



## Hornsea Project Three Offshore Wind Farm

Applicant Responses to the ExA's First Written Questions

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## 1. Applicant's responses to the First Written Questions

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

### 1.1 Written Question 1.1 Alternatives and Design Flexibility

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.1.1	Applicant	<p>"Table 3.6 in the Environmental Statement (ES) [APP-058] sets out the maximum design scenarios for the most numerous type of turbine (with a maximum blade tip height of 250m above lowest astronomical tide (LAT)) and the largest type of turbine (with a maximum blade tip height of 325m above LAT).</p> <p>A) What factors would the undertaker take into account when choosing which turbines to install?</p>	<p>A) The choice of wind turbine generator for an offshore windfarm project such as Hornsea Project Three is influenced by a variety of different factors such as cost, availability, proven technology, commercial availability, competition for demand, supply time etc. Offshore wind farm technology, particularly for the turbines themselves is rapidly maturing and we have seen increases from 3MW turbines used approximately 15 years ago to turbines over 8MW in capacity more recently, and this trend is likely to continue. In general, a higher capacity wind turbine generator tends to also be larger in rotor diameter, and thus hub height and upper blade tip height. Capacity is one element that will be considered when considering the turbine type selected, typically a larger turbine would likely be more cost effective as fewer would need to be deployed in the array area (requiring fewer foundations etc), however offshore wind is rapidly expanding in the UK and overseas in existing and new markets and therefore the availability of turbines at certain sizes, capacities, required volumes and the degree of competition between the limited number of offshore turbine manufacturers will also influence what a developer could seek to acquire. Ultimately this will be guided by the Project Envelope parameters described and assessed as part of the EIA to ensure that the assessment of impacts and any required mitigation where required is aligned.</p>

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		B) Is it envisaged that the two scenarios could be combined, for example if the offshore works were carried out in phases, or are the scenarios mutually exclusive?"	<p>B) Depending on final detailed design of the two phases, and supplier availability and choice, it is possible that turbines with different maximum blade tip heights could be installed, and indeed there could be a situation where two different turbine suppliers may contribute to the wind farm. In this case, the dimensions of the turbines would not exceed the maximum design scenarios evaluated in the ES.</p> <p>For example, in the scenario for the largest type of turbine, two different types of turbines, with different rotor radii, could be installed, but neither would exceed the maximum blade tip height of 325m LAT. An example of such a situation can be seen in the Walney and Walney Extension Projects.</p> <p>The Applicant has assessed maximum design scenarios as described in Table 3.6 in the Environmental Statement (ES) [APP-058]. The two scenarios describe the most numerous WTG scenario with 300 WTGs and the largest WTG scenario with 160 WTGs. The final number of turbines would be limited by the maximum total rotor swept area as given by the maximum design scenario, driven by the 300 WTG case. The total rotor swept area in this case is 9.0 km<sup>2</sup>, and the environmental impacts of this have been assessed in the ES as a maximum design scenario. This is reflected in revised Requirement 2 of the dDCO (see response to Q 1.13.38 and 1.13.62).</p>
Q1.1.2	Applicant	<p>"The range of foundation types being considered is set out in Table 3.9 in the ES [APP-058]. The ES states that flexibility is required to ensure that anticipated changes in available technology and project economics can be accommodated within the project design.</p> <p>A) Is this degree of flexibility still necessary having regard to the growing body of experience of windfarm construction in the North Sea?</p>	<p>A) The applicant notes that the project has already refined the range of foundations being considered post PEIR, to remove floating foundations from the project envelope. The flexibility provided by the remaining range of foundation types ensures that suitable foundations can be constructed for all offshore infrastructure under various site conditions, soil characteristics, and WTG and other offshore infrastructure choice, which are not fully known at this stage. The choice and suitability of the foundation type depends on detailed design studies, which would be completed post consent. Soil types and layers should be studied for detailed design, obtained through geotechnical investigations at the finalised turbine locations. Therefore, design flexibility is needed at this stage of project design.</p> <p>The UK government's stated policy objective, through The Clean Growth Strategy: Leading the way to a low carbon future (HM Government, Oct 2017, updated April 2018), is to support the development of a domestic offshore wind</p>

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		<p>B) Please provide an up-to-date assessment of the advantages and disadvantages of each of the foundation types currently under consideration, including a summary table showing the scale and significance of impact of each foundation type on benthic habitats, harbour porpoise and marine geophysical features.</p> <p>C) What is known about the foundation types actually used for comparable offshore wind farms, either recently commissioned or under construction, in the North Sea?"</p>	<p>industry which delivers renewable energy at a reducing cost to the UK consumer through competitive market mechanisms. The Applicant strongly supports this policy and recognises the value that vigorous competition between offshore developers and within the offshore supply chain brings to the wider industry and to the UK consumer.</p> <p>In order to continue to deliver reductions in the price of offshore wind energy Hornsea Three requires flexibility in the choice of foundation types, with flexibility encouraging competition within the supply chain across a greater number of potential suppliers.</p> <p>B) As outlined in section 5.3.3 of Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement (APP-060), the impact assessment has been undertaken following the Rochdale Envelope approach. This approach has involved selecting the maximum design scenario for each identified potential impact from the range of relevant design parameters outlined in the Project Description (Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058)). In this case, the Environmental Statement identified four foundation types (gravity base, suction bucket, piled jacket and monopile). For impacts that consider foundation type, the maximum design scenario considered, amongst a range of other parameters, the number, installation method, dimensions and orientation of foundations for turbines and other offshore structures considered for Hornsea Three.</p> <p>The maximum design scenarios for benthic ecology, marine mammals and marine processes are presented in Table 2.14 of Volume 2, Chapter 2: Benthic Ecology (APP-062), Table 4.15 of Volume 2, Chapter 4: Marine Mammals (APP-064) and Table 1.11 of Volume 2, Chapter 1: Marine Processes of the Environmental Statement (APP-061), respectively. These maximum design scenarios have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group.</p> <p>Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the project Design Envelope (e.g. changes in the number, size, spacing of foundations), be taken</p>

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			<p>forward in the final design scheme. For the three topics queried by the ExA, no significant impacts were predicted in EIA terms as a result of the maximum design scenario assessed and therefore any other scenario would similarly lead to effects which are not significant in EIA terms.</p> <p>C) While monopiles are a commonly used foundation type in the North Sea, there are also projects that use jackets, gravity base structures (GBS) and tripods as foundations. The choice of foundation type depends on the specific soil and site conditions. While monopiles are used in Hornsea Project One and Hornsea Project Two, piled jackets are used for East Anglia ONE, suction cassion jackets have been installed at Borkum Riffgrund I, followed by further units at Borkum Riffgrund II and Aberdeen, GBS have been installed at Blyth and suction monopods are scheduled for deployment at DeBu (Deutsche Bucht Wind Farm in the German North Sea).</p> <p>As is illustrated by these examples, a range of foundation types are viable in the North Sea, depending on the specific soil and site conditions at the particular site. Therefore, as discussed in part (A) of this response, it is important for the project to retain the current range of foundation types in the project envelope.</p>
Q1.1.3	Applicant	Paragraph 3.6.10.6 of the ES [APP-058] states that cables will typically be buried at a depth of 1 to 2m with actual burial depth informed by a cable burial risk assessment. Condition 12 of the Deemed Marine Licence (DML) for transmission assets [APP-027] refers to a detailed cable laying plan, to be approved by the Marine Management Organisation (MMO).	<p>A) As set out in Schedule 11, Part 2, Condition 11(1)(h) and Schedule 12, Part 2, Condition 12(1)(h) of the draft DCO (APP-027), a Cable Specification and Installation Plan will be submitted to and approved by the MMO prior to cable installation. This will include details of cable laying techniques and an assessment of suitable burial depths across the Hornsea Three array area and offshore cable corridor.</p> <p>Following installation of offshore cables, the MMO will be provided with details of the achieved burial depths across the Hornsea Three array area and offshore cable corridor. The Cable Specification and Installation Plan will also include proposals for monitoring of offshore cables, including a risk-based approach to management of unburied or shallow buried cables and identification of the need for cable protection during the operational lifetime of Hornsea Three. These management measures (e.g. reburial or deployment of cable protection) may be required should target burial depths not be achieved.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>A) Is it intended that the MMO would approve the actual burial depth of any given section of cable?</p> <p>B) To what extent does the suggested approach accord with advice in paragraph 2.6.76 of National Policy Statement (NPS) EN-3 that where cables are buried at depths greater than 1.5m below the sea bed impacts from electromagnetic fields (EMF) are likely to be negligible?"</p>	<p>B) The potential effects of electromagnetic fields (EMF) on marine ecological receptors are fully assessed in paragraph 3.11.2.44 <i>et seq.</i> of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement (APP-063) and paragraph 4.11.2.23 <i>et seq.</i> of Volume 2, Chapter 4: Marine Mammals of the Environmental Statement (APP-064). The assessments considered a maximum design scenario that offshore cables will typically be buried to between 1 to 2 m, in line with paragraph 3.6.10.6 of Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058). Where burial to the target depth is not possible, cables may be buried using cable protection.</p> <p>These impact assessments concluded that effects of EMF on fish and shellfish and marine mammal receptors were of minor or negligible significance, respectively, which is not significant in EIA terms.</p> <p>The Applicant considers that the approach taken is in line with NPS EN-3 while also taking into account the best available scientific evidence to ensure a robust impact assessment.</p>
Q1.1.4	Applicant	<p>"The representation from the Eastern Inshore Fisheries and Conservation Authority (EIFCA) [RR-070] suggests that, if the nearshore re-route took a more direct route across the north west corner of the Cromer Shoals Chalk Bed Marine Conservation Zone, the impacts on the fishing industry and benthic ecology would be reduced.</p> <p>Please provide further justification for the proposed nearshore re-route, having regard to the issues raised by the EIFCA."</p>	<p>The Applicant would like to draw the Ex.A's attention to the response to the EIFCA Relevant Representation (RR-070) as submitted with Applicant's response to Deadline 1, which provides further justification for the nearshore re-route, having regard to the EIFCA's comments. In summary, alternative routeing options to minimise overlap with the Cromer Shoal Chalk Beds MCZ further offshore, to the north west (as suggested by the Eastern IFCA) were considered but were not deemed feasible. This was because the Sheringham Shoal and Pollard Bank bathymetric features were considered to pose potential technical constraints and were avoided, particularly where alternatives would have meant crossing existing cables in close proximity to these (see Figure 4.8 in Volume 1, Chapter 4: Site Selection and Consideration of Alternatives of the Environmental Statement; APP-059).</p> <p>Section 2.11 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) predicted that effects on benthic ecological receptors (including designated features of The Wash and North Norfolk Coast SAC and Cromer Shoal Chalk Beds MCZ) were not significant in Environmental Impact Assessment terms. The nearshore re-route was discussed with stakeholders (including Natural England, MMO and the Wildlife Trusts) during the Marine Processes, Benthic Ecology and Fish and Shellfish Expert Working Group (EWG) following section 42 consultation on</p>

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			<p>the Preliminary Environmental Information Report (PEIR). The decision to progress the nearshore re-route was taken on the basis of feedback from stakeholders (including Natural England and The Wildlife Trusts) that habitats in the eastern section of the Wash and North Norfolk Coast SAC were expected to be less sensitive than those designated features identified in the western section of the Cromer Shoal Chalk Beds MCZ (e.g. clay exposures, which have no recovery potential following cable installation). In addition, the re-route considerably reduced the cable protection volume and area of habitat affected by cable protection across the two designations, primarily by ensuring that all crossings in the nearshore environment were outside designated sites. As such, the overall impact on designated features across the two designated sites combined was reduced from the PEIR.</p> <p>With regard to impacts on the local potting fleet due to construction activities, paragraphs 6.11.1.30 to 6.11.1.53 of Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement (APP-066), present an assessment of the effects of construction activities within the Hornsea Three offshore cable corridor on this fleet (and other fleets). It is acknowledged that the local potting fleet has increased sensitivity to this impact and that, unmitigated, the effect would be significant. As such, further mitigation measures have been proposed as outlined in Paragraphs 6.11.1.54 of Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement and in the outline Fisheries Coexistence and Liaison Plan (APP-183). While routing through the northwest corner of the MCZ may have marginally reduced the length of the offshore cable corridor (noting the technical constraints to this suggestion outlined above), this reduction would not have been sufficient to reduce the significance of this impact to a level whereby further mitigation would not be required. This is demonstrated by the conclusion presented within the PEIR (i.e. based on the original, shorter Hornsea Three offshore cable corridor), which also showed an effect which was significant in EIA terms (unmitigated), in line with the conclusions presented in the final Environmental Statement.</p> <p>The requirement for a Fisheries Coexistence and Liaison Plan (and mitigation measures outlined within) is secured via the dMLs, (APP-027), which require the plan to be approved by the MMO prior to commencement of works (condition 11(3) of Schedule 11, Generation Assets dML, condition 12(3), Transmission Assets dML).</p>

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Q1.1.5	Applicant	<p>"North Norfolk District Council (NNDC) [RR-133] expresses concern that the option of open cut cable installation is still being considered for the landfall works. The ES states that horizontal directional drilling (HDD) may not be possible due to ground conditions, cable design, or other factors [APP-058] (paragraph 3.6.12.5).</p> <p>A) Please provide further justification for retaining the option of using open cut techniques for the landfall works.</p> <p>B) What would be the implications for beach closures and diversion of the coastal path if open cut techniques were to be used instead of HDD?"</p>	<p>Open cut trenching is retained as an option for cable installation within the intertidal area as identified by the Ex.A and as there are no complex features such as cliffs or sea defences to be transitioned at the Applicant's chosen landfall, both open cut and HDD are expected to be technically viable solutions based on currently available knowledge of the site. Notwithstanding this, the specific approach taken forward (as part of the final scheme design) will be informed by further detailed site investigation work undertaken post consent as well as input from onshore and offshore construction contractors and cable suppliers. The ES and HRA have considered the worst-case scenario (between open cut and HDD, noting that HDD represents the worst-case in a number assessments) for each relevant receptor. Whilst it is recognised that open cut trench forms the worst-case scenario for a number of receptors, it is important to note that neither option would result in significant adverse effects in EIA or HRA terms. Notwithstanding this, open cut remains the Applicants preferred approach to cable installation at landfall. Specific benefits of open cut trenching are described in the following paragraphs.</p> <p>Whilst a HDD landfall negates beach disruption, and the need to close the coastal path, Open cut installation is a less technically complex approach, utilising simpler construction methods as well as decoupling time critical construction activities thus providing greater certainty in construction and installation programmes at reduced cost and reduced construction risk. In most cases, open cut construction techniques will result in a reduced overall duration of landfall construction activities and minimise or eliminate the need for 24 hour working onsite. The Applicant has made allowance within the dDCO for temporary diversion of the Norfolk Coast Path and any temporary beach closures will be managed in line with the Outline CoCP.</p> <p>Open cut works also reduce the marine interface, with no need for offshore HDD exit pits and associated dredge and backfill operations and may reduce the risk of under burial and subsequent need for remedial cable protection (at the HDD exit) as cables can be buried in a continuous operation from the intertidal through the nearshore region. Onshore, open cut activities typically entail less onshore traffic (with no HDD drill rigs required for example, or bentonite deliveries to site) and typically entail a smaller associated construction compound than those required to support HDD operations.</p>

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			<p>The Applicant would refer to Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078) where the impacts of an open cut technique at landfall, which represents the maximum design scenario, on the beach and Norfolk Coast Path are assessed.</p> <p>Should open cut techniques be used at landfall, a temporary beach closure will be required from mean low water springs (MLWS) to the landfall construction compound for security and health and safety. The beach closure will have a duration of up to one month per cable circuit (on up to six occasions).</p> <p>The Norfolk Coast Path would be temporarily diverted during construction, along existing tracks to the immediate south within grounds of the Muckleburgh Collection. The diversion is shown on Sheet 1 of 35 of the Works Plan (Onshore) (APP-013) and is approximately 600 m in length. The route within the Order Limits will be agreed with the landowner post-consent. The diversion, and access to it from the beach on either side, would be fenced and gated and managed in accordance with beach access measures in accordance with a PRoW Management Plan, which will be developed as part of the Code of Construction Practice secured under Requirement 17. This commitment is captured in the Outline CoCP (APP-179).</p> <p>The Applicant is in ongoing discussions with NCC in regard to the proposed diversion and associated management measures as set out in the NCC Statement of Common Ground.</p> <p>If HDD techniques were used at the landfall, the Norfolk Coast Path would remain on its existing alignment for the duration of the landfall construction works, however a temporary beach closure of up to 24 hours duration may be required for pulling and removing a mud line over the beach (if required) and a separate temporary beach closure of up to 24 hours may be required per circuit if pulling onshore welded pipes offshore, for example.</p>

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			If the footpath is required to be closed during these shorter periods, a diversion will either make use of the wider diverted route utilised under the open cut scenario or a localised diversion provided for within the Order Limits on the beach.
Q1.1.6	Applicant	<p>"The ES states that the maximum number of construction phases would be two and that there may be a gap in construction, for example due to constraints in the supply chain or the timing of auctions for the Government's Contract for Difference process [APP-058] (paragraph 3.8.1.5).</p> <p>A) Please provide further justification for the possible need for a gap in the construction programme of up to 3 years.</p> <p>B) In practical terms how is it envisaged that the project might be divided into phases? Please give illustrative examples.</p> <p>C) What control measure is there to ensure that the construction duration does not extend beyond what has been assessed in the ES?"</p>	<p>A) The Applicant is seeking a DCO for an offshore wind farm in the order of 2.4 GW which could be built out in one or two phases. Similar to other recent Round 3 offshore wind farms (Dogger Bank Creyke Beck, Dogger Bank Teesside A and B, interlinks between Norfolk Vanguard and Norfolk Boreas), projects are seeking to identify the optimum approach to the consenting of the largest, and furthest offshore Round 3 offshore windfarms.</p> <p>The application of a phasing is interlinked with the UK Government's approach to supporting projects through the CFD auction process (or alternative funding mechanism) and both the Government's and the projects' shared objective of maximising the ability to bring forward strong, viable projects.</p> <p>Since the DCO application was submitted, the CfD delivery mechanism has received further clarity in July 2018 from the Energy minister Claire Perry, who advised that:</p> <ul style="list-style-type: none"> <li>- the next CfD allocation round will be held in May 2019 (with successful auction round announcements anticipated to be made in summer 2019);</li> <li>- a subsequent allocation round in 2021; and</li> <li>- further auctions "around every two years".</li> </ul> <p>Nonetheless, there remains key elements of the CfD tender framework yet to be announced, including the total budget for each tender, with Government noting that "depending on the price achieved, these auctions will deliver between 1GW and 2GW of offshore wind each year in the 2020s". A single project build-out scenario could still be the preferred option. However announcements from UK government (Claire Perry, July 2018) have suggested a cap on the total auction award per delivery year of 1-2 GW with up to 4 GW supported in a single auction. Therefore, it may be the case that a two phased project is required to successfully respond to the available CfD budget, depending on</p>

