	The MMO would welcome the inclusion of a condition to limit the maximum footprint of foundations and scour protection. The MMO consider that this would be in line with best practise and would provide further clarity to record the parameters of the worst case scenario within the DMLs. The MMO would be content if the maximum footprint of foundation and scour protection would be recorded for the worst case scenario only.	Please see the Applicant's Deadline I response to Q1.13.54 (REP1-122).
Q1.13.72	MMO	The MMO [RR-085] has suggested that the volume and footprint of sandwave clearance and the amount of boulder clearance should be limited by a condition. Please can the Applicant comment on this suggestion. Please can the MMO comment on what measure(s) should be used in relation to the amount of boulder clearance.	Volume and footprint of sandwave clearance and the amount of boulder clearance should be provided in cubic metres (m3) and square metres (m2) respectively.	Please see the Applicant's Deadline I response to Q1.13.72. (REP1-122).
Q1.13.73	MMO	Paragraph 4.11.1.33 of the ES [APP-064] considers maximum hammer energy for piling operations. The MMO [RR-085] recommends that a condition is included to restrict the maximum hammer energy to the worst case scenario (5,000kJ), as assessed in the ES. However, that maximum relates to a WTG type which may not be used. There is an example (Dogger Bank	The MMO recommends the inclusion of a condition to restrict the maximum hammer energy to 5000kJ. The use of 5000kJ was assessed as the worst case scenario within the ES, the MMO is therefore content that there is no requirement for such a restriction to vary according the foundation type. Furthermore, the MMO would like to highlight that this recommendation has been discussed with the applicant who agreed to include the condition as	The Applicant welcomes the agreement and conclusion on this point from the MMO. Please see the Applicant's Deadline I response to Q1.13.73. (REP1-122) – an appropriate condition has been added to the draft DMLs (see Schedule 11, Condition 13(6) and Schedule 12, condition 14(6, DCO Version 1 as submitted for Deadline 1).

		Teesside A and B) of imposing limits relevant to the various foundation types under consideration. Would it be appropriate to include a condition restricting maximum hammer energy? If so, should any such restriction vary according to the foundation type being used?	suggested by the MMO in the revised draft DCO. Please see the agreed condition wording below. In the event that driven or part-driven pile foundations are proposed to be used, the hammer energy used to drive or part-drive the pile foundations must not exceed 5,000kJ.	
Q1.13.74	MMO	The MMO suggests that pre and post-construction surveys and monitoring should extend to benthic communities [RR-085]. Paragraph 2.11.1.14 of the ES [APP-062] addresses sandwave recovery but not the recoverability of benthic communities in any significant detail. Would it be appropriate to include a condition requiring the 'in- principle monitoring plan' to include pre and post-construction surveys and monitoring for benthic communities and geophysical features?	The MMO recommends the inclusion of a condition including the requirement to undertake pre- and post-construction surveys and monitoring for benthic communities and geophysical features. The MMO has commented on this in point 4.3 of our Relevant Representation. The MMO has provided further comment on this in our Written Representation, please see comment 6.5 for further information.	The Applicant has agreed to further monitoring commitments as outlined in the updated In Principle Monitoring Plan (IPMP; Appendix 2 to the Applicant's response to Deadline I; REP1-180). The Applicant's considers the monitoring outlined in the IPMP is appropriate to monitor the impacts on nature conservation designations coincident with Hornsea Three. Please see the Applicant's response to the MMO Written Representation for further discussion of benthic monitoring commitments.

1.14 Written Question - Compulsory Acquisition

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.14.15	Broadland DC	Paragraph 1.4.1.7 of the Funding Statement [APP-029] considers the arrangements for the approval of a funding guarantee and concludes that such approval should be given by the Secretary of State	Yes.	Noted.
Q1.14.15	SNC		Yes.	Noted.