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			<p>how many competing bids/projects participate in the auction round, e.g. many competitive bids may warrant a smaller project, i.e. two phases.</p> <p>The ability to secure key infrastructure for such a large project, including WTGs, offshore installation vessels, lead in times for high voltage transmission cables (in particular HVDC cables), offshore substations installation vessels in a timely manner, will also add challenges to the whole offshore wind industry to deliver the largest, and furthest offshore Round 3 offshore windfarms, meaning that a project needs to be phased in response to the availability and capacity of the supply chain.</p> <p>On this basis the 3 year construction scenario gap is to incorporate the anticipated time between future CfD auction rounds, accommodate alternative funding mechanisms and/or supplier availability/capacity to cope with demand.</p>

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			<p>B) There are a range of development scenarios that could develop which inform the phasing and scale of the development and its associated timings. Figures 3.38 and 3.39 of the Project Description Chapter of the ES [APP-058] illustrate indicative construction programme if Hornsea Three is built out in a single or two phases.</p> <p>Under a single phase delivery: -</p> <ul style="list-style-type: none"> <li>Hornsea Three secures a CfD (or alternative funding mechanism) for the whole project (i.e. up to 300 turbines (as noted under part A, there is a suggested cap on the total auction award per delivery year).</li> <li>Hornsea Three is successful in securing two CfD contracts in the same auction for a project to be delivered under different delivery years) e.g. 1.2 GW in delivery year 2024 and 1.2 GW in delivery year 2025. Under which scenario – on the basis that both phases would then secure FiD, for the purposes of onshore impacts detailed below this would be treated as a “single phase”.</li> <li>Hornsea Three is successful in securing a CfD contracts for part of the project to be delivered and has sufficient commercial confidence, to secure FiD for subsequent phase.</li> </ul> <p>Under a two phase delivery:-</p> <ul style="list-style-type: none"> <li>Hornsea Three secures a CfD (or alternative funding mechanism) for part of the project. Leaving the opportunity to make a tender(s) for subsequent CfD allocation rounds for the residual phase, but ultimately no further commitment is secured for that second phase at the time of constructing the first phase.</li> </ul> <p>When applied to the onshore cable installation element of the project, these range of development scenarios may ultimately delivered in two approaches.</p> <p>The first, is one phase (either because the project is being delivered as a single phase, or both phases have secured a FiD.</p>

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			<p>The Applicant recognises the potential for minimising impacts and disruption to the local community through pre-ducting for the second phase. Therefore the Applicant has made two commitments – documented further in response to Q1.9.7. Firstly, the Applicant has committed to installing all onshore export cables circuits within ducts, as opposed to direct burial. Furthermore, the Applicant has committed to installing ducts for the second phase as part of the first phase of works, should both phases be awarded a CFD in the same auction round (or alternative funding mechanism) or the second project still secures Final Investment Decision (See response to RR-006 for the proposed amendments).</p> <p>Alternatively, two separate phases, delivered at two different points in time. The onshore installation would be divided into two discrete phases, dependant on the number of circuits required for each phase. Only those works required for the first phase would be undertaken. As such the construction corridor would be broadly (where it traverses open fields) split in two and all works associated with the first phase would be confined to the allocated construction corridor. Similarly, all HDD works, trench excavation works, cable installation, cable jointing and testing works would be carried out for the first phase only. It is noted that the ES “worst case” provides for the whole width of onshore corridor to be cleared for each phase as the scale of each phase being taken forward is not known, the exact land take required at certain locations may draw on the full corridor width – for example to make use of site access points or in the setting out of HDD works, or through utilising soil storage or secondary construction compounds.</p> <p>C) Requirement 6 of the draft DCO (Version 1, submitted for Deadline 1) provides for a phasing scheme to be submitted to and approved by the relevant planning authority prior to commencement of development. This will set out details of phasing and under the requirement this scheme must be abided by when the project is constructed.</p>
Q1.1.7	Applicant	"The application seeks to use either high voltage alternating current (HVAC) or high voltage direct current (HVDC) transmission, or a combination of the two. The ES states that flexibility is required to ensure a low	A– D) Please see Appendix 22 to the Applicant's response to Deadline 1 which refers to the HVAC and HVDC Transmission Systems.



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		<p>cost of energy to the UK consumer and to facilitate successful completion of the project in a competitive market [APP-058] (paragraph 3.5.1.5). Relevant representations have pointed out that other projects have committed to HVDC transmission [RR-026, RR-096 amongst others].</p> <p>A) Please provide an updated justification for retaining this element of design flexibility, given what is now known about the intentions of comparable projects.</p> <p>B) Please provide an assessment of the relative advantages and disadvantages of HVAC and HVDC, including environmental impacts (offshore and onshore), project delivery and implications for compulsory acquisition.</p> <p>C) Please explain how and why HVAC and HVDC might be combined.</p> <p>D) At what point would the choice of transmission technology be made?"</p>	

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Q1.1.8	Applicant	<p>"Paragraph 3.5.1.5 of the ES [APP-058] states that Hornsea Project Three may use HVAC or HVDC transmission or a combination of both technologies.</p> <p>Please explain how a combination of HVAC and HVDC transmission systems could be achieved without exceeding the maximum parameters used as the basis for the assessments in the ES."</p>	Please see Appendix 22 to the Applicant's response to Deadline 1 which refers to the HVAC and HVDC Transmission Systems.
Q1.1.9	Applicant	<p>"Figure 3.32 in the ES [APP-058] shows an indicative layout for the onshore cable corridor.</p> <p>A) What are the key determinants of the corridor width?</p> <p>B) Is the width shown the minimum that is reasonably required?</p> <p>C) What would the corridor width be if HVDC transmission were used?</p>	<p>A) Paragraph 3.7.3.12 of the ES [APP-058] and Table 3.56 notes the dimensions of the export cable corridor, with the circuits must be spaced out in order to minimise the mutual heating effect of one circuit on another, this enables the cables to effectively carry the large power volumes required without overheating and damaging the cable.</p> <p>The key determinants of the corridor width are then primarily determined by the number of circuits to be installed, the area of land required for soil storage and space required to install the haul road.</p> <p>B) For the installation of six circuits, the Applicant considers that an 80m temporary corridor, provides an efficient and safe working width within whilst seeking to minimise land take. Where required, this working width can be reduced, but at the cost of cable installation efficiency, increased complexity for field drainage and added management requirements for soil separation and management.</p> <p>C) Please see Appendix 22 to the Applicant's response to Deadline 1 which refers to the HVAC and HVDC Transmission Systems.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		D) Please provide an indicative layout for HVDC in similar format to Figure 3.32."	D) Please see Appendix 22 to the Applicant's response to Deadline 1 which refers to the HVAC and HVDC Transmission Systems.
Q1.1.10	Applicant	<p>"Relevant representations [RR-096, RR-133 amongst others] have suggested that the onshore cables could be laid in ducts, with a view to reducing the construction impacts in the event that there are 2 phases.</p> <p>A) What would be the advantages and disadvantages of installing ducts for phase 2 whilst carrying out the installation of cables in phase 1?</p> <p>B) If the onshore works were carried out in two phases is it intended that the haul road would remain in place between the first and second phases?</p> <p>C) If the onshore works were carried out in two phases what would be the advantages and disadvantages, in terms of environmental impacts, of removing or retaining the haul road between the first and second phases?"</p>	<p>A) The principal advantages of installing ducts for the second phase as part of the first phase of works are that the majority of intrusive construction works on any individual parcel of land would take place only once, thereby minimising impacts to the land and the landowners. The majority of pre-construction activities, such as vegetation removal, fencing, pre-construction drainage and similar would typically only be undertaken once, rather than once per phase. Once the installation of ducts is complete for both phases, the majority of land would be reinstated between joint bays leaving only that which is needed to facilitate to subsequent cable pull activities, thus minimising the duration of disturbance on a given parcel of land.</p> <p>The principal disadvantage of installing ducts for the second phase as part of the first phase of works is that there is the potential to cause unnecessary disruption to communities and landowners associated with installing ducts for works that ultimately are not delivered as well as generate non-realised capital expenditure for the first project should the second phase of works not ultimately be delivered.</p> <p>Therefore, should the second phase not be delivered, the ducts would either represent a permanently unused component of the project, an unnecessary inconvenience for landowners and/or works would be required to remove them, causing further disruption.</p> <p>An additional disadvantage of installing the ducts for the second phase as part of the first phase of works, are that the ducts are not considered to be fully sealed units, such that there is a need to clean the duct system prior to installation of the cables. Where the duct system is found to be obstructed due to the ingress of foreign material, excavations to clear any blockages would be required, requiring access for construction vehicles anywhere along the cable route.</p> <p>With due regard given to the advantages and disadvantages as set out above, the Applicant recognises the potential for minimising impacts and disruption to the local community through pre-ducting for the second phase. These commitments i.e. the Applicant has committed to installing all onshore export cables circuits within ducts and installing</p>

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			<p>ducts for the second phase as part of the first phase of works, should both phases be awarded a Contract for Difference in the same auction round – detailed under response to Question 1.1.6 and 1.1.9.</p> <p>To mitigate the disadvantages of this approach, as noted above, Hornsea Three has only committed to installing ducts for the second phase as part of the first phase of works if both phases are awarded a Contract for Difference (or other alternative funding mechanism) in the same auction round. This means that pre-ducting for the second phase would only occur if there was certainty that the second phase will go ahead (by means of having secured a CfD at the same time as the first phase) thus avoiding the potential to cause greater disruption than is necessary to the communities and landowners and a greater environmental impact should the second phase ultimately not be delivered. Furthermore, the Applicant would cap the end of ducts to minimise the chance of obstructions within the ducts. Should cleaning be required, impacts from construction vehicle movements would be minimised through the use of the haul road, or where not possible, through the use of a temporary trackway system.</p> <p>B) Should Hornsea Three be delivered in two phases, the haul road will be removed unless otherwise agreed. Upon review, the Applicant has amended paragraph 1.2.3.1 in the Outline Construction Traffic Management Plan (APP-176) to clarify this point (new text underlined):</p> <p><u>"1.2.3.1 The haul road will be used where needed throughout the installation of the cable and will be removed upon reinstatement. Following completion of the works being served by that access point, the haul road will be removed and the land reinstated, unless otherwise agreed with the local planning authority."</u></p> <p>A second haul road could then be installed for the second phase of works.</p>

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			<p>C) For the landowner, the principal disadvantages of retaining the haul road between phases is that the land would stay out of agricultural production for a longer period of time and the imposition of the haul road may sever parcels of land in that interim period between phases. Reinstatement of the remaining land along cable corridor may also be complicated.</p> <p>For other users of the land, during the interim period, consideration would also need to be afforded any disruption caused to any public rights of way crossing points.</p> <p>For the construction contractor, the haul road installed under phase 1 may not be in the optimal position for phase two works. If the haul road is retained between phases, consideration would need to be given to ongoing maintenance to ensure it is kept in a safe and suitable condition and speed control measures and restrictive usage, applied during the construction period maintained during any interim period.</p> <p>The principal advantage of retaining the haul road between phases, is that there would be a reduction in HGV movements for Hornsea Three as the aggregate and geotextile would have to be imported once and removed once. The construction traffic flow figures as reported in Volume 6, Annex 7.7: Traffic Flows with Construction Traffic of the Environmental Statement [APP-165] have been calculated based on the maximum design scenario that the haul road would be removed between phases. If the haul road was retained between phases, these traffic flows would reduce.</p> <p>Further, retaining the haul road between phases holds the advantage of less aggregate waste - although it is possible that the aggregate material could be re-used elsewhere (as suggested in Volume 4, Annex 3.4: Site Waste Management Plan of the Environmental Statement [APP-088]).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.1.13	Applicant	<p>"Figure 3.21 of Annex 4.3 to the ES [APP-094] indicates the construction compound options that were considered.</p> <p>Please provide further justification for the selection of Oulton Street as the proposed location for the main construction compound."</p>	Justification for the selection of the former Oulton Airfield as the main construction compound is provided at Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1.
Q1.1.14	Applicant	<p>"Mulbarton Parish Council [RR-049] suggests that the Lafarge Aggregates quarry at Mangreen should have been considered as an option for the onshore HVDC converter/HVAC substation.</p> <p>To what extent was the quarry site considered and, if it was considered, what were the reasons for rejecting it?"</p>	Please refer to the Applicants response to Relevant Representation RR-049.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.1.15	Applicant	<p>"Figure 3.8 of the ES [APP-094] shows the shortlisted options for locating the onshore HVDC converter/HVAC substation. The rejected option (Option A) is described as physically more constrained than the selected option.</p> <p>A) What are the relative advantages and disadvantages of the two shortlisted options in terms of landscape and visual impacts and other environmental impacts?</p> <p>B) Please provide further justification for the selection of Option B."</p>	<p>A) In terms of landscape character, both of the shortlisted sites are located within the same landscape character area (B1 Tas Tributary Farmland) as shown on ES Figure 4.3 Sheet 8 (APP-076), with Option B also partly within the adjacent character area (C1 Yare Tributary Farmland with Parkland). As set out within sections 4.11.2.50 to 4.11.2.71 of the ES (APP-076), these two character areas have many similarities and are of the same susceptibility, value and sensitivity.</p> <p>The Option A site is also within approximately 200m of character area A1 Tas Rural River Valley, which is protected by South Norfolk Local Plan Development Management Policies Document (October 2015) Policy DM4.5 as shown on ES Figure 4.1 Sheet 8. ZTV studies for the two options were prepared as part of the viewpoint consultation process and show that whilst the pattern of visibility arising from the two sites is slightly different, the overall area of potential visibility for both options is broadly similar.</p> <p>Option A would have given rise to more extensive visibility from character area A1 – with the potential for effects to arise, whereas Option B indicated limited visibility from area A1 and the river valleys protected by Policy DM4.5.</p> <p>The two ZTV studies indicate that once existing vegetation and built form is taken into account. The Option A site is further from the Norwich View Cones and falls outside of the Norwich Southern Bypass Protection Zone protected by South Norfolk Local Plan Development Management Policies Document (October 2015) Policy DM4.6, as shown on ES Figure 4.1 Sheet 8 (APP-076), and is not adjacent to Undeveloped Approaches as shown on Map 4.6 of the South Norfolk Local Plan Development Management Policies Document 2018.</p> <p>In terms of visual receptors, both sites are near main road and rail routes and are located at similar distances from settlements, though Option A is closer to Public Rights of Way and Option B is closer to local roads.</p> <p>As shown by Figure 3.6 in Annex 4.3: Extracts from Local Landscape Character Area Descriptions to the Environmental Statement (APP-094), proximity to residential properties was considered as part of the site selection</p>

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			<p>process and both sites are at a distance such that effects on residential visual amenity would be acceptable, though the Option A site is slightly more distant from the nearest properties.</p> <p>In describing the Option A site as more physically constrained, the appraisal also specifically mentions that Option B has "<i>a greater availability of land for potential mitigation to be implemented</i>" at Annex 4.3 to the ES, para 3.2.4.9 (APP-094).</p> <p>In summary therefore, there is little to choose in landscape and visual terms between the two locations. Option B is likely to have less effects on river landscape character areas protected by Policy DM4.5, but slightly greater effects on some visual receptors (views from roads and residential receptors) but lesser effects on users of Public Rights of Way. However, the reduced constraints affecting Option B were judged to allow more flexibility for the inclusion of effective mitigation, such as landscaping, rather than mitigation options being limited by site constraints.</p>



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			<p>B) Section 4.11.5 of APP-059 documents the refinement of the onshore HVDC converter/HVAC substation. It notes that the two substation site options were considered, relative to one another, to determine a preferred option, supported by site visits in the summer of 2016.</p> <p>During the site inspections, further consideration was given to matters such as topography, access, landscape framework/screening, hydrology and ground conditions, to supplement the desk top work that was carried out. Furthermore, the sites had been subject of desk top heritage assessment and phase 1 ecology surveys (as part of the early EIA process) since their initial identification and shortlisting, and this information was also considered.</p> <p>In addition, an assessment of the potential access to Option B identified that this was significantly less constrained and would involve less highway works and the associated construction disruption.</p> <p>Option B also had a receptive landowner, subject to agreement to suitable commercial terms, with Option A presenting a stronger, initial opposition to the citing of the substation on their land.</p> <p>It was determined that Option B provided a greater availability of land for potential mitigation to be implemented. Option A was comparatively constrained by the railway line directly to the east and by the Norwich Main NGET substation to the north.</p>
Q1.1.16	Applicant	"Paragraph 3.5.1.7 of the ES [APP-058] states that a construction base may be required for stockpiling materials before delivery to the array area. It goes on to state that an onshore operations and maintenance base may be required to support the operational phase of the proposal.	<p>A) The Applicants response to Questions 1.10.1 and Q1.11.13 details the status of the selection of ports for use during construction, operation and maintenance and decommissioning activities of Hornsea Project Three, noting that the Applicant has not selected the ports that it will use and does not intend to make a decision during the Examination period. This includes the likely necessity for a construction facility to support the construction of the offshore works, the location of which has not been determined at this time and is reliant upon a number of factors (detailed further in response to Question 1.10.1).</p> <p>If a new onshore construction base is required to support the offshore works for Hornsea Three then this will either utilise existing consents secured by the port operator, or if necessary consented separately by grant of planning</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		A) How have any environmental effects relating to these facilities been assessed?	permission under the Town and Country Planning Act 1990 (or other statutory consents such as a harbor revision order). With the assessment of the impacts of the port use taking place at that stage.
		B)How would any mitigation of such effects be secured?"	B) The mitigation of any negative effects would be secured under either existing consents secured by the port operator, or if necessary through the grant of planning permission under the Town and Country Planning Act 1990 (or other statutory consent such as a harbour revision order).