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		rather than being delegated to local authorities. Do you agree with the Applicant's conclusion?		
Q1.14.18	Statutory Undertakers (Anglian Water Services Ltd)	"Paragraphs 1.1.3.2 and 1.1.3.3 of the Statement of Reasons [APP-032] refer to powers being sought in order for the Applicant to be able construct, operate and maintain the authorised project. Are you content with the provision in Article 19 paragraph (5) authorising the Applicant to transfer the power to acquire new rights or impose restrictions?	Yes – Anglian Water is content with provision in Article 19 (paragraph (5)).	Noted.
Q1.14.19	Statutory Undertakers (Anglian Water Services Ltd)	Paragraph (5) of Article 20 would dis-apply Article 20 in respect of statutory undertakers and refers to section 138 of PA2008 and Article 27 of the dDCO. Article 27 refers to Schedule 9 (protective provisions). Are you satisfied that your interests are adequately protected? Do you consider that the protective provisions would meet the requirements of s127 and s138 of PA2008?	We are satisfied our rights are protected. Article 20 relates to extinguishment, and so works against the landowner. Dis-applying it where article 27 applies (land or rights belonging to statutory undertakers) therefore works in favour of statutory undertakers. We consider our interests are adequately protected by article 27 and schedule 9 and therefore do not consider that sections 127 or 138 of PA2008 are engaged.	Noted.
Q1.14.20	Highways England	Paragraph (5) of Article 20 would dis-apply Article 20 in respect of statutory undertakers and refers to section 138 of PA2008 and Article 27 of the dDCO. Article 27 refers to Schedule 9 (protective provisions).	Highways England have reviewed the proposed crossing locations on A47 and A11 and is content that its interests will be suitably protected. These in particular relate to Horizontal Directional Drilling (HDD): A Section 50 Licence (New Roads and Streets Works Act 1991) will be required to be entered into	The Applicant would refer to the Statement of Common Ground between Hornsea Project Three (UK) Ltd and Highways England (REP1-226) which addresses each of the points mentioned. This demonstrates agreement in respect to the provision of crossing method statements for the Strategic Road Network Crossings (A47 and A11, HDD 31

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		Are you satisfied that your interests are adequately protected, in particular where the proposed project would cross the A11 and A47 trunk roads?	with a Geo-technical Certificate to be issued by Highways England. Highways England have provided information in relation to HDD crossing procedure in relation to the A47 and A11 Strategic Road Network. It will be necessary that the requirements of DMRB HD22 and HA120 are met, including the production of Geotechnical Risk and Preliminary Sources Study Reports (PSSR) for the two crossing locations during detailed design, together with detailed crossing method statements which will be developed in consultation with Highways England. It will be necessary for detailed proposals to be submitted at least six months prior to the anticipated start-of-works at the HDD crossing points (HDD locations 8 and 31). Abnormal Loads: At this stage it is not possible to understand fully the impacts of abnormal loads on the Strategic Road Network, as the applicant has not provided the port location to be used for this project and consequently abnormal load routeings have not yet been identified. The routeings will be subject to an approval process which will be taken forward once further information on routeing is provided. HE will require agreement to be reached prior to any onshore site construction takes place. Any approval will include where necessary site-specific measures	and HDD 8 respectively) during the detailed design stage, as set out in paragraph 1.3.2.1 of the Outline CoCP [APP-179]. These method statements will provide the necessary Geotechnical Risk Report and Preliminary Sources Study for each crossing. The Applicant will, through the development of the Outline CTMP (APP-176), continue to monitor and consider the impact of Abnormal Indivisible Loads and continue to engage with Highways England on this point.

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			to accommodate the abnormal loads along the specified routeings.	

1.15 Written Question - General

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
Q1.15.4	MMO	The MMO [RR-085] states that the assessment of significance of effect in the ES has not been undertaken in line with the Rochdale envelope approach in that the maximum potential effect has not been identified. Please provide specific examples where, in your view, the ES assessments are not in line with the Rochdale envelope approach.	It was not clear to the MMO how the applicant was able to conclude a 'minor' impact in situations where the assessment indicated that the significance of effect may be 'minor to moderate'. According to the Rochdale Envelope approach, such effects should have been assessed as of 'moderate' significance. Following discussions with the applicant, further clarification was provided to the MMO which indicated that in situations where the conclusion was 'minor to moderate' expert judgement was used to make the final determination whether it would be 'minor' or 'moderate'. This has been made explicit in the ES at appropriate points where expert judgement has been used. The MMO is content with this approach.	The Applicant acknowledges the MMO's comments and has nothing further to add.
Q1.15.5	Highways England	Highways England has drawn attention for the need to have regard to the delivery of improvement works to the A47 in the vicinity of the proposed cable crossing [RR-149].	The proposed crossing points (HDD31 and HDD8) are located in the vicinity of the A47 Tuddenham to Easton and A47/A11 Thickthorn Junction Road	The Applicant would refer to the Statement of Common Ground between Highways England and Hornsea Project Three [REP1-226], which addresses matters relating to the A47 and A47/A11