### 1.3 Written Question 1.2 Ecology - Offshore

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.1	Applicant	<p>Tables 1.1 and 1.2 of the ES [APP-097] summarise the search area extents that have been used to evaluate the cumulative offshore and onshore impacts of the proposal.</p> <p>Please explain why you considered these areas to be sufficient with regard to the extent of the anticipated cumulative impacts.</p>	<p>The onshore and offshore search area extents used to identify the projects, plans and activities in the Cumulative Effects Assessment (CEA) long list were designed to be wide enough to capture all projects, plans and activities within the potential effects range for all onshore and offshore receptors considered in the Environmental Statement. As such, these were intentionally broad, extending over a sufficiently wide scale to capture all projects with the potential to interact cumulatively with Hornsea Three. The search area extents in Table 1.1 of Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement (APP-097) were sufficiently large to encompass the extent of potential impacts associated with the various offshore project types. For example, cables and pipeline projects have a highly limited zone of influence and as such had a relatively small search area extent (i.e. 100 km), while for offshore wind farms, a more extensive search area (i.e. 500 km) was required due to the extensive zone of influence from these projects, particularly on highly mobile and wide ranging receptors (e.g. foraging ranges for offshore bird and marine mammals, and operating ranges for vessels including commercial fishing vessels).</p> <p>The search area extents were sufficiently wide to encompass the largest topic specific study areas and zones of influence, for example, for offshore ornithology the CEA considered impacts on bird populations along the UK east coast. Similarly, the marine mammal study area included the entire southern North Sea and adjacent Small Cetaceans in the European and Atlantic North Sea Blocks (see Figure 4.1 of Volume 2, Chapter 4: Marine Mammals of the Environmental Statement; APP-064) with cumulative effects from offshore wind farm piling considered across this extent. The search areas presented in Table 1.1 of Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement were sufficiently large to encompass projects within these areas.</p> <p>The Applicant would highlight that this use of search area extents for the identification of projects, plans and activities was the first stage in the CEA screening process. Following this first stage a more detailed screening has been undertaken on a topic by topic level. This process is further described in section 5.4.3 of Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement (APP-060). This involves a stepwise process that considers the level of detail available for projects, plans and activities, as well as the potential for interactions on a conceptual, physical and temporal basis.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>As detailed in paragraph 5.4.3.17 of Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement, the potential for impacts arising from Hornsea Three to physically overlap with those from other projects, plans and activities has been assessed on a receptor basis for each topic. This means that, in most examples, an overlap of the physical extents of the impacts arising from the two (or more) projects, plans and activities must be established for a cumulative impact to arise. Screening on the basis of physical extent was carried out for all topics in line with the maximum potential impact (and hence physical extent) that may arise from Hornsea Three, in line with the maximum design scenario approach. For the purposes of the Hornsea Three CEA, all projects, plans and activities which did not have a physical overlap of impacts for a given Environmental Impact Assessment topic with those of Hornsea Three were screened out.</p> <p>This process further refines the initial screening of projects based on search area extents. In addition to considering the potential for physical overlap, the screening process also considers data confidence associated with projects (i.e. the availability of a sufficient level of detail to allow a meaningful cumulative effects assessment to be completed), the conceptual overlap (i.e. the presence of an impact-receptor pathway) and a temporal overlap of activities associated with the projects. The approach adopted is consistent with Guiding Principle 5 of the RenewableUK Cumulative Impact Assessment Guidelines (RenewableUK, 2013).</p> <p>The search area extents outlined in Table 1.1 and Table 1.2 of Volume 4, Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement (APP-097) are therefore large enough to capture all projects with the potential to affect onshore and offshore receptors considered within each topic chapter of the Environmental Statement (Volume 2: Chapters 1 to 11 and Volume 3: Chapters 1 to 10). Projects, plans and activities identified via the search area extents are then considered via a more detailed screening process, as detailed above, to determine their inclusion or otherwise in the cumulative effects assessment. The Applicant therefore considers these areas to be sufficient with regard to the extent of the anticipated cumulative impacts.</p>

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Q1.2.2	Natural England (NE)	<p>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.</p> <p>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.</p>	<p>Whilst not directed at the Applicant, the Applicant refers the Ex.A to their response to Natural England's Relevant Representation (RR-097), as submitted at Deadline I. In summary, the Applicant can confirm that the potential for disturbance and repeat disturbance to benthic habitats from cable installation, across the lifetime of the project, has been fully assessed within Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). The Applicant's response to Natural England's Relevant Representation provides signposting to the relevant sections of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement where the assessments are presented. All assessments relating to the potential for repeat disturbance associated with cable installation, maintenance and decommissioning conclude that the areas likely to be impacted by such repeat disturbance are limited spatially.</p>
Q1.2.4	Applicant	<p>Paragraph 2.7.1.3 of the ES [APP-062] states that the inshore section of the cable corridor is characterised by sub-cropping rock at a depth of 0.2 to 3m.</p> <p>How has this informed the estimated extent of cable protection that would be required, as set out in paragraph 3.6.10.7 of the ES [APP-058]?</p>	<p>The Applicant has based the estimated extent of cable protection in the nearshore on knowledge of best available technologies and success rates on other projects using such equipment on similar terrain.</p> <p>For example, mechanical trenchers such as the T3200 have proven successful in burying cable in chalk/stiff clay. This trencher was used successfully on both the Nemo-Link interconnector project and Hornsea One Offshore Wind Farm. This trencher can also offer a pre-cut solution.</p> <p>Another option for nearshore trenching in sub-cropping rock would be the cable plough. The rock unit encountered in the nearshore section during the Hornsea Three site investigation is generally described as extremely weak to weak low to medium density chalk, and may be anticipated to have a rock strength lower than 600 kPa. Therefore, an advanced cable plough could be utilised. The Advanced Multi-Pass Plough (AMP500) also has an extensive track record for the Pre-Cut and Post-Lay protection of large diameter pipelines, flowlines and power cables. The AMP500 plough spread is proven in multiple seabed conditions.</p> <p>Post-consent, further detailed pre-construction geophysical and Geotechnical survey data will be used to inform the Cable Specification and Installation Plan, specifically in relation to the tools required to install cables in this area, to</p>

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			maximise the chance of cable burial. The Applicant is therefore confident that the 10% represents the maximum design scenario, even when considering the subcropping rock in the nearshore.
Q1.2.5	Applicant	<p>Paragraph 3.6.6.8 of the ES [APP-058] states that up to 10% of the array cable length may need protection and the same estimate has also been applied to the protection that may be required along the cable export corridor in paragraph 3.6.10.7.</p> <p>What is the evidential basis for this estimate?</p>	<p>The Applicant has produced a Clarification Note on Cable Protection as presented at Appendix 6 to the Applicants response to Deadline I which provides clarification on the requirement for, and assessment of, cable protection as presented in the Project Description chapter of the ES [APP-058] and a rationale behind the maximum scenario of 10% based on experience from other projects.</p> <p>The clarification note shows the assumption for export cables, but the same assumptions (e.g. about burial success) apply equally to array cables. The information available about the array area does not indicate that burial is going to be more problematic than encountered on other projects and it is therefore considered that 10% is suitably precautionary.</p>
Q1.2.6	NE, Marine Management Organisation (MMO)	<p>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 minor adverse impact.</p> <p>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?</p>	<p>Whilst not directed at the Applicant, it is material to note that the Applicant has provided the MMO and Natural England with a Cable Protection Clarification Note which is included in Appendix [6] of the Applicant's response to Deadline I. The Cable Protection Clarification Note provides a clarification on the requirement for, and assessment of, cable protection in designated sites as presented in ES [APP-062].</p>
Q1.2.7	Applicant	<p>Paragraph 2.11.2.3 of the ES [APP-062] states that up to 25% of the cable protection would be replenished during the operational phase of the project.</p>	<p>A) The Applicant is confident that the value of 25% is suitably precautionary.</p> <p>The design of the cable protection would consider the environment in which the protection will be deployed, including hydrodynamic regime (e.g. wave energy, storm conditions) to ensure rock protection embeds significant robustness, such that replenishment would not be required. This would be set out in the cable specification and installation plan</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>A) Why do you consider that the 'worst case scenario' of 25% cable protection replenishment is appropriate and what justification do you have for concluding that it would not be greater?</p> <p>B) Please explain the justification for the assumption that replenishment would only occur in areas of existing cable protection.</p> <p>C) If you have relied on experience from previous projects then please provide further details.</p>	<p>as secured in the DCO. The Applicant is therefore confident that the assumption of 25% replenishment is set within appropriate precaution.</p> <p>B) As outlined in row 4 of Table 2.14, and paragraph 2.11.2.3 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062), the replenishment of cable protection and cable/pipeline crossings during the operation and maintenance phase will not result in any additional long-term habitat loss. It is assumed that replenishment works will be additive in areas in which cable protection was laid during construction (i.e. that cable protection replenishment will involve replenishment of protection on top of cable protection previously installed over the Hornsea Three cables). Therefore, the maximum design scenario that up to 10% of the total length of export cables within designated sites will require cable protection is applicable throughout the O&amp;M phase of the project.</p> <p>C) Replenishment has not been required so far on existing Orsted projects and that good design (as detailed in part A of this question) has eliminated the need for this. Following questions raised by Natural England in their Relevant Representation (RR-097) in response to the maximum design scenario for cable protection, the Applicant is therefore re-examining this precautionary assumption in the Project Design envelope.</p>
Q1.2.9	Applicant	<p>Paragraph 4.1 of the MMO's representation [RR-085] observes that the turbines would be painted every 10 years and that this would require preparation to break down existing surface coatings and any associated corrosion.</p> <p>As this would lead to material entering the benthic environment, how has this effect been assessed in the ES?</p>	<p>The Applicant would highlight that, for large re-painting campaigns such as those which would be required every 10 years, any spent abrasive material from blasting activities will be recovered by the blasting unit and therefore no environmental effects are predicted from this particular process. Simultaneous blast and vacuum recovery systems are also likely to recover debris (e.g. paint chips). Therefore, any potential impact would be associated with small amounts of paint being accidentally released into the marine environment. The Applicant refers the Ex.A to the Applicant's response to the MMO's Relevant Representation [RR-085], as submitted at Deadline I. An assessment of the potential effects associated with the accidental release of pollutants, including synthetic compounds (e.g. paint) on benthic receptors during the operation and maintenance phase is presented in paragraph 2.11.2.174 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). Given the mitigation measures which are proposed (i.e. the implementation of a Project Environmental Management and Mitigation Plan (PEMMP) which is secured by the deemed marine licences in the draft DCO (Version 1, submitted for Deadline I [APP-027]) (see condition 13(1)(d) of Schedule 11 (generation assets) and condition 14(1)(d) of Schedule 12 (transmission assets)), the likelihood of accidental release was assessed to be extremely low (see paragraph 2.11.2.186 of Volume</p>

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			2, Chapter 2: Benthic Ecology of the Environmental Statement). In the event that surface preparation works result in the accidental release of small amounts of this material into the marine environment, the volumes of potential contaminants released would be small and rapidly dispersed to concentrations below which deleterious effects would be expected (also see paragraph 2.11.2.186 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement).
Q1.2.10	Applicant	<p>Table 2.1 of the ES [APP-062] states that the 'likely rates of recovery' of benthic communities have been assessed as required by paragraph 2.6.113 of NPS EN-3. Paragraph 2.9.2.2 goes on to state that impacts on Valued Ecological Receptors (VER) have been informed by 'best available evidence'.</p> <p>Please explain the sources of this evidence.</p> <p>Has this evidence been derived from schemes that are comparable, for example in relation to substrates, marine processes, foundation types and scale of project?</p> <p>Is there any peer reviewed scientific evidence to justify the assumed recovery times?</p>	<p>As noted in paragraph 2.9.2.2 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) the Marine Evidence based Sensitivity Assessment (MarESA) has been drawn upon, in the first instance, to support the assessments of recoverability of benthic communities presented in sections 2.11 to 2.13 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). As outlined in Table 2.6 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, the use of the MarESA was advised by Natural England in their section 42 consultation response to the Preliminary Environmental Impact Report (PEIR). The 'evidence base' presented in the MarESA is peer reviewed and is the largest review yet undertaken on the effects of human activities and natural events on marine species and habitats. The MarESA approach is a defined process of literature review, documentation of evidence, and systematic assessment of the evidence to assess sensitivity (including recoverability). On this basis, the details provided therein on recovery are considered by the Applicant to be one of the best available sources of evidence relating to recovery of benthic species and habitats. As such, the use of this source of evidence is standard best practice in offshore wind farm assessments.</p> <p>It should be noted, however, that the MarESA has not been used in isolation to inform the assessments of recovery of benthic communities within Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. Where available and relevant data exist from monitoring studies of similar activities (e.g. sandwave clearance, jack-up footprints, cable installation, introduction of hard substrate) at other offshore wind farms, these have been drawn upon to support the assessment of likely rates of recovery. For example, paragraph 2.11.1.14 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement draws on monitoring evidence for sandbank recovery following sandwave clearance activities at the Race Bank offshore wind farm and offshore cable corridor. The Applicant would also direct the Ex.A to the Sandwave Clearance Clarification Note as submitted at Appendix [11] of the Applicant's response to Deadline I, where the findings of this monitoring data are expanded on to validate the predictions made within the Environmental Statement.</p>



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		<p>Have previous schemes adopted pre-construction corridor clearance techniques of a similar scale?</p> <p>If modelling has been used please provide a summary of the assumptions of those models and how they were tested.</p>	<p>In addition, the assessment of recovery of benthic communities to impacts associated with jack-up vessel footprints in paragraphs 2.11.1.12 and 2.11.1.32 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement also draws on monitoring evidence of this activity at other offshore wind farms (i.e. Barrow, Lynn and Inner Dowsing). Paragraph 2.11.1.77 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement draws on evidence from cable installation monitoring for the Humber Gateway offshore wind farm to support the assessment of effects of and recovery following cable installation in mixed and coarse sediments. The Hornsea Three assessment of effects associated with the habitat creation from the introduction of hard substrates in paragraph 2.11.2.48 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement has also drawn on a number of examples of post-construction monitoring of the colonisation of foundations at other offshore wind farms (e.g. Egmond an Zee, Horns Rev).</p> <p>In addition to drawing on evidence from other offshore wind farms, the assessments of recovery and sensitivity of benthic species and habitats presented in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement has also drawn on evidence from analogous activities, including marine aggregate dredging. This evidence has been used on the basis that marine aggregate extraction results in impacts of a similar nature and magnitude to a number of construction impacts associated with Hornsea Three. These include physical disturbance/substrate removal associated with seabed preparation and sandwave clearance (see paragraphs 2.11.1.28 and 2.11.1.31 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement) and increased suspended sediment concentrations associated with these activities and also cable installation (see paragraph 2.11.1.113 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement).</p> <p>The Applicant can confirm that the rates of recovery predicted in in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, were based on published, peer reviewed evidence from the all of the sources outlined above and was not based on modelling.</p>

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			<p>It is also useful to view the approach to assessing recovery of benthic communities in the Environmental Statement in the context of two published reports: i) the Marine Management Organisation (MMO) <i>Review of environmental data associated with post-consent monitoring of licence conditions of offshore wind farms</i> (MMO, 2014); and ii) the report by Royal HaskoningDHV and The Crown Estate (2018) on proportionate Environmental Impact Assessment (EIA) for offshore wind farms. The results of the MMO (2014) review indicated that, to date, post-consent monitoring of offshore wind farms has not demonstrated any significant impacts on benthic infaunal communities, suggesting therefore that the communities impacted during construction have recovered. The Royal HaskoningDHV and The Crown Estate (2018) report concluded that there are elements of EIA where there is sufficient evidence (via repeated assessment) that based on current practice, the impacts are sufficiently known, and evidence suggests minimal impacts. The suggestion being that low risk activities, with the application of standard mitigations, do not require as much detail. It is the Applicant's position that the impacts to benthic receptors from the impacts associated with offshore wind farm construction and operation are well understood and that with the designed in mitigation measures in place (as outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement), the risk to benthic receptors is low.</p> <p>In conclusion, it is the Applicant's position that the evidence supporting the conclusions with respect to rates of recovery of benthic ecology receptors is scientifically robust, having drawn upon both peer reviewed scientific evidence and relevant monitoring data from offshore wind and other relevant industries. As such, the impact assessment has been based on the best available evidence.</p>
Q1.2.11	Applicant	<p>Paragraph 2.3.1.1 of the ES [APP-062] defines the extent of the benthic ecology study area which includes the former Hornsea Zone with a 5 km buffer and an area defined by the boundaries of the Southern North Sea Natural Area.</p> <p>Why is the inclusion of these areas in the assessment process justified having regard</p>	<p>As discussed in paragraph 2.3.1.1 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062), two benthic ecology study areas were defined:</p> <ul style="list-style-type: none"> <li>i) the Hornsea Three benthic ecology study area (encompassing Hornsea Three, the former Hornsea Zone plus a 5 km buffer); and</li> <li>ii) the southern North Sea benthic ecology study area (defined by the limits of the southern North Sea Marine Natural Area).</li> </ul> <p>The first of those, the Hornsea Three benthic ecology study area, was identified as the area within which direct and indirect effects associated with Hornsea Three may occur (i.e. beyond this range, any effects would be well within natural variability), and was therefore selected as the focus of site-specific surveys in order to comprehensively</p>

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		to the extent of the likely significant effects from the project?	characterise the benthic ecology baseline. It is the Applicant's position that this study area was sufficiently large to capture likely effects of Hornsea Three on benthic ecology receptors. The southern North Sea benthic ecology study area covered the extent of the desktop data review, the purpose of this information being to provide wider context to the site-specific Hornsea Three data, e.g. to provide an indication of how representative benthic ecology receptors (i.e. species, communities and habitats) are within the wider southern North Sea.
Q1.2.12	Applicant	<p>The benthic grab locations shown in figure 2.4 of the ES [APP-062] indicate that no samples of the nearshore cable corridor re-route were obtained. Paragraph 2.6.1.4 of the ES [APP-062] states that a combination of site specific and desktop survey data were deemed adequate by the EWG.</p> <p>Representations from Natural England [RR-097], the MMO [RR-085] and the Eastern Inshore Fisheries and Conservation Authority (EIFCA) [RR-070] question the assumption that the benthic habitats in the re-route are likely to be the same as those sampled elsewhere.</p> <p>Please explain the scientific justification for the assumption that the survey effort was adequate.</p>	<p>A description of the nearshore benthic ecology study area of the Hornsea Three offshore cable corridor, is presented in paragraph 2.7.1.11 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) and paragraph 4.1.4.83 <i>et seq.</i> of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-107).</p> <p>The desktop data sets which were used to extend the nearshore biotope maps generated from the Hornsea Three site specific benthic ecology data into The Wash and North Norfolk Coast SAC (i.e. into the nearshore re-route) are outlined in paragraph 2.7.6.2 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. The desktop data indicates that the broadscale sediment types are similar across the benthic ecology study area with sandy sediments inshore grading into coarse/mixed sediments further offshore within The Wash and North Norfolk Coast Special Area of Conservation (SAC). The consistency in the pattern of sediments present across datasets and over a long time series, provided confidence in the extrapolation of biotopes into areas where there had been no site-specific sampling and confidence in the sufficiency of this information for the purposes of the Environmental Impact Assessment.</p> <p>Paragraph 4.1.4.83 <i>et seq.</i> of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement describe the biotopes mapped within the part of Hornsea Three offshore cable corridor re-route coinciding with The Wash and North Norfolk Coast SAC. The biotopes predicted are also shown in Figure 2.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement and were consistent with findings of previous surveys in this area for the Sheringham Shoal and Dudgeon offshore wind farms, as well as surveys within The Wash and North Norfolk Coast SAC. On the basis of the desktop data sets outlined in paragraph 2.7.6.2 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement and also the results of a site-specific drop down video survey in October 2017 within areas of potential chalk outcrops within The Wash and North Norfolk Coast SAC, it was</p>

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			<p>concluded that Annex I reef habitats were unlikely to be present within the part of the Hornsea Three offshore cable corridor which coincides with The Wash and North Norfolk Coast SAC.</p> <p>Since the Hornsea Three DCO application was submitted in May 2018, the Applicant has undertaken a drop down video survey of the Hornsea Three offshore cable corridor that coincides with The Wash and North Norfolk Coast SAC in the nearshore area (i.e. the re-route section). The results of the survey validates the benthic ecology baseline, and therefore the predictions made within Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. The results and full details of this survey have been provided to Natural England and the MMO in September 2018 via The Wash and North Norfolk Coast Clarification Note which is also included in Appendix [5] of the Applicant's response to Deadline I. Analysis of the Hornsea Three 2018 drop down video survey data validated the prediction (made in the ES) of predominantly mixed sediments within the parts of the Hornsea Three offshore cable corridor that coincide with The Wash and North Norfolk Coast SAC and confirmed that there is no evidence of Annex I stony reef habitat, or any other Annex I reef habitat, in this area. No evidence of <i>Sabellaria spinulosa</i> was found during the 2018 Hornsea Three drop down video survey, which suggests that the allocation of the SspiMx biotope to this area of mixed sediment, for the purposes of the assessment presented in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, was over-conservative.</p>
Q1.2.14	The Wildlife Trusts (TWT)	<p>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.</p> <p>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?</p>	<p>Whilst not directed at the Applicant, it is material to note that the Applicant has provided TWT with a Cable Protection Clarification Note which is also included in Appendix 6 of the Applicant's response to Deadline I. The Cable Protection Clarification Note further explains how the maximum design scenario for cable protection for Hornsea Three has been derived and is therefore precautionary but realistic and justified.</p>

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Q1.2.15	NE	<p>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.</p> <p>Please identify the nature of these errors and the implications that you think this has for the findings of the ES.</p>	<p>Whilst not directed at the Applicant, it is important to note that the Applicant has acknowledged the general limitations associated with biotope mapping in paragraph 2.7.6.3 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). As discussed in paragraph 2.7.6.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, these limitations have been controlled by grouping habitats with similar overall general ecology, species assemblages and sensitivities together as valued ecological receptors. Therefore, as discussed in paragraph 2.7.6.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, any uncertainties or differences in expert opinion in relation to classification of individual biotope codes to certain sites will not materially affect the overall conclusions or certainty of the impact assessment presented in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement.</p>
Q1.2.16	Applicant	<p>Paragraph 2.4.3.2 of the ES [APP-102] states that the mini-Hamon grab sample size that was used for macrofaunal analysis was 0.1 m<sup>2</sup>.</p> <p>A) What proportion of the total benthic study area was surveyed and how was the sample size statistically determined to ensure that it was representative?</p> <p>B) Please explain the justification for the sampling strategy with reference to empirical measures of the heterogeneity and spatial grain of benthic habitats.</p>	<p>A) Paragraph 2.4.2.3 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102) explains that data from 334 benthic grab samples, taken using a 0.1 m<sup>2</sup> Hamon grab, from historic benthic ecology surveys undertaken across the former Hornsea Zone were used to characterise the Hornsea Three benthic ecology study area. As discussed in section 2.4.3 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement, these data were augmented with the results of 60 site-specific grab samples (0.1 m<sup>2</sup> Hamon) undertaken by the Applicant in 2016/2017. Given the extent of offshore wind farm study areas such as those for Hornsea Three, the relative proportion of the area surveyed will inevitably appear comparatively small.</p> <p>However, the approach adopted for the benthic ecology characterisation of Hornsea Three is consistent with all relevant guidance for baseline characterisations (e.g. Davies <i>et al.</i>, 2001; Cefas, 2011; Ware and Kenny, 2011) as outlined in paragraph 2.5.1.2 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement. The approach is also consistent with that adopted for other offshore wind farm projects and offshore industries. The Applicant is confident that, on the basis of this approach, the number of samples collected is proportionate to the size of the project and that the coverage of samples is adequate for the purposes of facilitating a broad scale description of the seabed environment within and around Hornsea Three and to define the main habitats and their spatial extent. The emphasis of baseline characterisation surveys using grab and drop down video techniques is on the elucidation of spatial patterns in the biological communities associated with seabed sediment to</p>

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		C) How does the sampling intensity reflect the observed spatial distribution of key benthic habitats, such as Sabellaria reefs?	<p>an extent which then allows confident interpolation of biotopes across similar sediment types in wider un-surveyed areas.</p> <p>B) The site-specific benthic surveys in the Hornsea Three array area were first discussed with the Marine Processes, Benthic Ecology and Fish and Shellfish Expert Working Group (EWG) at a meeting on 6 June 2016 (see Appendix C.1 of the Consultation Report Annex 1: Evidence Plan [APP-035]). The principles of the design of the site-specific surveys of the Hornsea Three offshore cable corridor were first discussed with the EWG at a meeting on 18 November 2016 with full details of the Applicant's sampling strategy for the Hornsea Three offshore cable corridor presented at a meeting of the EWG on 1 February 2017 (see Appendix C.5 of the Consultation Report Annex 1: Evidence Plan). The sampling strategy and density of the site-specific benthic grab samples discussed with the EWG was intended to focus survey on areas where data were lacking or data coverage was poor (i.e. to provide further data coverage within representative sediment types in area of poor or moderate data coverage). Sample locations were also targeted at historic Sabellaria spinulosa reef locations. See the meeting minutes presented in Appendix C.5 of the Consultation Report Annex 1: Evidence Plan</p> <p>C) The Applicant would also highlight that, as discussed in paragraph 2.4.3.5 and 2.4.3.10 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102), seabed camera footage was obtained from grab sampling stations along the Hornsea Three offshore cable corridor to ensure that no potential Annex I habitats (such as Sabellaria spinulosa reefs) were present prior to seabed contact by the grab sampler. If a potential Annex I habitat was identified in the feed from the grab mounted camera, no grab sample was taken. This approach is consistent with the relevant guidance for sampling areas of potential S. spinulosa reef (i.e. Gubbay, 2007) which state that this type of sampling should be limited due to the destructive nature of the technique. Where discrete habitats (e.g. potential S. spinulosa reef habitats, potential clay/chalk exposures) were identified from the geophysical datasets along the Hornsea Three offshore cable corridor, these more sensitive and spatially limited features were thoroughly investigated using appropriate, non-destructive sampling equipment (i.e. seabed camera footage) to ensure a robust baseline characterisation.</p>
Q1.2.17	Applicant, NE	Table 2.18 of the ES [APP-062] states that cables would be micro-sited through areas	Paragraph 2.7.1.19 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Assessment (APP-062) refers to the occurrence of Sabellaria biotopes within the Hornsea Three offshore cable corridor. The Applicant would highlight

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		<p>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.</p> <p>How effective is this mitigation measure likely to be given the widespread distribution of this habitat?</p>	<p>that, as discussed in paragraph 4.1.4.97 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102), although biogenic <i>Sabellaria spinulosa</i> reefs are associated with <i>Sabellaria</i> biotopes (e.g. SS.SBR.PoR.SspiMx <i>Sabellaria spinulosa</i> on stable circalittoral mixed sediment (SspiMx) biotope), the widespread mapping of the SspiMx biotope along the Hornsea Three offshore cable corridor does not automatically indicate that reef is present. Therefore, it is important that the relevant guidance (i.e. Gubbay, 2007) is applied to distinguish between areas that do qualify as <i>S. spinulosa</i> reef and those which are 'not a reef'. As per the approach to the Environmental Impact Assessment, this approach will be applied to the pre-construction survey, which the Applicant is committed to undertaking (as per Schedule 12, Part 2, Paragraph 16 (2)(ii) of the draft DCO [APP-027]), to determine the location, extent and composition of any Annex I reefs within SACs and/or biogenic or geogenic reefs outside SACs within the Order limits at the time of construction.</p> <p>The Applicant's commitment to the designed-in mitigation measures outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (i.e. to develop measures to avoid direct impacts to <i>S. spinulosa</i> reef features, where possible), are standard mitigation measures which have been applied, and proved to be successful, over many offshore industries (including oil and gas drilling and pipeline installation, interconnectors and offshore wind).</p> <p>Furthermore, the assessment of an impact occurring to potential future Annex I reef (should this develop prior to construction), as presented in paragraph 2.11.1.43 et seq. of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, has demonstrated that the Hornsea Three offshore cable corridor is of sufficient width to allow for micro-siting around any potential Annex I reef features which may develop prior to construction within the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC). This indicates that this mitigation measure would be successful and that residual risks to Annex I <i>S. spinulosa</i> reef features are minimal.</p> <p>It is also widely accepted that, within any <i>S. spinulosa</i> reef, there are typically areas of higher and lower 'reefiness'. Therefore in the unlikely event that the primary mitigation (i.e. avoiding biogenic reefs, where possible) fails and export cables need to be installed through an area of reef(s), the Applicant is confident that the secondary mitigation, as outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (i.e. to micro-site cables through areas of lower quality reef, avoiding areas of medium or high quality reef and/or cable installation would be restricted to the periphery of reef features to ensure continuous reef features are not bisected) would be feasible and successful.</p>



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Q1.2.18	Applicant	<p>Paragraph 5.4.3 of NE's representation [RR-097] highlights the potential use of the Joint Nature Conservation Committee Sabellaria reef layer.</p> <p>A) Why was this digital reef layer not used to determine the extent of this feature and, if it had been, how would this have altered the findings of the ES?</p> <p>B) How does an additional area of reef that has been identified since the analysis was completed alter the findings of the ES?</p>	<p>A) The Applicant refers the Ex.A to the Applicant's response to Natural England's (NE) Relevant Representation (APP-097), as submitted at Deadline I. The Applicant would highlight that the most up to date JNCC reef layer, available at the time of submission, was used by the Applicant to inform the core reef assessment, and it is this layer which is presented in Figure 2.9 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). The Applicant notes that the updated reef layer referred to in NE's Relevant Representation was not available at the time that the Environmental Impact Assessment was undertaken but that the Applicant has since requested that the Joint Nature Conservation Committee (JNCC) provide this layer.</p> <p>The Applicant considers it important to reiterate that no Annex I <i>Sabellaria spinulosa</i> reefs were recorded within Hornsea Three coinciding with designated sites (see paragraph 2.7.1.13 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. However, as per best practice, and in response to a request by NE, an assessment of an impact occurring to potential future Annex I reef (should this develop prior to construction) within the North Norfolk Sandbanks and Saturn Reef SAC was undertaken as presented in paragraph 2.11.1.43 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. The purpose of this core reef exercise was to provide a high-level risk assessment, as advised by Natural England in the Marine Processes, Benthic Ecology and Fish and Shellfish Ecology Expert Working Group (EWG) meeting on 23 February 2018, in order to 'future proof' the assessment to cover the possibility of <i>S. spinulosa</i> reef developing in the intervening time between the Hornsea Three characterisation and the pre-construction Annex I reef surveys. Furthermore, as outlined in the Applicant's response to Q1.2.17 above, this assessment has demonstrated that the Hornsea Three offshore cable corridor is of sufficient width to allow for micro-siting around any potential Annex I reef features which may develop prior to construction within the North Norfolk Sandbanks and Saturn Reef SAC.</p> <p>B) As outlined in response to Part A above, the Applicant has requested but not yet received the updated JNCC reef layer and is therefore unable to comment on the location of any additional <i>S. spinulosa</i> data points in respect to the Hornsea Three offshore cable corridor. The core reef assessment was, however, based upon the best available data at the time, with assumptions and limitations clearly stated in paragraph 2.11.1.53 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. The key limitation being the limited number of datasets available for the area of the North Norfolk Sandbanks and Saturn Reef SAC coinciding with the Hornsea Three offshore cable corridor. If the latest reef layer had been available for inclusion in the assessment it would have increased the datasets used to inform the Hornsea Three core reef assessment from three to four. However, when compared to the 16 datasets used</p>



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			<p>for the core reef approach in The Wash <i>S. spinulosa</i> synthesis (Roberts <i>et al.</i>, 2016), the addition of the extra layer would have only marginally increased confidence in the conclusion of the core reef assessment.</p> <p>It is in acknowledgement of the residual uncertainty as to the location and extent of any potential future Annex I reefs, that the Applicant has proposed to control any residual risks to Annex I reef features of the North Norfolk Sandbanks and Saturn Reef SAC, should these develop within the Hornsea Three offshore cable corridor prior to construction, via the designed in mitigation measures adopted as part of Hornsea Three as outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. The key control measure being that, should <i>S. spinulosa</i> reef features be identified during pre-construction surveys of the Hornsea Three offshore cable corridor, appropriate measures will be discussed with statutory consultees to avoid direct impacts to these features, where possible. The Applicant would highlight that the proposed measures to avoid <i>S. spinulosa</i> reefs are standard mitigation measures which have been applied, and proved to be successful, across many offshore industries, including the offshore wind industry, oil and gas (including pipelines) and interconnector cables.</p>
Q1.2.19	NE	<p>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.</p> <p>Please explain how the adopted approach differs from the published guidance.</p> <p>How is any difference in approach likely to have affected the findings of the ES?</p>	<p>Whilst not directed at the Applicant, the Applicant refers the Ex.A to their response to Natural England's Relevant Representation (RR-097) as submitted at Deadline I. Here it is highlighted that the approach involved a high-level risk assessment, as advised by Natural England in the Marine Processes, Benthic Ecology and Fish and Shellfish Ecology EWG meeting on 23 February 2018, in order to future proof the assessment to cover the possibility of <i>Sabellaria spinulosa</i> reef developing in the intervening time between the Hornsea Three characterisation and the pre-construction Annex I reef surveys.</p>
Q1.2.20	Applicant, NE, MMO	<p>Paragraph 2.7.1.19 of the ES [APP-062] states that <i>Sabellaria</i> reefs are 'likely to be ephemeral'.</p>	<p>A) The Applicant considers that it is widely acknowledged that <i>Sabellaria spinulosa</i> reef can be a naturally ephemeral habitat which is vulnerable to both natural disturbance (e.g. storms) and anthropogenic activities such as bottom trawling.</p>

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		<p>A) What peer reviewed literature supports this assumption?</p> <p>B) Is it possible that the observed changes in distribution are attributable to regular loss of reefs from bottom trawling?</p> <p>C) Given the observed ephemerality, would pre-construction surveys be effective in mitigating potential impacts?</p> <p>D) 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.</p>	<p>As discussed in paragraph 2.11.1.44 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) and paragraph 3.1.3.24 et seq. of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement [APP-102] for example, it has been widely reported that the Saturn <i>S. spinulosa</i> reef of the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC) was first recorded in 2003, creating a solid structure rising above the seabed (BMT Cordah, 2003), but subsequent surveys in 2006 failed to identify the extensive areas of <i>S. spinulosa</i> reef previously identified (Limpenny et al., 2010). Annex I <i>S. spinulosa</i> reef was, however, recorded to the west of the previously mapped Saturn reef by the JNCC/Cefas 2013 survey (Jenkins et al., 2013).</p> <p>The ephemeral nature of <i>S. spinulosa</i> reefs was also demonstrated during the baseline characterisation surveys for the Hornsea Project One and Hornsea Project Two offshore wind farms. During the Hornsea Project One baseline characterisation surveys in October 2011 (SMart Wind, 2013), <i>S. spinulosa</i> reef was recorded at six discrete locations along the Hornsea Project One offshore cable corridor. These locations were specifically revisited as part of the Hornsea Project Two baseline characterisation surveys in 2012, but no evidence of the <i>S. spinulosa</i> reef habitat was found (Smart Wind, 2015).</p> <p>The Applicant considers that these examples, together with the fact that Annex I reef was not recorded within the Hornsea Three offshore cable corridor during the baseline characterisation surveys, highlight the ephemeral nature of this habitat in the vicinity of Hornsea Three. The Joint Nature Conservation Committee (JNCC)/Cefas North Norfolk Sandbank and Saturn Reef cSAC/SCI Management Investigation Report (Jenkins <i>et al.</i>, 2015) and the Conservation Objectives and Advice on Operations document for the site (JNCC, 2012) also both describe the Annex I <i>S. spinulosa</i> reef feature of the North Norfolk Sandbanks and Saturn Reef SAC as ephemeral.</p> <p>B) The Jenkins <i>et al.</i> (2015) and JNCC (2012) reports discussed in answer to Part A above, also outline that damage to the reef structure was observed during the original survey by BMT Cordah (2003) which may have been the result of bottom trawling. The Conservation Objectives and Advice on Operations document for the SAC (JNCC, 2012) states that trawling, dredging, net fishing and potting are all believed to cause physical damage to <i>S. spinulosa</i> reefs and demersal trawling, resulting in exposure to physical damage, has been identified as a pressure for reef features within the North Norfolk Sandbanks and Saturn Reef SAC (JNCC, 2012). The JNCC Report No. 504 <i>Assessing the sensitivity of Sabellaria spinulosa</i> reef biotopes to pressures associated with marine activities (Gibb <i>et al.</i>, 2014) also</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>confirms that fishing activities are likely to result in physical disturbance impacts to reefs. As discussed above in answer to Part A, the Applicant considers that it is widely acknowledged that <i>S. spinulosa</i> reef is an ephemeral habitat, however, the Applicant considers that it is possible that some of the observed changes in distribution of <i>S. spinulosa</i> reefs in the southern North Sea may be attributable to bottom trawling.</p> <p>C) The Applicant would highlight that no Annex I <i>S. spinulosa</i> reef was recorded within the part of the Hornsea Three offshore cable corridor that coincides with the North Norfolk Sandbanks and Saturn Reef SAC during the baseline characterisation surveys. However, in acknowledgement of the ephemeral nature of this habitat, as outlined in Table 2.18 in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, the Applicant is committed to undertaking a pre-construction Annex I survey so that mitigation measures to avoid direct impacts to reefs can be defined which are appropriate on the basis of the extent of these features (if present) at the time of construction. The pre-construction Annex I survey would be scheduled within an appropriate timeframe to ensure that they are fit for purpose, which typically means within 12 to 18 months from construction. Although there is a very small residual risk that <i>S. spinulosa</i> reef may develop in the intervening period, the Applicant would highlight that such mitigation measures have been applied, and proved to be successful, over many offshore industries (e.g. oil and gas, interconnectors and offshore wind).</p> <p>D) The Applicant notes this is directed to NE and MMO but would highlight that the assessment of medium sensitivity of <i>S. spinulosa</i> reefs to temporary habitat disturbance, as described in paragraph 2.11.1.31 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, is based on sensitivity using the Marine Evidence based Sensitivity Assessment (MarESA) pressure benchmarks (i.e. Tillin and Marshall, 2018) as advised by Natural England in their Section 42 consultation response (see Table 2.6 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement). This is also consistent with the JNCC's sensitivity assessment of <i>S. spinulosa</i> reef to the Intergovernmental Correspondence Group on Cumulative Effects (ICG-C) pressure 'penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion' as presented in Gibb <i>et al.</i> (2014).</p>
Q1.2.21	Applicant	Paragraph 2.11.1.20 of the ES [APP-062] states that 25,000 m2 of Habitat E would be lost which would amount to approximately 30% of the Habitat E area within the Hornsea Project Three benthic	The Applicant refers the Ex.A to the Applicant's response to the MMO's Relevant Representation (RR-085) as submitted at Deadline I and would clarify that the assessment presented in paragraph 2.11.1.20 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) relates to effects associated with temporary habitat disturbance/loss.