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		What assessment has been carried out of the engineering requirements for the highway improvements and the cable crossing, such as to establish whether the two projects can co-exist satisfactorily? How would the powers sought by the applicant interact with those which may in due course be sought by Highways England? Should the Order include protective provisions in respect of Highways England?	investment Strategy schemes A47/ A11 Thickthorn Junction (HDD crossing location 31). This scheme currently has a proposed construction start of late summer 2020, with a construction period of 20 months. The proposed cable crossing of the A11 lies beyond the extent of the works proposed as part of the A11 Thickthorn Junction RIS scheme; therefore, cable crossing works on the A11 at this location are unlikely to have an impact on the delivery of the A11 Thickthorn RIS scheme A47 North Tuddenham to Easton (HDD crossing location 31). This scheme currently has a proposed construction start of late summer 2021, with a construction period of 24 months. At this time, it is too early to confirm the delivery programme for the cabling works. Consequently it is not known if the cabling will be delivered before, during or after the A47 dualling works have been completed. In the advent that the cabling works precede the A47 dualling scheme, the Applicant will deliver the cable crossing point across the existing road and provide enabling works to facilitate crossing of the future dualling and any connecting roads forming part of the scheme. In the advent that the cabling works occur at the time of or after construction of the A47 dualling scheme, appropriate ducting will be incorporated into the scheme works by HE at no cost to HE. Subject to further development of the A47 scheme, this may extend to local connecting roads built as part of the scheme. Agreement and approval of the cable	schemes. This demonstrates that there is agreement between the parties that Hornsea Three is unlikely to have an impact on the A47/A11 scheme and that design of the onshore cable corridor and Application allows sufficient flexibility that HDD could be utilised at the point of crossing should there be certainty that the A47 would come forward.

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			crossing point, including construction specification, methodology and implementation will need to be in place, prior to commencement of any works. It is likely that any Orders for the two RIS schemes will follow after the granting of Orders for this project. Consequently, Highways England in its submission for a Development Consent Order (DCO) will reference any requirements for this wind farm proposal in its submission to the Planning Inspectorate. Whilst it may not necessary to specifically reference the RIS schemes in this proposed, for clarity and the avoidance of doubt, it would be useful to set out or at least reference Highways England's requirements with respect to the proposed crossing of the A47 and A11 trunk roads. Highways England has not further comments to make.	
Q1.15.6	RSPB	Paragraph 1.2.1.5 of the Outline Code of Construction Practice [APP-179] states that it would be a 'living document' that would be updated post examination. How would adequate mitigation be delivered and the necessary framework for the production of detailed Codes of Construction Practice be secured if this document is not finalised by the end of the examination?	This question highlights a source of concern for the RSPB, as it might be possible for mitigation measures to be removed post-consent. We recommend that the Development Consent Order is modified to ensure that the mitigation measures contained within the version of the Outline Code of Construction Practice that is in place at the time that the Examination concludes must be included in the final version of the Code of Construction Practice.	The Applicant's response to Q1.15.6 advises how at the point of determination of the DCO the Outline CoCP and the principles it establishes would be fixed and no longer 'living'. That final Outline CoCP would then form part of the certified document under Article 35 of the DCO. The proposed wording to Requirement 17 of dDCO is considered sufficient in that it prescribes works must accord with the outline CoCP.
Q1.15.7	RSPB	Paragraph 1.2.1.2 of the Outline Ecological Management Plan [APP-180] states that it is a 'living document' that would be updated as required prior to implementation. How would adequate mitigation be secured if it is not finalised by the end of the examination and then used as	As with Q1.15.6 above relating to the Outline Code of Construction Practice this question highlights a source of concern for the RSPB. As with our response to Q1.15.6 we recommend that the Development Consent Order is modified to ensure that the mitigation measures contained within the version of	The Applicants response to Q1.15.7 advises how at the point of determination of the DCO the Outline EMP and the principles it establishes would be fixed and no longer 'living'. That final Outline CoCP would then form part of the certified document under Article 35 of the DCO. The proposed wording to

PINS Q No.:	Responder	Question:	Interested Parties (IP) Response at DI	Applicant's Comments on IPs Response
		the basis for detailed Ecological Management Plans approved pursuant to Requirement 10?	the Outline Ecological Management Plan that is in place at the time that the Examination concludes ***must*** be included in the final version of the Ecological Management Plan.	Requirement 10 of dDCO is considered sufficient in that it prescribes works must accord with the Outline CoCP.
Q1.15.8	Broadland DC	Please comment on the Outline Code of Construction Practice [APP-179] and comment on any potential amendments that may, in your view, be required in order the secure appropriate environmental outcomes and regulatory compliance.	The OCoCP is broadly acceptable, however further details in respect of the layout and use of the compound, including fencing, lighting and the source of electricity are to be submitted and agreed with the District Council through the final Code of Construction Practice.	The Applicant would refer to the Statement of Common Ground between Broadland District Council and Hornsea Project Three submitted at Deadline 1 (REP1-099), where this matter is agreed through reference to the Code of Construction Practice (CoCP) which will be submitted for the approval of the local planning authority under DCO Requirement 17 Code of Construction Practice.
Q1.15.8	SNC		South Norfolk Council would suggest no amendments at this stage.	Noted.
Q1.15.8	NNDC		This issue is ongoing with Ørsted as part of the Statement of Common Ground.	The Applicant would refer to the Statement of Common Ground between North Norfolk District Council and Hornsea Project Three submitted at Deadline 2.
Q1.15.8	EA		We are content with the principles established in the outline Code of Construction Practice. The CoCP refers to consultation with the Environment Agency for site specific works requiring a detailed CoCP. As stated in our Relevant Representation dated 20 July, we consider it necessary that our prior approval of a detailed CoCP is obtained and that this is safeguarded in Development Consent Order Requirements. This will enable us to comment directly on more site specific measures and controls, thus speeding up the process and better protect the environment. It is our understanding that the Applicant	The Applicant would refer to the Statement of Common Ground between the Environment Agency and Hornsea Project Three submitted at Deadline 1 (REP1-203) where this matter is now agreed.

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			is in agreement with this and prior approval is reference in the Statement of Common Ground.	
Q1.15.8	NE		It is Natural England's understanding that the Code of Construction Practice would list a number of legal obligations under the DCO. We therefore advise that as much detail is included as possible. Natural England would like to be consulted on the final proposals of the CoCP post-consent. We suggest that any opportunity to enhance the local environment should be used by the Applicant. We refer the Applicant to the National Character Area profiles that coincide with the proposed cable route and associated works for the information on the characteristic features of the area, which should be preserved.	The Applicant would refer to the Statement of Common Ground between the Natural England and Hornsea Project Three – All Other Matters submitted at Deadline 1 [REP1-218] where this matter is now agreed. The Applicant is proposing enhancements including woodland planting at the substation sites [detailed in the Section 3 and Appendix A of the outline LMP REP1-145], hedgerow enhancement and tree planting within a 100 m enhancement corridor [paragraph 4.1.1.3 of the outline LMP REP1-145], and pond restoration as part of the proposed Great Crested Newt licence application, which will have broader biodiversity benefits [see SoCG with NE REP1-218]. Further to this, the Applicant's approach to enhancement is agreed as appropriate in the Norfolk Wildlife Trust/The Wildlife Trusts SoCG submitted at Deadline 1 [REP1-227].
Q1.15.8	RSPB		The RSPB wishes to see an amendment to the Outline Code of Construction Practice (OCOCP) to ensure that the pink-footed geese population is not disturbed by the construction works associated with the onshore cable corridor. The relevant provision is set out under the heading "Wintering birds" at paragraph A.1.1.1 on page 18 of the OCOCP. Our comments on this issue are complicated by the inter-relationship between multiple documents. We set out the details of that relationship, along with a way to	The Applicant has included proposed wording to the outline CoCP in its SoCG with the RSPB submitted at Deadline 2. The SoCG includes further details on the Applicant's approach to Pink-footed Goose mitigation which address the issues raised in this question response.

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			potentially simplify the situation, below in our response to Q1.5.11 on the Outline Ecological Management Plan (OEMP). Key ecological facts for pink-footed geese For ease of reference we have drawn together the key ecological facts which have a bearing on the design of this mitigation scheme. The wintering pink-footed goose population that has been surveyed in or near the cable corridor area is up to 10,000 birds, which represents 42% of the North Norfolk Coast SPA population (23,802 birds) (Report to Inform Appropriate Assessment, paragraph 8.7.2.6). 11 of the 13 fields where pink-footed geese were observed during the winter 2016/17 and 2017/18 surveys were sugar beet crops (paragraph 3.1.1.1 and 3.1.1.4 respectively, ES, Annex 3.9 – Onshore Ecology – Wintering and Migratory Birds), showing a clear preference for this crop by the geese ("almost all fields that held sugar beet crop were being utilized at some point in the period" (paragraph 8.7.2.5, Report to Inform Appropriate Assessment). This is as expected based on surveys and assessments of pink-footed goose foraging preferences adjacent to the North Norfolk Coast SPA. Given the proportion of the North Norfolk Coast SPA population that has been surveyed in or near the cable corridor area, the applicants have appropriately concluded that the sugar beet fields in this area are functionally linked habitat (paragraph 8.7.2.7, Report to Inform Appropriate Assessment).	