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		<p>ecology study area. Paragraph 2.11.1.23 goes on to state that the magnitude of impact associated with the temporary loss of all benthic habitats during the construction phase would be minor.</p> <p>Given that the temporary loss of all other VER (Habitats A-D) would be around 3%, how is the magnitude of the predicted temporary loss of Habitat E justified as also being minor?</p>	<p>As discussed in paragraph 2.7.1.15 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, Habitat E corresponds to a single discrete area of <i>Sabellaria spinulosa</i> reef located within the Hornsea Three offshore cable corridor but outside the boundaries of a SAC/Site of Community Importance (SCI). This area of reef was assigned as 'medium reef' according to the relevant guidance for <i>S. spinulosa</i> reef assessment (i.e. Gubbay, 2007). The extent of Habitat E was estimated at 0.084 km<sup>2</sup> and the assessment of the magnitude of the impact of temporary habitat loss/disturbance of 29.63% of this habitat was based on the fact that this reduction would not alter the outcome of the <i>S. spinulosa</i> reef assessment in this locality (i.e. the reef would still be assessed as 'medium reef' on the basis of the extent criteria outlined in Gubbay, 2007). As the overall status of the reef would not change, the magnitude was considered to be minor.</p> <p>It should be noted that as outlined in paragraph 2.11.1.17 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, the assessment of temporary effects on Habitat E was highly precautionary on the basis that it assumed that cables would be installed through <i>S. spinulosa</i> reef (i.e. Habitat E). As outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, the Applicant is committed to employing appropriate mitigation measures to avoid direct impacts to <i>S. spinulosa</i> reef features, where possible. Therefore, the Applicant is confident that the extent of any temporary habitat loss/disturbance impacts to Habitat E as a result of cable installation will be considerably lower than those predicted within paragraph 2.11.1.20 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement.</p>
Q1.2.22	Applicant	<p>Paragraph 4.6 of the MMO's representation [RR-085] states that the VER would respond differently to the impacts arising from sediment disturbance, sandwave removal and smothering.</p> <p>The applicant is asked to comment on this point and to consider how separate significance ratings would alter the conclusions of the ES.</p>	<p>The Applicant refers the Ex.A to the Applicant's response to the MMO's Relevant Representation (RR-085), as submitted at Deadline I. Here it is explained that the assessment of the overall significance of the effect of temporary habitat disturbance/loss to Habitats A-E was based on an appraisal of how each of the habitats individually would respond to the impacts of sediment disturbance, sandwave removal and smothering. The assessment presented in paragraph 2.11.1.3 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) describes each of these impacts separately in order to provide an individual quantification of the effects. Both individually and overall, the significance of effects was considered to be of minor significance, and it should be noted that the assessment would have highlighted where there was an exception to this conclusion for a particular habitat.</p>

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Q1.2.23	Applicant	<p>Table 2.7 of the ES [APP-062] indicates that two benthic survey reports were more than 10 years old and that only one had been published in the last 3 years. Paragraph 2.6.1.2 states that this was deemed 'largely appropriate' by the expert working group.</p> <p>Please provide a justification of how these data provide a robust baseline from which to predict the likely benthic impacts of the proposal.</p>	<p>As outlined in the Applicant's response to Ex.A Question WQ-1.2.11 above, the primary purpose of the desktop data review was to provide context for the Hornsea Three site-specific data. The Applicant would highlight that, as described in paragraph 2.6.1.2 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062), the Hornsea Three array area is located within the former Hornsea Zone, for which extensive data and knowledge regarding benthic ecology was already available (e.g. from zonal studies and surveys/characterisations undertaken for Hornsea Project One and Hornsea Project Two). However, as outlined in section 2.6.4 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, a number of Hornsea Three site-specific surveys were undertaken to establish a robust and up-to-date characterisation of the baseline environment within the Hornsea Three array area and offshore cable corridor. The consistency of the habitats and biotopes recorded during the Hornsea Three site-specific surveys (and historical surveys within the former Hornsea Zone), as described in full in section 4 of Volume 5, Annex 2.1: Benthic Ecology Technical Report (APP-102), with those described in the desktop data sets in section 3 of Volume 5, Annex 2.1: Benthic Ecology Technical Report, demonstrates that the historical variation, over a period of more than 10 years, in the sediments and associated benthic habitats is low. The Applicant considers that this confirms that the benthic ecology baseline characterisation for Hornsea Three is robust.</p>
Q1.2.24	Applicant	<p>Paragraph 5.4.11 of NE's representation [RR-097] states that the benthic analyses were not appropriate for characterising the Markham's Triangle proposed Marine Conservation Zone.</p> <p>The applicant is asked to comment on this point.</p>	<p>The Applicant refers the Ex.A to the Applicant's full response to Natural England's Relevant Representation (RR-097), as submitted at Deadline I. In summary the Applicant's response confirms that, in relation to the evidence queried by Natural England (i.e. the Cefas/Defra survey evidence for Markham's Triangle proposed Marine Conservation Zone (pMCZ)), the raw data from this survey were made available to the Applicant (as described in paragraph 2.4.2.4 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102)) and were used by the Applicant to inform the benthic ecology baseline characterisation within this site as discussed in paragraph 3.1.3.32 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement .</p> <p>With respect to the JNCC Report 608 (Sotheran <i>et al.</i>, 2017) report identified by Natural England in their Relevant Representation, the Applicant would note that this report was not highlighted to the Applicant during the pre-application phase. The Applicant has however since reviewed the Sotheran <i>et al.</i> (2017) report and a full commentary is provided in the Applicant's response to Natural England's Relevant Representation. In summary, the minor differences in the biotope classifications which exist between those mapped in the Sotheran <i>et al.</i> (2017) report and those mapped by the Applicant within Markham's Triangle pMCZ in Figure 2.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) do not change the overall conclusions of the Environmental</p>

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			Impact Assessment or Volume 5, Annex 2.3: Marine Conservation Zone assessment of the Environmental Statement (APP-104) due to the similarities in biotope sensitivity, including recovery potential following disturbance.
Q1.2.26	Applicant	<p>Paragraphs 2.11.2.116 and 2.11.2.117 of the ES [APP-062] predict that the impact on VER would be long term, continuous and irreversible for the lifetime of Hornsea Project Three. Paragraphs 2.11.2.120 and 2.11.2.121 go on to state that Habitats B, D and E have high intolerance to changes in water flow.</p> <p>A) How is the low-medium sensitivity of Habitats B, D and E justified under these circumstances?</p> <p>B) How has the impact of residual structures that would remain after decommissioning been assessed?</p>	<p>A) The Applicant refers the Ex.A to paragraph 2.11.2.124 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) where it is explained that the potential changes to the rates of flow and wave regime as a result of the presence of Hornsea Three are predicted to be small and below the benchmarks of the relevant Marine Evidence based Sensitivity Assessment (MarESA) pressures (see paragraph 2.11.2.107 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement) used to inform the assessment of impacts to benthic receptors in paragraphs 2.11.2.118 to 2.11.2.123 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. For example, as discussed in paragraph 2.11.2.110 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement the presence of Hornsea Three is predicted to result in maximum changes in current speeds varying from <math>+0.04 \text{ ms}^{-1}</math> to <math>-0.1 \text{ ms}^{-1}</math> in the near-field only (i.e. primarily within the offshore wind farm footprint). The MarESA benchmark for changes in rates of water flow is a change in peak mean spring bed flow velocity of between <math>0.1 \text{ ms}^{-1}</math> to <math>0.2 \text{ ms}^{-1}</math> for more than one year (see paragraph 2.11.2.107 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement). Furthermore, baseline tidal currents across the former Hornsea Zone vary from approximately <math>0.6 \text{ ms}^{-1}</math> (at High Water) to <math>1 \text{ ms}^{-1}</math> (at Low Water) for peak mean spring tides and therefore, the predicted changes are within natural variability for this area. Therefore, the Applicant is confident that the assessment of sensitivity to the likely magnitude of the impacts is precautionary and although some effects on benthic receptors may be observed they are likely to be more subtle than described in paragraphs 2.11.2.118 to 2.11.2.123 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement.</p> <p>B) As outlined in section 3.14 of Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058), turbines and foundations will be removed during decommissioning and therefore there will be no impact to benthic receptors from a change to marine processes as a result of these structures post-decommissioning. Although scour and cable protection will be left in situ, as discussed in paragraph 2.11.2.110 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, these structures will only exert a highly localised influence on marine processes. Any effects on the wave and tidal regime as a result of the presence of cable and scour protection post-decommissioning will be inconsequential compared to the magnitude of the changes which are predicted during the operation phase due to the presence of foundations, as discussed above. The associated effects on benthic receptors post-decommissioning as a result of scour and cable protection will therefore be limited to habitat loss effects, as assessed in paragraph 2.11.3.38 et seq. of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement.</p>



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Q1.2.27	Applicant	<p>Paragraph 2.11.1.7 of the ES [APP-062] states that the temporary habitat loss resulting from unexploded ordnance clearance would be within the 15 m cable burial corridor.</p> <p>What evidence supports this assumption?</p>	<p>As outlined in paragraph 3.6.2.5 of Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058), due to the intensity of the surveys required to accurately identify unexploded ordnance (UXO), it was not practicable and proportionate during the pre-application phase to define the number, nature or indeed location of UXO which may require detonation, for the purposes of the Environmental Impact Assessment. The Applicant intends to apply for a separate Marine Licence, pre-construction, for the detonation (where required) of any UXO which may be identified in pre-construction surveys (noting that this is standard industry practice). This Marine Licence application would fully consider the impact of UXO detonation on benthic receptors.</p> <p>However, the Applicant is confident, based on prior experience at Hornsea Project One for example, that this activity will be limited to a discrete number of detonation events affecting a limited area. In many instances, UXO targets will simply be micrositied around and therefore there would be no need to detonate these UXOs. In other cases, UXO within the 15 m export cable installation corridor may need to be removed (if safe). Where detonation of UXO is required, the extent of the resulting seabed disturbance would be dependent on the size of the ordnance. Post-detonation data from other offshore wind farms have indicated that the diameter of craters created have been typically less than 10 m. The Applicant would also highlight that the maximum design scenario for other pre-construction activities (e.g. sandwave clearance and boulder clearance) considers temporary habitat loss/disturbance within wider corridor widths of up to 30 m.</p>
Q1.2.28	Applicant	<p>Paragraph 2.7.6.4 of the ES [APP-062] states that data limitations are such that the biotope map should not be interpreted as describing definitive areas.</p> <p>A) Given that the site-specific survey carried out along the export cable corridor within the Wash and North Norfolk SAC is limited in nature, what confidence can be attached</p>	<p>A) As outlined in the Applicant's response to Ex.A Question WQ-1.2.12 above, a combination of desktop data sources and Hornsea Three survey data were used to characterise the section of the Hornsea Three offshore cable corridor coinciding with The Wash and North Norfolk Coast Special Area of Conservation (SAC). The desktop data sets which were used to extend the nearshore biotope map generated from the Hornsea Three site specific benthic ecology data into The Wash and North Norfolk Coast SAC (i.e. into the re-route) are outlined in paragraph 2.7.6.2 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062). The desktop data indicated that the broadscale sediment types were similar across the area with sandy sediments inshore grading into coarse/mixed sediments further offshore within The Wash and North Norfolk Coast SAC. The consistency of this pattern across datasets and over a long time series, provided confidence in the extrapolation of biotopes into areas where there had been no site-specific sampling and confidence in the sufficiency of this information for the purposes of the Environmental Impact Assessment. This is on the basis that the biological communities present in any given area largely dictated by the type of sediment present (although noting that other factors e.g. exposure to currents and</p>

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		<p>to the mapping of the biotopes within the SAC?</p> <p>B) How is uncertainty addressed in the approach that has been taken in the ES?</p>	<p>depth etc. also play a role). Therefore, the sediment type can be confidently defined, it is possible to infer, with some confidence, the associated benthic communities.</p> <p>Paragraph 4.1.4.83 <i>et seq.</i> of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102) describe the biotopes mapped within the part of Hornsea Three offshore cable corridor re-route coinciding with The Wash and North Norfolk Coast SAC. The biotopes predicted are also shown in Figure 2.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. The biotopes mapped (i.e. the SS.SSa.IFiSa.NcirBat (NcirBat) sandy sediment biotope with relatively impoverished communities in the inshore area and the SS.SBR.PoR.SspiMx (SspiMx) and SS.SCS.ICS.MoeVen (MoeVen) biotopes with increasing distance offshore) were consistent with findings of previous surveys in this area for the Sheringham Shoal and Dudgeon offshore wind farms, as well as surveys within The Wash and North Norfolk Coast SAC.</p> <p>As outlined in the Applicant's response to Ex.A Question WQ-1.2.12 above, since the Hornsea Three DCO application was submitted in May 2018, the Applicant has undertaken a drop down video survey of the Hornsea Three offshore cable corridor that coincides with The Wash and North Norfolk Coast SAC in the nearshore area, which has validated the benthic ecology baseline and the impact assessment within the Environmental Statement.</p> <p>The Applicant, therefore, considers that the characterisation of the baseline environment within The Wash and North Norfolk Coast SAC is adequate and sufficient for the purposes of assessing the impacts of cable installation on benthic features of the SAC within Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement and the Report to Inform Appropriate Assessment (RIAA; APP-052).</p>



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			B) The data limitations referred to by the Ex.A in paragraph 2.7.6.4 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement apply to biotope mapping in general, rather than being specific to the nearshore re-route. As outlined in paragraph 2.7.6.4 Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, benthic communities and seabed sediments generally grade into one another and therefore boundaries shown in biotope maps should not be viewed as definitive boundaries. This is in contrast to delineation of discrete habitat features, such as reef habitats, as their boundaries are more readily defined and accurately mapped using a combination of geophysical datasets and video sampling. The limitations therefore apply to the boundaries between biotopes, rather than biotope classification in general and as outlined above, the consistency in the biotope classifications across a long time period and over multiple datasets provide a high degree of confidence in the biotope classifications. Any residual uncertainty (e.g. due to Annex I reefs which may develop prior to construction) will be controlled via the designed-in mitigation measures as outlined in the Applicant's response to Ex.A Question WQ-1.2.18 above.
Q1.2.31	NE	<p>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.</p> <p>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. Are you in agreement with the Applicant's approach of using the conservation objectives for the Cromer Shoals Chalk Beds Marine Conservation Zone?</p>	Whilst not directed at the Applicant, it is material to note that the Applicant was advised by NE and JNCC at The MCZ Working Group Meeting (4 <sup>th</sup> December 2017) that in the absence of conservation objectives for Markham's Triangle proposed Marine Conservation Zone (pMCZ), the draft Conservation Advice Package for Cromer Shoal Chalk Beds MCZ should be used.

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Q1.2.32	NE, MMO, TWT	<p>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.</p> <p>Do you agree with the decision not to assess certain impacts on benthic ecology receptors within this assessment or within the HRA in-combination assessment for the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation?</p> <p>If not, why not?</p>	<p>Whilst not directed at the Applicant, it is material to note that the approach to scoping out the cumulative impacts described in paragraph 2.12.2.3 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) was consistent with the approach adopted for the Preliminary Environmental Information Report (PEIR) and no comments relating to this were received during the section 42 statutory consultation on the PEIR from any consultees.</p>
Q1.2.33	Applicant	<p>Paragraph 2.13.2.19 of the ES [APP-062] only considers the magnitude of impact on the sandbank Annex I feature of the North Norfolk Sandbanks and Saturn Reef SAC.</p> <p>Why is there no cumulative impact assessment of the second Annex I feature of the SAC, namely the Sabellaria reef?</p>	<p>Paragraph 2.13.2.18 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) presents the cumulative assessment of temporary habitat loss on features of the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC). As outlined in paragraph 2.11.1.43 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, no Annex I reefs were identified during the site specific surveys of the Hornsea Three offshore cable corridor coinciding with the North Norfolk Sandbanks and Saturn Reef SAC. Any residual risks to reefs which may develop prior to construction will be adequately controlled via the mitigation measures adopted as part of the project (see Table 2.18 in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement). Specifically, these include a pre-construction survey to be undertaken to provide a detailed assessment of <i>S. spinulosa</i> along the offshore cable corridor which will enable appropriate mitigation measures (e.g. micro-siting) to be designed and discussed with the statutory consultees to avoid direct impacts to <i>S. spinulosa</i> reef, where possible. These measures are standard mitigation measures which have been applied, and proved to be successful, over many offshore industries. It is therefore assumed that any other projects operating within this SAC would apply similar mitigation should Annex I <i>S. spinulosa</i> reefs have the potential to be affected by these projects.</p>

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			<p>Furthermore, the results of the <i>S. spinulosa</i> core reef assessment presented in paragraph 2.11.1.47 <i>et seq.</i> of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement have demonstrated that the Hornsea Three offshore cable corridor is of sufficient width to allow for microsinoting around any potential Annex I reef features which may develop prior to construction.</p> <p>On this basis, cumulative effects on potential future Annex I <i>S. spinulosa</i> reef, as a result of Hornsea Three and other plans/projects are not predicted and, therefore, an assessment was not required within section 2.13 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement.</p>
Q1.2.34	Applicant	<p>Paragraph 2.13.2.28 of the ES [APP-062] identifies cumulative suspended sediment impacts on VER. Section 2.13.3 also identifies the cumulative long term loss of VER as a result of foundations, scour protection and cable protection. In both instances the significance of the effect is defined as minor adverse.</p> <p>A) Given the high sensitivity of the VER, please explain why the significance of the effect has not been classified as 'minor or moderate' as defined in table 2.17 of the ES?</p> <p>B) If it were classified in this way, how would this alter the findings of the ES?</p>	<p>A) The Applicant refers the Ex.A to the Applicant's response to the MMO's Relevant Representation (RR-085), as submitted at Deadline I. The approach to evaluation of significance of effect is outlined in paragraph 5.3.5.14 Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement (APP-060). The matrix approach, correlating magnitude of the impact and sensitivity of the receptor, has been adopted as a guide, with latitude for professional assessment, where deemed appropriate, in the application of the matrix. Specifically, where the matrix offers a choice of significance levels, professional judgement has been used to determine the most likely outcome. In paragraph 2.9.2.5 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) it is clarified that, in cases where a range is suggested for the significance of effect, there remains the possibility that this may span the significance threshold (i.e. the range is given as minor to moderate). In such cases the final significance concluded in the assessment is based upon the expert's professional judgement as to which outcome delineates the most likely effect. This is consistent with the methodology presented in Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement.</p> <p>In the instance of cumulative long term habitat loss, the effect was assessed to be of minor adverse significance rather than moderate adverse significance on the basis that the impact will be highly localised to within the vicinity of each project. Furthermore, as described in paragraph 2.13.3.4 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, if during decommissioning, offshore wind farm structures and oil and gas pipelines are removed, the impacts will be reversible with recoverability of the affected habitats likely, within time scales similar to those outlined in paragraphs 2.11.1.24 to 2.11.1.36 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, following removal of the structures.</p>