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			Figures 3.1 and 3.2 of the Wintering and Migratory Birds Report (ES, Annex 3.9 – Onshore Ecology – Wintering and Migratory Birds) clearly illustrate the distribution of the birds on the cable corridor. These show that the distribution of the birds is clearly influenced by the cropping patterns within the cable corridor as far fewer birds were found in the cable corridor in the winter of 2016/17 (figure 3.1) when far fewer fields were planted with sugar beet crop than in the winter of 2017/18 (figure 3.2). It is also important to note that the sugar beet fields only become functionally linked following the harvesting of sugar beet (paragraph 8.7.2.5, Report to Inform Appropriate Assessment). The RSPB consider that if sugar beet crops are grown within the cable corridor during the cable installation works it is inevitable that there will be a conflict between the geese and the construction works when those crops are harvested. This is likely to manifest itself in the form of disturbance to the birds, with associated energetic costs from flights at times that they should have been feeding. Given the proportion of the North Norfolk Coast SPA that utilises these fields the RSPB consider that it is not possible to exclude the risk of an adverse effect on the integrity of the SPA, and that consequently mitigation measures will be necessary. **Mitigation measures** The mitigation measures proposed would involve providing alternative foraging habitat "if required" (second bullet point, paragraph A.1.1.1, OCOCP, and second bullet point, paragraph 5.4.3.1, OEMP). Given	

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			the information in the paragraph above, the RSPB considers that alternative foraging habitat in the form of coordinated sugar beet cropping will be required to ensure that the pink-footed geese population is not disturbed by the construction works. To achieve optimum effects for the applicant this would take the form of both avoiding planting of sugar beet crops in the fields through which the cable corridor will pass during the years in which it will be constructed and either the planting of sugar beet crops in fields away from the cable corridor, or retention of sugar beet residues for a 30-day period (i.e. not simply ploughing in residues immediately after harvest to ensure food resource remains available). These measures would aim to attract the pink-footed geese away from the construction works and consequently away from the risk of disturbance and ensure that an equivalent food resource was retained during the construction period. If the applicant relies upon the timing of the sugar beet crop harvesting there would be disruption of construction works on the cable corridor if the construction and harvesting overlap as it would be necessary to stop works in the sugar beet fields to allow the pink-footed geese to graze. The RSPB consider that the proposal within the OCOCP to formulate a pink-footed goose mitigation plan 12 months prior to construction will leave the preparation of this important mitigation measure too late to ensure that it can be properly secured. This is important given the need to discuss and secure options with landowners, which will involve managing crop rotations and provision of suitable payments to	

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			secure the mitigation. Via the Onshore Ecology Expert Working Group the RSPB recommended that Hornsea Project Three secured agreements with the landowners to ensure that sugar beet crops are grown in a pattern that avoids the risk of potential disturbance of pink-footed geese by the construction works. The applicant's own ecological information (set out above) highlights this, as well as the limited area for which such a scheme would need to be implemented. We suggested that early agreement would be likely to help keep the costs of such mitigation measures down. The RSPB note that an effective pink footed geese refuge scheme is being implemented for the Jack's Lane wind farm in west Norfolk to replace lost foraging habitat and reduce goose use of the turbine area. This scheme is based on payments to land owners to retain sugar beet residues after harvest rather than ploughing them in immediately. We consider that this scheme may offer a suitable option for the Hornsea Three onshore cable corridor for a relatively small cost. We note that if our proposed approach is considered unduly onerous that an alternative approach is highlighted in paragraph 8.7.2.17 of the Report to Inform the Appropriate Assessment which acknowledges that ensuring construction works take place outside of November to January inclusive there will be no adverse effect on site integrity. As this would lead to a significant loss of flexibility for the applicant we consider that the approach we suggest represents a better solution.	

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			The RSPB note from relevant representations by other parties that various farmers appear to have expressed concern about the potential impacts upon their farming that may be caused by the current uncertainties associated with the timing of the cable corridor works. Consequently, we recommend that the ExA establishes whether the affected farmers would welcome the greater certainty in planning their crops that such a measure would achieve. Consequently, the RSPB recommends that this measure is included within the Outline Code of Construction Practice and that the Development Consent Order is modified, as highlighted in our response to Q1.15.6 above, to ensure that the final version of the Code of Construction Practice retains this measure.	
Q1.15.11	EA	Please comment on the Outline Ecological Management Plan [APP-180] and comment on any potential amendments may, in your view, be required in order to secure appropriate environmental outcomes and regulatory compliance.	EA RESPONSE: We require some amendments to the proposed timing for ecological surveys in relation to water vole. Further clarity is required as to what is meant in Table 10.1 of the Outline Ecological Management Plan. Optimal survey season for water vole is mid April to September. Habitat management works during the months when water vole are overwintering in their burrows (November - February) are not advised. The table indicated that this is 'sub-optimal', however water vole are not active during this time and are therefore unable to move to find alternative refuge. This is also a time when surveys or mitigation should not be carried out. It is our understanding that the Applicant is amending the tables in response to our	The Applicant would refer to the Statement of Common Ground between the Environment Agency and Hornsea Project Three submitted at Deadline 1 (REP1-203) where this matter is now agreed. The outline EMP [REP-147] has been updated as part of the Deadline I submission to reflect these requested changes. The dDCO has been updated to include the EA's request to be part of the approval process for the final EMP [see EA SoCG REP1-203].