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			B) As discussed in response to Part A above, the Applicant is confident in the overall assessment of minor adverse significance and does not consider that it should have been classified as moderate adverse.
Q1.2.35	Applicant	<p>Paragraph A.6 of NE's representation [RR-097] and paragraphs 1.65 to 1.69 of the MMO's representation [RR-085] highlight issues with monitoring before and after the construction phase.</p> <p>Please comment on the points that have been raised and suggest any changes that may be necessary to the DMLs.</p>	<p>The Applicant would direct the Ex.A to the responses to the relevant sections of the MMO (RR-085) and Natural England Relevant Representations (RR-097) as submitted at Deadline I.</p> <p>The Applicant has considered the comments made by the MMO and Natural England on the monitoring commitments and has updated the In Principle Monitoring Plan (APP-182) to reflect the ongoing discussions with the MMO and Natural England on this matter. The updated In Principle Monitoring Plan has been provided in Appendix [2] of the Applicant's response to Deadline I.</p> <p>The Applicant has also updated the relevant sections of the draft DCO and DMLs (Version 1 submitted at Deadline I) which relate to monitoring commitments, to reflect the changes to the In Principle Monitoring Plan.</p>
Q1.2.36	Applicant	<p>Table 2.18 of the ES [APP-062] states that 'appropriate measures' will be discussed with statutory consultees to avoid direct impacts and this is repeated in a number of other instances.</p> <p>Please explain what you mean by appropriate measures.</p> <p>How would a duty to consult and the resultant implementation of any recommendations be controlled through the dDCO and DMLs?</p>	<p>The wording in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) has deliberately not referenced the precise nature of the measures to be implemented to avoid direct impacts to <i>Sabellaria spinulosa</i> reefs on the basis that the Applicant considers they should be informed by best practice, and current advice from the statutory consultees, at the time of construction.</p> <p>As per Schedule 11(1)(h) (Generation Assets) and Schedule 12, Part 2, Paragraph 12(1)(h) (Transmission Assets) of the draft DCO (APP-027), the duty to consult with the statutory consultees on any mitigation measures required within the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC) or The Wash and North Norfolk Coast SAC is secured, and the resultant implementation will be controlled, via the cable specification and installation plan which must be submitted to and signed off by the Marine Management Organisation (MMO) prior to the commencement of licensed activities.</p> <p>The appropriate measures referenced in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement for avoiding direct impacts to <i>S. spinulosa</i> reefs, are likely to include micro-siting. Micro-siting is a standard</p>

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			mitigation measure which has been applied and proved to be successful at reducing direct impacts to <i>S. spinulosa</i> reefs, over many offshore industries. This standard approach can also be used to avoid interactions with other seabed features, including unexploded ordnance and archaeological features.
Q1.2.37	Applicant	<p>The Band Model assumes the lowest astronomical tide (LAT) and a gap of around 35m between the turbine blades and the sea.</p> <p>A)How has the modelling accounted for bird strike for low flying species, such as gannets, under conditions of high swell which may reduce the gap?</p> <p>B)How does the model take account of changes in tidal height which may also reduce the gap?</p> <p>C)Is the model realistic in this respect and what information has been used to justify the use of LAT?</p>	<p>A) Collision Risk Modelling was undertaken using the Band (2012) collision risk model, as agreed in the Evidence Plan (APP-035).</p> <p>In the Band (2012), the air gap between the turbine blades and the sea is not a direct input parameter. Instead the air gap is incorporated into the calculation of the proportion of birds at collision height (PCH) either as part of the calculation of a site-specific PCH value (Option 1) or through the calculation processes in the Band model (Options 2 and 3, both of which use generic flight height distributions above the sea surface, included in the model).</p> <p>It is important, however, that the flight heights of birds are considered in the same frame of reference as the turbine design. The data used for flight height distribution and turbine heights (i.e. hub height) need to be calculated using the same reference point with respect to the sea surface, for collision risk modelling this is Mean Sea Level (MSL) and so all measurements are, for modelling purposes, corrected to this datum.</p> <p>For example, the hub height entered into the model is measured at Highest Astronomical Tide (HAT). This is corrected to MSL through the use of the tidal offset parameter. This is identified in Table 1.4 of Volume 5, Annex 5.3: Collision Risk Modelling (APP-109).</p> <p>Site-specific surveys of birds are conducted across long periods of time and therefore at various tidal states. For the purpose of collision risk modelling it is assumed that all bird flight height data is at MSL, as recommended in the guidance supporting the Band (2012) collision risk model. This is because it is assumed that birds orientate their flight height in response to the actual sea surface rather than an arbitrary datum. This is the standard approach used for all site-specific data used to inform assessments for offshore wind farms.</p>

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			<p>B) The calculation of PCH assumes that all bird flight heights are recorded at MSL. There is no function within the model that would allow for consideration in changes in tidal height and therefore it is assumed that there is an equal probability of sea heights above MSL as there are those below.</p> <p>C) See above: LAT is not used, MSL is used for bird flight heights and turbine parameters through the use of the tidal offset feature of the collision risk model.</p>
Q1.2.38	NE, Royal Society for the Protection of Birds (RSPB), MMO	<p>Representations from NE [RR-097], RSPB [RR-113] and the MMO [RR-085] consider that an appropriate site specific baseline has not been established.</p> <p>Why do you consider that two years of survey data is essential to provide an appropriate baseline?</p> <p>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?</p>	<p>The Applicant notes that this question is directed at Natural England, the RSPB and the MMO however, it should be noted that the applicant has collected 20 consecutive months of data from April 2016 to November 2017 (inclusive), which includes two breeding seasons.</p> <p>As discussed throughout the Evidence Plan process (see Consultation Report Annex 1 – Evidence Plan (APP-035)), the Applicant has used data from the wider Hornsea zone to understand the likely density and variability of key species during the period December – March.</p> <p>There is no indication that the Hornsea Three area is of particular importance to key species during this period, nor that the conclusions of EIA or HRA are sensitive to assumptions about the densities that are likely to be observed. It is considered that the approach taken to quantify risk to key species during all seasons in the Hornsea Three location allows for consideration of the appropriate level of precaution and that the assessment conclusions reached on the basis of these risk assessments is robust.</p>
Q1.2.39	Applicant	Paragraph 1.3.2.4 of the ES [APP-107] states that the project analysed boat-based and aerial survey data collected between 1979 and 2011. Paragraph 1.3.3.2 goes on to highlight the 'acute negative impacts' of climate driven changes on marine food webs.	The assessments presented in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP-051) are primarily based on contemporary site-specific baseline survey data with contextual data, such as WWT Consulting and MacArthur Green (2013), used to provide additional context. The data from this source has been used to contextualise the proposed Hornsea Three site into a wider context as these data provided, at the time the Application was made, the most recently available information on the distribution and relative abundance of seabirds at a large geographic scale.

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		What are the likely effects of climate change, since 2011, on this baseline and how might this affect the conclusions of the ES?	<p>WWT Consulting and MacArthur Green (2013) uses data collected over a large geographic area and more than 30 year period as a consequence it will already reflect longer term trends in the distribution and relative abundance of seabirds in this region. At the spatial scales being considered in these descriptions and the relatively brief period that has elapsed since the study was published the findings are still considered to be relevant. The effects of climate change on the information presented in WWT Consulting and MacArthur Green (2013) are difficult to identify during this short period of time since 2011, but due to the use of these data as contextual information any effects will not affect the conclusions presented in the EIA and HRA.</p> <p>With respect to quantitative risk assessments for Valued Ornithological Receptors (VOR), these are primarily based on recently collected site-specific survey data. The conclusions reached in the ES (and HRA) are therefore not directly reliant on the information presented in WWT Consulting and MacArthur Green (2013) with these data only used contextually, if required. There is therefore considered to be no effect on the conclusions reached in the ES (and HRA).</p>
Q1.2.40	Applicant	<p>Paragraph 5.2.1 of NE's representation [RR-097] states that only 10% of the digital aerial survey data that covers the study area has been used.</p> <p>Please confirm the extent of your analysis of aerial data and explain why you consider that it is appropriate.</p>	<p>It should be noted that Natural England is referring to 10% of the survey area (ie survey coverage) not that 10% of the data acquired in the survey campaign has been analysed. The Digital Aerial Survey (DAS) method, which was agreed within the EWG (see Appendix D, Section D.2 of Consultation Report Annex 1 – Evidence Plan (APP-035)) used for these surveys uses four high definition digital video cameras. Together these cameras record, using a 2.5km transect separation, up to 20% of the survey area. In common with most surveys using these methods data from 2 of the cameras was analysed, resulting in 10% coverage.</p> <p>The primary purpose of conducting two years of survey is to characterise variability in animal abundance within a site. Increasing the survey coverage can only reduce the error on the abundance estimate for any one survey. Thus increasing the survey coverage from 10% to 20% in this instance will provide improved precision for the months sampled. This has been achieved through other approaches in this instance. While improving the precision in the abundance estimate is inherently a good thing to do, the level of improvement is likely to be driven by a variety of factors, not least the actual abundance of animals present. Animals already present in relatively large numbers will see relatively small gains in precision, as there are already suitable data for estimating abundance with a sufficient level of precision. For animals at very low relative abundance the precision in the abundance estimate may increase more, but these species are likely to be less important for impact assessment because of their low abundance. As a general rule of thumb, as survey coverage increases, the improvements in the abundance estimate becomes less</p>



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			and less useful, as high levels of precision are generally not needed in these situations, where the biggest source of variability is the spatial distribution of the animals themselves at a scale much larger than the sampled area. It is clear that survey coverage of 10 – 20% is the accepted norm for these kinds of surveys. For example StUK 4 in Germany recommends at least 10% site coverage for characterisation surveys. It is surprisingly difficult to determine other levels of coverage in characterisation surveys for digital aerial surveys, but we note that other projects have used similar amounts of coverage to Hornsea Three. Dogger Bank Creyke Beck and Teesside projects all used 14% coverage while Norfolk Vanguard employed "at least 10%". The submitted coverage for Moray West was 10% and Lewis strategic surveys used 10% coverage.
Q1.2.41	Applicant	<p>Paragraph 2.6.1.5 of the ES [APP-110] states that the analysis of four long transects produced a representative sample of bird density.</p> <p>What is the statistical basis for assuming that this sample was representative?</p>	<p>The Applicant can clarify that this paragraph states only that by requiring a minimum of four long transects across the length of the HOW03, this would "be sufficient to represent a suitable north to south coverage of the site". The paragraph goes on to mention that <i>"suitable east to west coverage of the site can be achieved by rejecting month/year density or population estimates in which all the long transects occur either in the eastern or the western half of Hornsea Three."</i></p> <p>These requirements are used to ensure that data used in the assessment are not biased by uneven spatial coverage of the project area. The requirements are based upon basic survey design principles, which feature prominently in Buckland et al. (2001) and require that sample data are representative of the spatial extent of the study area.</p>
Q1.2.42	Natural England	<p>Paragraph 5.2.2 of NE's representation [RR-097] states that the hierarchical data selection method for integrating densities/numbers of species derived from digital aerial and boat-based survey data is flawed.</p> <p>Please explain in more detail why you consider the method to be flawed.</p>	<p>The Applicant notes this Question is directed at Natural England however the Applicant would draw the Examining Authorities attention to Appendix 8 to the Applicants response to Deadline I which outlines a sensitivity testing approach in relation to the baseline characterisation of Hornsea Three</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		What, in your view, are the implications for the findings of the ES and HRA?	
Q1.2.43	Applicant	<p>Paragraph 2.7.1.1 of the ES [APP-110] defines a formula for the calculation of a coefficient of variation for pooled density estimates.</p> <p>A) Was the variance for the different density estimates the same for each month for the digital aerial surveys and the boat-based surveys when used?</p> <p>B) If not, how would this affect the robustness of this statistic?</p>	<p>The paragraph in question describes a method for pooling density estimates from two or more years in the same month and for describing the lower and upper confidence limits for those density estimates. The question seeks to understand if it is important if differences in the variance of the sample data between component years will affect the robustness of the statistics used.</p> <p>A) There will always be different amounts of variation underlying any mean density estimate for different years in any given month, regardless of which method has been used to collect the data. This is typical for all seabird density data at sea, where there is usually a degree of variation between years in both the density estimates and the variance for those estimates. For example, where two years of digital aerial data were used to calculate the pooled density, coefficient of variation and confidence limits, the variance for the density estimates will have differed from each other in exactly the same way as the variance differed between those months which pooled the density across different survey methods.</p> <p>B) We have not found any published reference that states that pooling the abundance or density estimates is any less robust when the variances are dissimilar than when they are similar. The only effect of pooling in this way is that the pooled variance and coefficient of variance will usually be higher than the variance of the contributing estimate with the lowest variance, and consequently, the confidence limits will be wider for the pooled estimates. This is a robust way of capturing the variance in the data used to pool flying bird density estimates to calculate lower and upper confidence limits of the pooled density estimate and has no negative implications for the way that these estimates are used in the subsequent assessment.</p>

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Q1.2.44	Applicant	<p>Paragraph 2.7.1.2 of the ES [APP-110] states that the calculation of upper and lower confidence intervals assumed a normal distribution about the mean.</p> <p>How has this assumption been tested?</p>	<p>The mean and upper and lower confidence limits of the component data were calculated using a bootstrapping method. Since this is a non-parametric technique, the distribution of the underlying data is ignored, and the distribution of the bootstrapped data will tend to normality as the number of bootstrap samples increases (see Efron and Tibshirani (1993)).</p> <p>It is not possible to test whether the pooled distribution has a normal distribution with sample sizes of two or four. Similarly, examining the distributions of the component years' data does not work, as this is not the basis of this assumption, which is a pooled mean with confidence limits.</p> <p>The method employed is a robust technique to calculate lower and upper confidence limits for a pooled flying bird density estimate based on a low number of years of data. This method is more robust than using the highest and lowest density values of the component years, which does not account for the underlying variance in each of those component values.</p>
Q1.2.45	Applicant	<p>Figure 5.1 of the ES [APP-065] shows four different ornithological study areas. Please provide a diagram that depicts the different areas and sampling intensity of the digital aerial survey and boat-based surveys with the boundaries of the different ornithological study areas clearly indicated.</p>	<p>At Appendix 39 to the Applicant's response to Deadline 1 the Applicant has provided figures to show the different areas and sampling intensity for the Hornsea Three Ornithological surveys.</p>
Q1.2.46	Applicant	<p>Figure 5.7 of the ES [APP-065] shows gannet foraging density kernels that have been derived from satellite tracking studies.</p> <p>Please provide a revised figure that also shows the array area and export cable corridor.</p>	<p>This figure is taken from Langston <i>et al.</i> (2013) and was not produced by the Applicant. The location of Hornsea Three was identified in the version of the figure (Figure 1.18) presented in RIAA Annex 3 – Phenology, Connectivity and Apportioning (APP- 054) using a red star.</p> <p>The Applicant has however, requested the underlying Kernel Density Estimation data layer from the RSPB and will provide a more detailed figure when the data is received.</p>

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Q1.2.47	Applicant	<p>Paragraph 1.3.2.8 of the ES [APP-107] describes the importance of the 'Flamborough Front' and paragraph 1.3.2.10 goes on to stress the importance of Dogger Bank and Brown Ridge as key feeding areas.</p> <p>How have the nutrient upwellings and greater primary productivity associated with these areas informed the Valued Ornithological Receptors mean density surfaces and the conclusions of the ES?</p>	<p>Following relevant guidance (CIEEM, 2010), VOR were identified on the basis of their conservation status and importance, the latter being informed by their relative abundance within the project area. This abundance of seabirds within the survey area will reflect a range of environmental drivers, including the proximity of fronts and upwellings etc. The survey area for digital aerial surveys comprised the proposed wind farm plus a 4km buffer. Survey data from the wider Hornsea zone were obtained over a much larger geographic area.</p> <p>It is considered, therefore, that any influence of features such as the Flamborough Front are inherently reflected in the observed densities and distributions of seabirds recorded during surveys, which in turn is a factor in the identification of VORs and the baseline data that are used for risk assessment. These risk assessments inform the impact assessment and the conclusions of the ES.</p>
Q1.2.48	Applicant	<p>Paragraph 1.3.2.18 of the ES [APP-107] states that seabird abundance is influenced by three large geographic sectors, as shown in figure 1.3.</p> <p>A) Please elaborate on the relevance of this broad classification in terms of its influence on the distribution and abundance of prey items at the scale of the array and cable export corridor.</p> <p>B) Please explain how this has informed the conclusions you have reached in the ES.</p>	<p>A) The use of the broad classifications as defined by Stone <i>et al.</i> (1995) allows for consideration of Hornsea Three in a regional context and provides information on the general trends and distribution of birds and in-combination with other contextual information sources allows for consideration of the underlying factors that may influence this distribution (e.g. abundance of prey items) that occur in these different areas. This information supplements site-specific information upon which much greater weight is placed in terms of the assessments presented.</p> <p>B) Following relevant guidance (CIEEM, 2010), Valued Ornithological Receptors (VOR) were identified on the basis of their conservation status and importance, the latter being informed by their relative abundance within the project area. This abundance of seabirds within the survey area will reflect a range of environmental drivers, including the proximity of fronts and upwellings etc. The survey area for digital aerial surveys comprised the proposed wind farm plus a 4km buffer. Survey data from the wider Hornsea zone were obtained over a much larger geographic area.</p> <p>It is considered, therefore, that the factors that inform the broad classifications presented in Stone <i>et al.</i> (1995) are reflected in the observed densities and distributions of seabirds recorded during surveys, which in turn is a factor in the identification of VORs and the baseline data that are used for risk assessment.</p>

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Q1.2.49	Applicant	<p>Paragraph 1.6.1.2 of the ES [APP-107] states that species occurring in the Hornsea Project Three array area were identified using site-specific aerial surveys whilst those within the cable corridor were identified as part of the designation process for the Greater Wash pSAC.</p> <p>Please elaborate on what data were used to establish the baseline populations for the export cable corridor.</p>	<p>The baseline populations used for assessments in Volume 2, Chapter 5: Offshore Ornithology (APP-065) are sourced from Lawson <i>et al.</i> (2015) and represent the regional population (the Greater Wash) of relevant species.</p> <p>In the RIAA (APP-051) the designated populations for the Greater Wash pSPA have been used (note that the pSPA has now been fully designated).</p> <p>The derivation of these populations is fully explained in Lawson <i>et al.</i> (2015) and the documentation supporting the designation of the Greater Wash SPA. The use of these populations represents the best available data for these species within the Greater Wash and is in line with standard offshore wind industry practice, providing biologically appropriate reference populations against which impacts can be assessed. The approach applied is consistent with the approach applied for all species throughout Volume 2, Chapter 5: Offshore Ornithology (APP- 065) and the RIAA (APP-051) when defining regional populations (i.e. using desk-based sources as regional populations cannot be defined using only site-specific survey data).</p>
Q1.2.50	Applicant	<p>Table 1.4 of the ES [APP-107] shows the definition of biological seasons for the species that may be affected by the proposal.</p> <p>A) Why have you not used the standard definition of biological seasons as set out in Furness (2015) and recommended by NE and RSPB?</p> <p>B) If the standard definition were used, how would this alter the findings of the ES?</p>	<p>A) The 'standard' seasonal definitions are presented in Furness (2015) and represent generic time periods which apply to large sea areas (e.g. the English Channel to Shetland) across which differences in bird phenology will occur. The definition of breeding seasons in Furness (2015) was based on analysis of non-breeding periods and therefore are not necessarily representative of the phenology of birds at FFC pSPA or at Hornsea Three.</p> <p>During the Evidence Plan process, Natural England recommend that, where possible colony or site-specific seasons should be used and through the analysis in RIAA Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA (APP-054), the Applicant has defined site-specific seasonal definitions. This approach utilised an analysis of survey data from a number of offshore wind farms in the North Sea (see Section 1.2 in RIAA Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA) and, with the exception of puffin for which the analysis suggested a more refined breeding season definition, are consistent with those recommended and used by Natural England during the examination of the Hornsea Project Two offshore wind farm. It should be noted that it is not clear why Natural England's position has changed as no new evidence is available.</p>

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			<p>B) Using the 'standard definitions' would alter the seasonal definitions for gannet, kittiwake and puffin only.</p> <p>For gannet, the number of collisions in the breeding season would increase by 25% with the number of collisions when using Option 2 increasing to over 1% of baseline mortality in the breeding season. However, the conclusions in the ES would remain valid as it is considered that Option 2 over-estimates the number of collisions at Hornsea Three due to the use of a generic flight height distribution which is not representative of bird behaviour at Hornsea Three.</p> <p>For kittiwake, the number of collisions in the breeding season would increase by approximately 24% with the number of collisions when using Option 2 at a 98.9% avoidance rate increasing to over 1% of baseline mortality in the breeding season. However, the conclusions in the ES would remain valid as it is considered that Option 2 over-estimates the number of collisions at Hornsea Three due to the use of a generic flight height distribution which is not representative of bird behaviour at Hornsea Three.</p> <p>There would be no change to the magnitude of displacement impacts for puffin as the peak populations for puffin used to calculate a mean-peak population occur in May of both years with May included in the breeding season definition defined by the Applicant.</p> <p>It should be noted that the 'standard definitions' are different to those previously applied by Natural England during the examination of the Hornsea Project Two wind farm (specifically see paragraphs 3.47 to 3.51 of Natural England's submission at Deadline 5 of the Hornsea Project Two examination for kittiwake).</p>
Q.1.2.51	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 colony specific data rather than 'at sea'	<p>Hornsea Three is located 150 km from FFC pSPA and in terms of the calculation of impacts the phenology of birds at Hornsea Three is fundamentally more important than the phenology of birds 150 km away (i.e. beyond the foraging range of the majority of key species) at FFC pSPA.</p> <p>There is no colony-specific data publicly available for FFC pSPA. The Applicant has contacted the RSPB who are the colony managers and are unable to provide further information that would assist Hornsea Three.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>abundance data to define the length of the breeding season.</p> <p>Please provide a summary of the key findings and associated caveats of any peer reviewed evidence that supports your view.</p> <p>How would the use of colony data most likely alter the findings of the ES and the HRA?</p>	<p>The Applicant has based the seasonal definitions for key species at FFC pSPA on survey data (collected to support planning applications for offshore wind farms throughout the English North Sea) and contextual information on the movements of birds. This is presented in RIAA Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA (APP-054) and is considered to accurately reflect the phenology of birds at Hornsea Three (i.e. where impacts will occur).</p> <p>The seasonal definitions used throughout assessments for all species (with the exception of puffin) are consistent with those advised and used by Natural England as part of their assessments produced for Hornsea Project Two (see Natural England's submissions at Deadline 3 and Deadline 5, specifically paragraphs 3.47 to 3.51 for Hornsea Project Two). It is not clear why Natural England's position has changed as no new publically available scientific evidence or colony data has been published.</p> <p>As no colony data are available, it is not possible to identify how such data may alter the findings of the ES and HRA, if at all. The Applicant considers that the seasonal definitions used are informed by the best available evidence, including information relating to the phenology, distribution and movements of birds in addition to survey data collected throughout the southern North Sea and are robust and appropriately precautionary.</p>
Q1.2.52	Applicant, NE	<p>The RSPB [RR-113] considers that herring gull should not have been scoped out of the impact assessment.</p> <p>Please can the Applicant comment on this point.</p> <p>Does NE think that herring gull should have been identified as a Valued Ornithological Receptor?</p>	<p>The only impact associated with Hornsea Three for which herring gull would be considered vulnerable is collision risk. The densities of herring gull recorded in flight during baseline surveys at Hornsea Three were not considered to be high enough to warrant the identification of herring gull as a VOR.</p> <p>A VOR was identified where the numbers present at Hornsea Three plus a 4 km buffer exceeded the 1% threshold of the regional population in any season. It was considered that any impacts on species occurring in numbers of less than 1% of the relevant regional population would not be significant. This process was not however, applied as a definitive threshold with expert judgement also used to identify species for which this threshold may not have been applicable and therefore ensure that species were not erroneously omitted from further assessment.</p>

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		If not, why not?	<p>During post-submission consultation with the RSPB, as a good will gesture, the Applicant agreed to conduct collision risk modelling for herring gull. This exercise was conducted in order to provide the RSPB with the detail requested and not because the Applicant accepted that herring gull is a VOR which merited collision risk assessment in the ES. This is contained within Appendix 12. This note concludes:</p> <p><i>"The number of collisions for herring gull as a proportion of the relevant reference population using either of the three Band model Options is considered to be negligible. There would therefore be no significant effects on the status of herring gull as a result of the operation of Hornsea Three. This supports the conclusion to discount herring gull as a VOR in Volume 5, Annex 5.1: Baseline Characterisation Report (APP-107)."</i></p>
Q1.2.53	Natural England, RSPB	<p>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).</p> <p>Do you agree that this survey data should be used to calculate displacement from the export cable corridor?</p>	The Applicant notes this question is directed at Natural England and the RSPB and the Applicant does not have anything further to add on this for Deadline 1.
Q1.2.54	Natural England	Paragraph 5.2.5 of NE's representation [RR-097] states that there is a need to account for uncertainty associated with natural variability and the underlying data sources.	<p>The Applicant notes this question is directed at Natural England but would highlight that the uncertainty and variability associated with collision risk estimates has been taken into account in the assessments presented in both the ES and RIAA (for example see paragraph 5.11.2.107 in Volume 2, Chapter 5 Offshore Ornithology of the Environmental Statement (APP-065)). Collision risk estimates calculated using confidence metrics associated with density data, flight height distribution and avoidance rate are presented in Volume 5, Annex 5.3: Collision Risk Modelling (APP-109).</p> <p>The use of a mean-peak populations for displacement analysis is considered to take into account the year to year variation in seabird abundance with this approach consistent with that advised by JNCC et al. (2017). It is not</p>

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		<p>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?</p>	<p>considered appropriate to use the confidence limits associated with population estimates to calculate mean-peak populations as such confidence metrics are independent and describe the variability around individual population estimates. Averaging these confidence intervals is therefore not a valid statistical approach and does not describe the variability around the mean-peak population estimate.</p>
Q1.2.55	Applicant	<p>Table 1.4 of the ES [APP-109] expresses hub height in metres above the Highest Astronomical Tide (HAT) rather than metres above the Lowest Astronomical Tide (LAT).</p> <p>If LAT were used as a parameter rather than HAT how would this alter the findings of the ES?</p>	<p>The change proposed would not make any difference to the findings of the ES [APP-109] as these parameters are corrected to MSL for the purposes of collision risk modelling. Please refer to our response to Q1.2.37.</p>
Q1.2.56	Natural England	<p>Paragraph 5.9.3.4 of the ES [APP-065] refers to the use of mean estimate/maximum likelihood methods to estimate collision risk.</p> <p>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)?</p>	<p>The Applicant notes this question is directed at Natural England and the Applicant does not have anything further to add on this for Deadline 1.</p>



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Q1.2.57	Applicant	<p>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.</p> <p>A) Please explain why, with reference to statistical inference, this would provide unrealistic estimates of the collision risks associated with the proposal.</p> <p>B) Why were only bird density and flight height selected as the parameters for the upper and lower confidence intervals of the CRM?</p>	<p>A) The use of upper and lower confidence limits associated with the metrics identified describe the variation in these parameters. Essentially, when estimating these parameters, the use of 95% confidence limits indicates that 95% of predicted values would fall within the range of the confidence intervals. There is no statistically robust way in which these confidence intervals could be combined and combining confidence limits for multiple parameters would not provide a collision risk estimate that would describe the confidence around the mean collision risk estimate. The resulting value would in fact be meaningless and represent a considerable over- or under-estimate of the likely collision impact. Previous assessments including those conducted by Natural England at Hornsea Project Two have considered the confidence intervals for different parameters individually (for example see Natural England submission at Deadline 3 during the examination of Hornsea Project Two).</p> <p>The assessments presented in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP_051) consider the variability associated with density data, flight height distribution and avoidance rates with a full range of collision risk estimates presented in Volume 5, Annex 5.3: Collision Risk Modelling) (APP-109). The implications of variability in these parameters is discussed in all relevant assessments presented in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the RIAA (APP-051) (see for example paragraph 5.11.2.107 in Volume 2, Chapter 5: Offshore Ornithology (APP-065)).</p> <p>It is important to note that the collision risk estimates predicted when using the upper and lower confidence intervals associated with relevant parameters describe the range within which the true collision risk estimate would fall. It is therefore statistically inappropriate to use the collision risk estimates associated with the upper or lower confidence intervals to suggest that this would be the actual number of collisions and instead, these should be used to inform the confidence that can be placed in the predicted best estimate of collision risk and thus inform any assessments conducted.</p> <p>B) In addition to the confidence intervals associated with density and flight height distribution, collision risk estimates calculated using the confidence intervals using the confidence intervals associated with avoidance rate are also presented in Volume 5, Annex 5.3: Collision Risk Modelling (APP-109).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			Density data, flight height distribution and avoidance rates are the three parameters for which there is likely to be the largest level of variability and as such it is these three parameters that have been incorporated into collision risk modelling with this approach welcomed by Natural England (Natural England's Discretionary Advice provided 16 <sup>th</sup> February 2018).
Q1.2.58	Applicant	<p>Paragraph 5.13.3.93 of the ES [APP-65] states that correction factors were applied to the CRM for different species.</p> <p>Please provide a copy of the publication that underpins these corrections (MacArthur Green (2017) - Estimates of Ornithological Headroom in Offshore Wind Farm Collision Mortality. The Crown Estate).</p>	MacArthur Green (2017) - Estimates of Ornithological Headroom in Offshore Wind Farm Collision Mortality is provided at Appendix 43 to the Applicant's response to Deadline 1.
Q1.2.59	Natural England	<p>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.</p> <p>Please explain why you consider that the parameterisation of NAFs is wrong. How do you say it should be improved?</p> <p>Can you refer to any appropriate peer reviewed literature to support your view?</p>	The Applicant notes this question is directed at Natural England however, the Applicant would draw the Examining Authorities attention to Appendix 10 to the Applicants response to Deadline I which provides additional information in relation to the nocturnal activity factors used for collision risk modelling and an explanation as to why those historically used for collision risk modelling are highly likely to over-estimate collision risk.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.60	Applicant	<p>The RSPB [RR-113] questions the changes in NAF for kittiwake and gannet.</p> <p>Please comment on the points made by the RSPB and justify your approach. Can you refer to any appropriate peer reviewed literature to support your view?</p>	<p>At Hornsea Three a literature review of relevant studies was conducted for four of the species identified for collision risk modelling (gannet, kittiwake, lesser black-backed gull and great black-backed gull) with this review identifying that the classification of nocturnal activity by Band (2012) based on information presented in Garthe and Hüppop (2004) was over-estimating nocturnal activity (Appendix D of Volume 5, Annex 5.3: Collision Risk Modelling (APP-109)).</p> <p>The nocturnal activity factors applied in collision risk modelling by the Applicant were identified based on best available evidence (see Appendix D of Volume 5, Annex 5.3: Collision Risk Modelling (APP-109) and are those recommended for use by Scottish SNCBs.</p> <p>The change in nocturnal activity for kittiwake (i.e. from 3 to 2) is consistent with that advised by the RSPB for offshore wind farm projects in Scotland (see for example the Scoping Opinions submitted for the Forth and Tay offshore wind farm projects).</p> <p>The nocturnal activity factors used for gannet and kittiwake are based on empirical evidence as detailed in Appendix D of Volume 5, Annex 5.3: Collision Risk Modelling (APP-109). There is a significant, growing body of evidence, that suggests the percentage rates assigned to the nocturnal activity rates presented in Garthe and Hüppop (2004) by Band (2012) lead to over-estimates of collision risk with the rates proposed by Band (2012) not based on any scientific evidence. The use of percentage rates was also not the intention of Garthe and Hüppop (2004) with these scores not intended to represent quantifiable rates of nocturnal activity rather they were intended to indicate that those bird species that scored higher were more likely to show more nocturnal flight activity than those that scored lower (Furness et al. 2018). The quantification of the rates of nocturnal activity in Garthe and Hüppop (2004) by Band (2012) was therefore incorrect and considerably over-estimates the actual level of nocturnal activity exhibited by birds.</p> <p>A recently published paper (Furness <i>et al.</i>, 2018) presents nocturnal activity rates for gannet based on empirical evidence. A similar exercise is also being conducted for kittiwake, with preliminary results presented in the planning</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>application for the Norfolk Vanguard offshore wind farm. The rates presented support the use of lower nocturnal activity rates as applied in the collision risk modelling for Hornsea Three. The implications of using these rates has been investigated in Appendix 10 to the Applicants response to Deadline 1 and it is considered that these rates now represent the best available evidence in relation to nocturnal activity factors.</p> <p>The RSPB state that peaks in the abundance of birds at first light have not been accounted for in the nocturnal activity factors recommended by Furness <i>et al.</i>, 2018) (for example). However, peaks in abundance that may occur at first light should not be accounted for by increasing the nocturnal activity factor which is used in the collision risk model to calculate the collision risk at night. The nocturnal activity rate used represents the activity expected as a proportion of daylight activity. As such, the application of a nocturnal activity factor does not require consideration of peaks in activity that may occur at first light as the amount of nocturnal activity is the same regardless of the activity that occurs in daylight hours. Therefore if an increased amount of daylight activity is expected (e.g. at sunrise), the nocturnal activity factor used in the model would be scaled to ensure the same amount of nocturnal activity was assumed in the model. Uncertainty in relation to the abundance of birds at a project (e.g. due to peaks at first light) should not be captured by arbitrarily increasing defined parameters, instead this form of uncertainty should form part of the avoidance rate (which represents bird avoidance behaviour and corrections for various assumptions made in the collision risk model).</p> <p>It is worth noting that Marine Scotland have previously stated that the RSPB's position appears to conflate nocturnal activity with colony attendance, foraging activity and timing of at-sea surveys and lacks an adequate empirical basis (see the Scoping Opinion's submitted for the revised application for the Neart na Gaoithe, Inch Cape and Seagreen offshore wind farms (e.g. Marine Scotland – Licensing Operations Team, 2017).</p>

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Q1.2.61	Natural England, RSPB	<p>Appendix B of the ES [APP-109] outlines the approach to CRM that was applied to migratory seabirds.</p> <p>Notwithstanding your concerns about the baseline data and model parameterisation, do you agree with the underlying approach that was used for the CRM for migratory seabirds?</p> <p>If not, why not?</p>	<p>The Applicant notes this question is directed at Natural England and the RSPB however, would like to state that migratory collision risk modelling is not based on site-specific information. The approach applied is also the standard approach that has been applied as part of the assessments conducted for multiple offshore wind farm projects.</p>
Q1.2.62	Applicant	<p>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.</p> <p>Please can you provide a summary of any peer reviewed publications or empirical observations that have been published since the application was submitted and highlight any implications that this might have for the CRM parameterisation.</p>	<p>The Applicant has provided Skov <i>et al.</i> (2018) at Appendix 41 and and Furness <i>et al.</i> (2018) at Appendix 40 to the Applicant's response to Deadline 1.</p> <p>The Applicant has produced a clarification note as presented at Appendix 10 to the Applicants response to Deadline 1 that investigates the effect on collision risk impacts as a result of using updated best available evidence. The clarification note includes consideration of nocturnal activity factors (Furness <i>et al.</i>, 2018; MacArthur Green, 2018), bird flight speed (Skov <i>et al.</i>, 2018) and avoidance rates (Skov <i>et al.</i>, 2018) with considerable reductions in collision risk identified for kittiwake.</p> <p>It is considered that the collision risk estimates presented in (add reference) are based on the best available evidence and as such are the most accurate quantification of this impact upon offshore ornithological receptors present at Hornsea Three.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.63	Applicant	<p>Section 3 of the ES [APP-110] contains species accounts that apply analytical results to displacement analysis and CRM for key species.</p> <p>Why are there no tables showing seasonal means for black-legged kittiwake, lesser black-backed gull and great black-backed gull?</p>	<p>Seasonal means are used in displacement analyses and therefore have only been calculated for those species considered vulnerable to displacement impacts. Kittiwake, lesser black-backed gull and great black-backed gull are not sensitive to displacement impacts (Wade <i>et al.</i>, 2016) and therefore seasonal means do not need to be calculated.</p>
Q1.2.64	Natural England, RSPB	<p>Appendix C of the ES [APP-109] outlines the approach to CRM that was applied to migratory water birds.</p> <p>Notwithstanding your concerns about the baseline data and model parameterisation, do you agree with the underlying approach that was used for the CRM for migratory water birds?</p> <p>If not, why not?</p>	<p>The Applicant notes this question is directed at Natural England and the RSPB however, would like to state that the approach applied is the standard approach (Wright <i>et al.</i>, 2012 or Migropath) that has been applied as part of the assessments conducted for multiple consented offshore wind farm projects (e.g. Hornsea Project Two, East Anglia Three).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.65	Natural England, RSPB	<p>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.</p> <p>Notwithstanding your concerns about the baseline data, do you agree with the underlying approach that has been used to assess these impacts and the resulting conclusions?</p> <p>If not, why not?</p>	The Applicant notes this question is directed at Natural England and the RSPB however, would like to state that the analyses conducted for these impacts are not reliant on site-specific baseline data and follow a standard approach that has been applied as part of the assessments at multiple consented offshore wind farm projects (e.g. Hornsea Project Two).
Q1.2.66	Natural England, RSPB	<p>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 North Sea razorbill population.</p> <p>Do you agree that the complexities of the razorbill population structure preclude attempts to compare predicted displacement effects?</p> <p>If you do not agree, how might such an assessment be undertaken?</p>	The Applicant notes this question is directed at Natural England and the RSPB however, despite the difficulties of evaluating cumulative effects on the non-breeding component of the North Sea razorbill population, the Applicant has provided a detailed assessment in paragraphs 5.3.13.28 to 5.13.3.58.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.67	Natural England, RSPB	<p>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 to state that the displacement analysis for the cable corridor only included a 2km buffer.</p> <p>Do you agree with the choice of buffer zone for the cable corridor given the presence of common scoter and red-throated diver?</p>	The Applicant notes this question is directed at Natural England and the RSPB however it should be noted that the guidance referred to is in reference to impacts occurring at an array area. The use of a 2 km buffer for a cable route is based on advice provided by Natural England at a number of offshore wind farm projects (e.g. Norfolk Vanguard and Thanet Extension).
Q1.2.68	Applicant	<p>Table 5.8 of the ES [APP-065] states that the maximum design scenario (MDS) for direct displacement or disturbance would be a duration of eight years, assuming a two phase construction programme.</p> <p>A) Please explain why this was chosen as the MDS.</p> <p>B) Why would disturbance and displacement be any greater than it would for two consecutive phases given that the absolute period over which construction activity would take place would be the same?</p>	<p>A) The construction phase will last up to eight years over two phases. A gap of up to three years will occur between an activity finishing in the first phase and starting in the second phase of construction thus providing a temporal period of up to eleven years assuming a two phase construction. This is considered, on a precautionary basis, to represent the worst case scenario as it is longest temporal period across which impacts could occur.</p> <p>B) In practice it is unlikely that any impact would be greater if the phased approach were to be adopted. However, on a precautionary basis, the phased approach, representing a longer temporal period across which impacts would occur, was selected as the worst case scenario.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.69	Applicant, NE, RSPB	<p>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 assessment criteria.</p> <p>A) 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].</p> <p>B) 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.</p> <p>C) Do NE and RSPB agree with the comparison of predicted mortality against background mortality as a means of 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</p>	<p>A) With respect to displacement 1% of baseline mortality is indicated to aid interpretation of the magnitude of a predicted impact. If the mortality from an impact represents less than 1% of the baseline mortality for the relevant reference population then it points to a magnitude of impact (in EIA terms) that is very low, as it represents a very small change (by definition) of that reference population. The origin of the 1% criterion as an indication of small changes in a population is explained below.</p> <p>It should be noted that, in this assessment, 1% of background mortality is not treated as a threshold but an indication of the magnitude of an impact which is considered together with other factors as set out in paragraphs 5.9.4.16, 5.9.4.17 and Table 5.14 of the Environmental Statement (APP-065).</p> <p>The use of the 1% baseline mortality in this way was discussed and agreed as part of the Evidence Plan process (see Section D5 of Appendix D of the Consultation Report Annex 1 – Evidence Plan (APP-035)).</p> <p>B) Background mortality is calculated by multiplying the relevant reference population by the mortality rate of the species in question. The source of reference populations is presented in Table 1.5 of Volume 5, Annex 5.1: Baseline Characterisation Report (APP-107) with mortality rates calculated as the inverse of the survival rates presented in Horswill and Robinson (2015).</p> <p>The use of 1% of baseline mortality to understand the likely magnitude of an impact derives from attempts to interpret Article 9(1)(c) of the Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds ("The Birds Directive")). This article provides a derogation from the provisions of the Directive to allow the taking of "small numbers" of birds for hunting purposes. The ORNIS committee was tasked with identifying what "small numbers" constituted and advised, for practical purposes, that this could be considered to be a number less than or equivalent to 1% of the baseline mortality of the relevant population. This was seen to be a reasonable threshold because mortality of this level would have a negligible effect on the population dynamics of the species concerned and because the parameters of population dynamics are seldom known to within less than 1 percentage point and bird taking amounting to less than 1% can be ignored from a mathematical point of view in model studies. See paragraph</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		been presented in section 1.4 of the ES [APP-108]?	3.5.33 of "Guidance document on hunting under Council Directive 79/409/EEC on the conservation of wild birds "The Birds Directive" " European Commission DOC/ORN. 04/02.
			C) The Applicant notes the part of the question directed at Natural England and the RSPB and would draw the Examining Authorities attention to the Evidence Plan meeting minutes presented in Section D5 of the Consultation Report Annex 1 – Evidence Plan (APP-035) where the approach applied by the Applicant was recommended by Natural England and accepted by the RSPB.
Q1.2.70	Natural England, RSPB	Table 5.9 of the ES [APP-065] summarises the assessment criteria for displacement effects and mortality rates for the array area.  Do you agree with the displacement and mortality rates and if not, what values would you recommend?	The Applicant notes this question is directed at Natural England and the RSPB however, would like to highlight that the displacement rates and mortality rates applied by the Applicant are based on an extensive literature review representing the best available evidence. Displacement analyses also present displacement mortality across the full range of displacement and mortality rates.