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			observations when conducting consultation on the Statement of Common Ground. In addition to the comments above we recommend the following amendments: Paragraph 4.3.9.5 'Translocation of water voles, if required, should be completed between 15th February - 15th April'. Translocation in this context would require trapping, and there is another best practice protocol complete with timings for this activity. We recommend a statement such as: 'Should trapping be required best practice protocol will be adhered to as defined in The Water Vole Mitigation Handbook (Strachan et al 2016). All activities will be detailed, planned and carried out by an appropriately qualified and licenced ecologist.' Paragraph 5.2.1.4. Biosecurity measures include the use of disinfectant. We recommend specifically stating that for work in and near waterbodies the disinfectant to be used is Virkon aquatic. This is because this product is known to be effective against crayfish plague. Paragraph 6.2.4. Minor watercourses and ditches Where open trench crossing techniques have been used, ensure that material excavated from the bed of the watercourse is reinstated so that the gravel material (if present) is on the surface. As previously noted in our Relevant Representation at 3.1 – 3.3 we have noted that although the outline EMP references pre-approval by the Environment Agency, this is not reflected in the Requirements. We take this	

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			opportunity to reiterate our request that the Requirements are amended to include our prior approval of detailed EMPs. This will enable us to comment directly on more site specific measures and controls, thus speeding up the process and better protect the environment. It is our understanding that the Applicant is in agreement with this proposal.	
Q1.15.11	NE		Natural England agrees in principle with the Outline EMP, but this should remain a live document and updated regularly. We note that currently it makes a number of references to the CoCP, which is relatively vague.	The outline EMP [REP1-147] is a live document and will continue to be updated in consultation with all appropriate stakeholders until a final version is agreed in the detailed design phase pre-commencement. This is secured in Requirement 10 of the dDCO. The final code of construction practice is an overarching document which will refer to the outline EMP on processes relating to ecology. These documents will be developed in conjunction. The final Code of Construction Practice, which must accord with the outline Code of Construction Practice [REP1-142], will include more detailed information based on detailed design features and any pre-construction surveys or site investigations.
Q1.15.11	RSPB		The RSPB has highlighted in its response to Q1.15.8 above that it considers that measures that extend beyond those proposed in the Outline Code of Construction Practice (OCOCP) are required to ensure the provision of effective mitigation measures for pink-footed geese on the onshore cable corridor. There is a substantial overlap between the requirements of the OCOCP and the Outline	The Applicant has addressed these issues in its SoCG with the RSPB which forms part of the Deadline 2 submission. With regards to the final EMP being in accordance with the outline EMP, the Applicant would refer the Examining Authority to how at the point of determination of the DCO, the Outline EMP and the principles it establishes would be fixed and no longer

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			Ecological Management Plan (OEMP) in terms of the provision of this mitigation measure – paragraph 5.4.3.1 of the OEMP is identical to paragraph A.1.1.1 of the OCOCP. The RSPB will not repeat the ecological information set out under the heading "Key ecological facts on pink-footed geese" or our suggested mitigation measures in our response to Q1.15.8 above, but we rely upon those in this answer. The OEMP notes (at paragraph 2.2.3.2) that pink-footed geese have been recorded utilising sugar beet fields at the north end of the onshore cable corridor. It then states (at paragraph 4.3.4.1) that if construction works are undertaken on functionally linked sugar beet fields between November and January inclusive a pink-footed goose mitigation plan will be formulated and submitted to Natural England. This provides more information than the OCOCP, but it does not elaborate further. Paragraph 5.4.3.4 of the OEMP states (in full): "Further details of the proposed mitigation strategy are provided in the Report to Inform Appropriate Assessment which also accompanies the application." However, no references are given as to where in the 350+ page document this information is to be found: if cross-references are to be relied upon (rather than inclusion of all the necessary information in a single working document) it is essential that appropriately detailed references are supplied. Recourse to the RIAA provides little further detail, repeating the text of paragraph A.1.1.1 of the OCOCP and 5.4.3.1 of the OEMP, and adding a statement that mitigation	'living'. That final Outline EMP would then form part of the certified document under Article 35 of the DCO. The proposed wording to Requirement 10 of dDCO is considered sufficient in that it prescribes works must accord with the Outline CoCP.

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			measures will be implemented between 1 November and 31 January only and that if the measures are implemented that they will be monitored to ensure their effectiveness (paragraph 8.7.2.13, Report to Inform Appropriate Assessment). The whole provision of ecological information and proposed mitigation measures for construction impacts on pink-footed geese using sugar beet fields is set out between paragraphs 8.7.2.1 and 8.7.2.18 of the RIAA. Given that the OEMP is supposed to be the detailed guide to the mitigation measures which are required during the construction period the RSPB is concerned that the document refers (at paragraph 4.3.4.2 and again at paragraph 5.4.3.4) to the RIAA as containing the detailed mitigation measures for pink-footed geese, which we have highlighted above it does not. To address the replication of information we recommend that the OCOCP, the OEMP and the RIAA are amended as follows: - The OCOCP makes it clear that the pink-footed geese mitigation plan is set out in the OEMP; - The limited details of the pink-footed geese mitigation plan in the RIAA are moved to the OEMP; - The OEMP sets out the details of how the sugar beet cropping will be secured with affected land owners to ensure that impacts upon the pink-footed goose population is avoided. We consider that this can be achieved in line with the approach	

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			highlighted in our response to Q1.15.8 above. The RSPB is willing to work with the Applicant to help secure an appropriate mitigation plan. *Table 10.1: Timetable of suitable work periods* (page 30) of the Outline Ecological Management Plan needs to be amended as there is no reference at present to surveying or mitigation periods for pink-footed geese: this omission needs to be corrected. In our response to Q1.15.7 above the RSPB has highlighted its concerns that the Development Consent Order will need to be amended to ensure that any mitigation measures secured within the OEMP during the course of the Examination will be retained in the final operational version.	
Q1.15.12	Broadland DC	Please comment on the Outline Landscape Management Plan [APP-181] and comment on any potential amendments that may, in your view, be required in order the secure appropriate mitigation of landscape and visual impacts.	It is considered that the Outline Landscape Management Plan, in so far as it affects Broadland District, is acceptable.	Noted.
Q1.15.12	SNC		There is an uncertainty as to the exact nature of the mitigation and enhancement planting works that will be undertaken along the cabling route; this is partly due to full information about tree and hedgerow losses/implications remaining outstanding, but also due to the uncertainties with regards to landowner co-operation with the aspirations, particularly with regards to enhancements. Once the outstanding information is received, we would wish to have a clear set of information confirming the features to be removed, and a plan and specification for where replanting will take place, whether for mitigation or enhancement.	The Applicant would direct the Examining Authority to the Applicant's comments on the South Norfolk Council Local Impact Report which forms part of the Applicant's Deadline 2 submission.

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			Mechanisms and responsibilities for ensuring the delivery and long-term management within both the cable route and the 100m working corridor ideally need to be identified, especially if the land will not be under the operational control of the applicant. Clarity will need to be provided on the long-term management for the re-instated and new features, including an explanation of likely operations for beyond the five-year establishment period. This will include timings of works and an indication of appropriate cycles where operations are repeated (e.g. the coppicing outlined in 5.3.2 of the Outline Landscape Management Plan. Note that at present there is confusion between the Outline Landscape Management Plan and Outline Ecological Management Plan as to which is prescribing the long-term management; the former states in 1.1.1.5 that the OEMP will describe the long-term management measures, whilst the latter states in 8.2.1.1 that once established, new planting will be managed in accordance with the OLMP.	
Q1.15.12	NE		Natural England's remit in relation to landscape issues only extends to the Areas of Outstanding Natural Beauty (AONBs). We therefore have no comments to make on the Outline Landscape Management Plan.	Noted.
Q1.15.12	NNDC		NNDC welcome the commitment from Ørsted to produce both a Landscape Management Plan (LMP) (Schedule 1, Part 3, Requirement 8 of the draft DCO) in conjunction with an Ecological Management Plan (EMP) (Schedule 1, Part 3, Requirement 10 of the draft DCO), and a Code of Construction Practice	The Applicant would refer to the Statement of Common Ground between Hornsea Project Three (UK) Ltd and North Norfolk District Council submitted at Deadline 2, as well as the Applicants Comments on North Norfolk District Council's Local Impact Report (REP1-062). The SoCG reflects that

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			(CoCP) (Schedule 1, Part 3, Requirement 17 of the draft DCO), that must be approved by any relevant planning authority (including North Norfolk District Council) prior to the commencement of works. These are considered appropriate control measures for managing the potential effects on landscape and visual resources. The requirement to agree details including the layout, scale, finished ground levels, external appearance, materials, access and circulation areas, and timetables for the landscaping works at the onshore HVAC booster station will be submitted to and approved by the North Norfolk District Council prior to commencement of construction (Schedule 1, Part 3, Requirement 7 of the draft DCO) is welcomed by NNDC. How-ever this should be widened to include agreement of external lighting given the site's location in a dark skies area. In respect of the management measures de-scribed in the Outline LMP (Document A8.7), Outline EMP (Document A8.6) and Outline CoCP (Document A8.5), NNDC would request that, in respect of woodland and woodland edges (OLMP para 5.3.1.1), plant failures should be replaced for a period of 10 years following planting. In respect of OLMP para 5.3.2, NNDC request clarification as to the intention to manage the woodland through coppicing. NNDC consider that a full woodland management plan is required. In respect of the principles of maintenance and management of proposed planting at the on-shore	agreement has been reached on the agreement of external lighting, through Requirement 7 of the draft DCO, and provides an update on discussion between parties in respect to landscape management and maintenance.

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			HVAC booster station as set out in Section 5 of the Outline LMP are appropriate, in addition to the above observations, NNDC request clarification as to who will be undertaking management of all planting and how this would be secured.	
Q1.15.14	EIFCA MMO	Please comment on the Outline Fisheries Coexistence and Liaison Plan [APP-183] and suggest any potential amendments that may, in your view, be required in order to secure appropriate liaison and consultation with the fishing industry	EIFCA RESPONSE: No further amendments required. MMO RESPONSE: The MMO defer to the position of the National Federation of Fisherman's Organisation.	The Applicant notes the comments from the MMO and Eastern IFCA and notes that the NFFO has not responded to this question. The SoCG between the Applicant and the NNFO (REP1-220) and the Applicant's response to the NFFO Written Representation (REP1-182), outlines the status of discussions with the NFFO in relation to the Outline Fisheries Coexistence and Liaison Plan. An updated version of the Outline Fisheries Coexistence and Liaison Plan (REP1-154) was submitted by the Applicant at Deadline I to take into account the comments raised by the NFFO during pre-examination discussions.
Q1.15.16	Broadlands DC	Several interested parties, including BDC [RR-057], have drawn attention to a dismissed planning appeal in 2014 for an anaerobic digester plant at Oulton Airfield. Please comment on the relevance and implications of that appeal decision for Hornsea Project Three, particularly in relation to the appeal Inspector's conclusions regarding effects on local highway conditions, highway safety on Oulton Street and the living conditions of local residents.	It is considered that the Inspector's decision to dismiss the appeal (PINS ref: APP/K2610/A/14/2212257) is relevant particularly as the proposed route of vehicular access for heavy goods construction vehicles and staff vehicles to and from the main construction compound is along The Street from its junction with the B1149. This is the same route that was proposed for the delivery of maize and grass for the anaerobic digester plant at Oulton Airfield, it is noted that the appeal proposal was to install 6 passing places along the length of The Street and that the harvest period for maize is between September to October and the grass harvest	The Applicant would refer to the Appendix 20 of the Applicant's response to Deadline 1 (REP1-176) which provides commentary on the main construction compound, particularly Annex A and Annex B which provides details on the proposed access strategy (including how regard has been given to potential cumulative impacts and planning history). Although the Applicant considers that significant progress has been made in demonstrating a workable access strategy for the main construction compound, it is acknowledged that the measures set out in Annex A and B in respect of Option 1: Passing Places are part of

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			is June to early August. The appeal inspector in describing The Street set out that: 'the carriageway is not wide enough for any vehicle larger than a car to pass any other vehicle except at the existing informal 'passing places''. He also noted that the area is a 'highly agricultural area, some movement of crops in large vehicles –tractor/trailer combinations, tankers or other HGV – is normal and to be expected by other road users'. He concluded on the highway safety and convenience issue that the appeal proposal 'would be likely to result in harm to highway safety and convenience' and that 'despite the proposed highway works, the cumulative impacts of the proposed development would be severe'. In terms of living conditions of local residents the appeal inspector concluded that 'the proposed development would, on balance, be likely to result in material harm to the living conditions of residential occupiers of The Old Railway Gatehouse with reference to noise and disturbance'. No other unacceptable impact on residential amenities was identified as arising from the appeal proposal. These issues of highway safety and convenience and impact on living conditions are considered to be relevant to the Hornsea Three project perhaps even more so, as it should be noted that the heavy goods construction traffic and staff vehicles will be throughout the year for the length of the construction period for up to 8 years, rather than the limited harvest periods associated with the anaerobic digester plant. Negotiations with the applicant in respect of these issues will continue, involving the Highway Authority, Broadland District	ongoing discussions with NCC (as local highway authority) and other interested stakeholders (including OPC). Notwithstanding this, the Applicant is confident that a solution acceptable to NCC as the local highway authority, taking into consideration the feedback received from BDC and OPC, can be reached and will be secured, once agreed, through the Outline CTMP (APP-176).

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			Council and Oulton Parish Council to seek an acceptable solution and the outcome of these negotiations will be set out in future Statements of Common Ground between the parties.	