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Q1.2.71	Applicant	<p>Table 5.17 of the ES [APP-065] summarises the displacement mortality for red-throated diver for the cable corridor area.</p> <p>Please provide the equivalent tables for fulmar, gannet, puffin, razorbill and guillemot for the cable corridor and array areas.</p>	<p>The assessments for gannet, guillemot, razorbill and puffin in relation to disturbance during the construction phase are provided in Section 5.11.1 of Volume 2, Chapter 5: Offshore Ornithology (APP-065). Fulmar is not considered vulnerable to impacts associated with disturbance in the construction phase and was therefore scoped out of consideration. Gannet is also not considered vulnerable to disturbance impacts due to construction activities associated with cable installation and is therefore scoped out of consideration however, the species is considered for disturbance impacts occurring at the array area during the construction phase.</p> <p>Baseline data is unavailable for the cable corridor and therefore it is not possible to provide equivalent tables for guillemot, razorbill and puffin for the cable corridor. This does not however, limit the assessment provided as it is considered unlikely that the cable corridor represents an important area for these species and the magnitude of any impact is considered to be lower than that associated with impacts occurring at the array area.</p> <p>The equivalent values for these species at the array area are presented in Volume 5, Annex 5.2: Analysis of Displacement Impacts on Seabirds (APP-108) and in the relevant species assessment sections in Volume 2, Chapter 5: Offshore Ornithology (APP-065).</p>
Q1.2.72	NE	<p>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.</p> <p>Please explain why you consider that the values that have been used are inadequate. What effect do you think this is likely to have had on the impact assessment and the HRA?</p>	<p>The Applicant notes this question is directed at Natural England but would draw the Examining Authorities attention to the Applicant's response to paragraph 5.2.4 in the Natural England Relevant Representation (RR-97) as submitted at Deadline 1...</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.73	Applicant	<p>Paragraph 5.11.2.115 of the ES [APP-065] states that the collision risk for gannets is negligible. Paragraph 5.11.2.107 states that more than 1% of the regional breeding population would be affected if flight height data are considered. A lower mortality rate is also given in paragraph 5.11.2.106.</p> <p>Please explain these apparently contradictory statements.</p>	<p>If using the upper 95% confidence limit flight height distribution from Johnston <i>et al.</i>, (2013) in collision risk modelling for gannet (as in paragraph 5.11.2.107), the resulting collision risk estimate in the breeding season represents more than a 1% increase in the baseline mortality of the regional population. The values used for assessment (i.e. those presented in paragraph 5.11.2.106) are those calculated using the maximum likelihood values for flight height distribution with these considered to provide a statistically robust figure against which assessments can be made.</p> <p>The confidence that can be placed in the collision risk estimates calculated using the maximum likelihood value for flight height distribution is described through the use of upper and lower confidence limits. The upper and lower 95% confidence limits describe the range of values within which the true collision risk estimate lies with a 95% certainty (i.e. the variability). This range is described by a bell shape and if input parameters were randomly sampled and modelling conducted multiple times, there would be a higher frequency of values towards the middle of the bell shape. To provide a statistically robust value, the mean (or maximum likelihood) value is used. Assessments should not be based on the collision risk estimate derived when using the upper confidence limit (or the lower confidence limit) as these describe the variability and do not provide a value upon which assessments should be based. It would be incorrect and grossly over-precautionary to apply the upper confidence limit for all parameters in the CRM.</p> <p>For assessment purposes, it is however important to acknowledge the variability associated with input parameters (as the Applicant as done for gannet in paragraph 5.11.2.107 of Volume 2, Chapter 5: Offshore Ornithology (APP-065)), the collision risk estimate derived from using the mean/maximum likelihood estimate is considered to be statistically robust.</p> <p>Although Band (2012) suggests replacing the central estimate of the proportion in each height band by its upper confidence limit when estimating collision risk, this is not an appropriate method as the proportion of birds at different flight heights are not independent of one another.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.74	Applicant	<p>Paragraph 5.2.3 of NE's representation [RR-097] raises concerns over the application of Option 3 of the Extended Band Model in estimating the collision risk to gannet, kittiwake, lesser black-backed gull and great black-backed gull.</p> <p>Please explain how the assessment of the significance of the effects of collision related mortality would alter if the assessment were based solely on the outcomes of the Basic Band Model, Option 2, using the avoidance rates recommended by the Statutory Nature Conservation Bodies.</p>	<p>It is important to note that the assessments for Hornsea Three alone have not been based solely on the results from Option 3, as suggested by Natural England and the RSPB in their Relevant Representations. Instead the Applicant has considered collision risk estimates from all collision risk model Options and relevant avoidance rates, following the guidance of the SNCBs and Band (2012). Consideration is then given to the Option that is considered to best represent the collision risk posed to each species at Hornsea Three.</p> <p>The use of Option 2 only to inform assessments would potentially increase the significance level assigned to species as part of assessments as Option 2 provides the highest collision risk estimates for all species considered at Hornsea Three. However, it is considered that it is not appropriate to base decisions solely on Option 2 as this option over-estimates the collision risk. Option 2 utilises generic flight height distribution data (from Johnston <i>et al.</i> (2013)) which is not considered to accurately reflect the flight height behaviour of birds at Hornsea Three as illustrated by data collected as part of the extensive boat-based survey programme conducted to support the applications for the Hornsea Project One and Hornsea Project Two offshore wind farms. These data were collected using well established and widely applied boat-based survey methods as discussed as part of the submission made by the Hornsea Project Two applicant as part of their Deadline 4 submission.</p> <p>It should be noted that during the examination of the Hornsea Project Two offshore wind farm, Natural England queried the use of the aforementioned boat-based data. In order to address the issues raised the Hornsea Project Two applicant incorporated a upper confidence metric and calculated the proportion of birds at collision height based on this metric. Natural England agreed with this approach and subsequently used collision risk estimates from Option 1 to inform their assessment conclusions (see the Memorandum of Understanding between the Hornsea Project Two applicant and Natural England submitted at Deadline 7 of the examination of Hornsea Project Two).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.75	Applicant, NE, RSPB	<p>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).</p> <p>A) 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?</p> <p>B) Are NE and RSPB satisfied that the estimated maximum foraging distances are robust?</p>	<p>A) It should be noted that Paragraph 5.7.2.95 refers to both Thaxter <i>et al.</i> (2012) and the results of tracking from FFC pSPA as part of the FAME project. Whilst Hornsea Three lies beyond the maximum foraging range for kittiwake indicated by Thaxter <i>et al.</i> (2012), ie 120km, the assessment has assumed connectivity as indicated by the result of FAME tracking. Nevertheless, very few tracks of birds were located within the proposed Hornsea Three area which, together with the studies referenced in Thaxter <i>et al.</i> (2012) emphasises the extent to which the proposed wind farm lies at the extremity of any breeding season foraging activity. For context, tracks exist for 133 birds of which less than 5 show any significant interaction with the Hornsea Three array area. Further recent studies analyses, including Cleasby <i>et al.</i> (2018) (Appendix 42 to Applicant's response to Deadline 1) further emphasise the relative unimportance of the Hornsea Three area for foraging kittiwake associated with the breeding colony at FFC pSPA.</p> <p>B) It is the Applicant's position that the assessment of kittiwake, in light of the limited evidence of connectivity with the FFC pSPA during the breeding season is highly precautionary.</p>
Q1.2.76	Applicant	<p>Paragraph 5.12.1.13 of the ES [APP-065] specifies a range of other offshore activities that may either have a direct or indirect impact on birds. Table 5.38 lists other projects and plans that have been considered as part of the cumulative effects assessment (CEA) but only includes offshore windfarms.</p> <p>Please explain if non-windfarm projects have been included in the CEA for offshore</p>	<p>The CEA has considered all relevant projects and offshore activities including non-wind farm projects. As a result of this process all relevant projects that may have an impact pathway with a temporal overlap with the relevant project phase of Hornsea Three have been included in the CEA. A lack of impact pathway led to all non-wind farm projects being screened out.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		ornithology and explain the rationale for their selection or exclusion.	
Q1.2.77	Applicant	<p>Paragraph 5.13.2.4 of the ES [APP-065] states that the installation of offshore elements of Hornsea Three would take 11 years assuming a two phase construction.</p> <p>A) Please explain the apparent inconsistency with table 5.8 which gives a maximum construction duration of 8 years.</p> <p>B) Please explain which construction duration has been used in the CEA and why.</p>	<p>The construction phase will last up to eight years over two phases, with impacts only occurring during the eight years of construction. A gap of up to three years will occur between an activity finishing in the first phase and starting in the second phase of construction thus providing a temporal period of up to eleven years assuming a two phase construction. In order to identify those projects that may contribute to a cumulative or in-combination impact an eleven year time period is used as this is the longest period across which there may be temporal overlap and therefore represents the worst case scenario.. Also see response to Q1.2.68.</p>
Q1.2.78	Applicant	<p>Section 5.13 of the ES [APP-065] outlines the methodology for the cumulative effect of other offshore wind farms.</p> <p>Please explain how the cumulative effect of wind farms that could become operational before or during the construction of Hornsea Three, such as East Anglia One or</p>	<p>For projects that could become operational before the construction of Hornsea Three, these projects have been considered as part of the cumulative assessments conducted for operational impacts (i.e. collision and displacement). For projects that may become operational during the construction of Hornsea Three, these projects have been considered as part of the cumulative assessments conducted for construction and operational impacts. Projects considered in the cumulative assessment in Volume 2, Chapter 5: Offshore Ornithology (APP-065) is identified in Table 5.38. From this long list the suite of projects considered for cumulative construction impacts is identified in paragraphs 5.13.2.4 and 5.13.2.11 of Volume 2, Chapter 5: Offshore Ornithology (APP-065). For cumulative operational impacts all relevant projects from Table 5.38 are considered for relevant species.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		Hornsea Project One, have been taken into account.	
Q1.2.79	Applicant	<p>Table 5.38 of the ES [APP-065] groups projects into tiers depending on the stage that each project has reached. The Norfolk Vanguard and Thanet Extension offshore wind farms have recently been accepted for examination by the Planning Inspectorate, making them Tier 2 projects.</p> <p>Please provide an updated CEA that takes into account the Norfolk Vanguard and Thanet Extension offshore wind farms as Tier 2 projects.</p>	The Applicant has answered this question in full at Appendix 49 to the Applicant's response to Deadline 1.
Q1.2.80	Applicant	<p>Section 5.13.3 of the ES [APP-065] outlines the cumulative effects of displacement during the operational phase of the proposal.</p> <p>Please provide the predicted increase in baseline displacement mortality, as a result of cumulative operational displacement</p>	<p>It is not possible to provide this information for guillemot, razorbill and puffin as it is not possible to define a population against which the impacts to which Hornsea Three will contribute can be compared.</p> <p>It is considered highly likely that the population of guillemot, razorbill and puffin that will interact with Hornsea Three during the breeding season will be composed of immature and non-breeding birds. There is not considered to be any connectivity between breeding adult birds from breeding colonies and Hornsea Three (see Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA (APP-054)). There is limited empirical data and published information that describes the movements and distribution of immature and non-breeding birds in the breeding season and therefore it is not possible to accurately quantify the total population of birds that may interact with</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		effects, during the breeding season for puffin, razorbill, guillemot and gannet.	<p>Hornsea Three. It is therefore not possible to calculate the increase in baseline mortality that would occur as there is no regional population for which baseline mortality can be calculated.</p> <p>This is discussed in further detail in paragraphs 5.13.3.28 to 5.13.3.30 for razorbill and paragraphs 5.13.3.59 to 5.13.3.62 for guillemot in Volume 2, Chapter 5: Offshore Ornithology (APP-065).</p> <p>The cumulative impact of operational displacement on gannet has not been quantified and therefore the increase in baseline mortality cannot be calculated. The consequences of displacement on gannet is considered to be trivial (see Searle et al. 2014 for evidence of this in the Firth of Forth) with the species having a vast foraging range in all seasons and a particularly high degree of habitat flexibility (Wade et al., 2016). This is explained in paragraph 5.13.3.7 of Volume 2, Chapter 5: Offshore Ornithology (APP-065).</p>
Q1.2.81	Applicant	<p>Representations from NE [RR-097] and RSPB [RR-113] raise a number of concerns about the CEA and the use of correction factors in the Extended Band Model.</p> <p>Please provide the following details for cumulative effects (including the effects from Norfolk Vanguard and Thanet Extension) on gannet, kittiwake, lesser black-backed gull and great black-backed gull:</p> <p>A) A seasonal breakdown of predicted cumulative collision related mortality using</p>	<p>A) The cumulative tables for gannet (Table 5.48), kittiwake (Table 5.51), lesser black-backed gull (Table 5.53) and great black-backed gull (Table 5.55) in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the in-combination tables for gannet (Table 7.36) and kittiwake (Table 7.39) in the RIAA (APP-051) present collision risk estimates that do not take account of as-built scenarios or corrections for changes to nocturnal activity.</p> <p>The corrections for as-built scenario and nocturnal activity factors have been presented to highlight the uncertainty associated with the cumulative and in-combination totals estimated in the aforementioned tables. The analyses conducted for these areas of uncertainty indicate that the cumulative and in-combination totals predicted represent a significant over-estimation of the cumulative/in-combination collision risk posed to relevant populations of seabirds and the Applicant considers that it is critical that these areas of uncertainty are taken into account.</p> <p>The conclusions reached in the cumulative and in-combination sections are informed by the analyses conducted for as-built scenarios and nocturnal activity factors but at no point in the assessment are the cumulative and in-combination totals derived from these corrections compared to the 1% baseline mortality threshold.</p>

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		<p>the Extended Band Model which has not had correction factors applied to account for an over-estimate of nocturnal activity and the increase in baseline mortality that would result from this predicted impact.</p> <p>B) A seasonal breakdown of predicted cumulative collision related mortality using the Extended Band Model which has not had correction factors applied to account for an over-estimate of nocturnal activity or to account for the difference between assessed and consented turbines and the increase in baseline mortality that would result from this predicted impact.</p> <p>C) A seasonal breakdown of predicted cumulative collision related mortality using Option 2 of the Basic Band Model and the avoidance rates recommended by the</p>	<p>The Applicant has produced a clarification note to be submitted at Deadline I that further examines the uncertainty associated with as-built scenarios and calculates updated cumulative and in-combination collision risk estimates taking into account the differences between assessed and as-built turbine scenarios.</p> <p>B) This information is presented in cumulative tables for gannet (Table 5.48), kittiwake (Table 5.51), lesser black-backed gull (Table 5.53) and great black-backed gull (Table 5.55) in Volume 2, Chapter 5: Offshore Ornithology (APP-065) and the in-combination tables for gannet (Table 7.36) and kittiwake (Table 7.39) in the RIAA (APP-051) present collision risk estimates that do not take account of as-built scenarios or corrections for changes to nocturnal activity.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>statutory nature conservation bodies and the increase in baseline mortality that would result from this predicted impact.</p> <p>D) A seasonal breakdown of predicted cumulative collision related mortality using Option 2 of the Basic Band Model and the avoidance rates recommended by the statutory nature conservation bodies which has not had correction factors applied to account for an over-estimate of nocturnal activity and the increase in baseline mortality that would result from this predicted impact.</p> <p>E) A seasonal breakdown of predicted cumulative collision related mortality using Option 2 of the Basic Band Model and the avoidance rates recommended by the statutory nature conservation bodies which has not had correction factors applied to account for an over-estimate of nocturnal activity or to account for the difference between assessed and consented turbines and the increase in baseline mortality that</p>	<p>C) Cumulative totals using the Basic model are presented for all species in Appendix 7 to the Applicants response to Deadline I. It is important to note that Option 2 is not always available (i.e. for projects that used earlier versions of the Band CRM or the preferred Option for use at certain projects, where Option 1 which uses site-specific data is that accepted by Natural England.</p> <p>D) Cumulative totals using the Basic model are presented for all species in Appendix 7 to the Applicants response to Deadline I. It is important to note that Option 2 is not always available (i.e. for projects that used earlier versions of the Band CRM or the preferred Option for use at certain projects, where Option 1 which uses site-specific data is that accepted by Natural England.</p> <p>E) Cumulative totals using the Basic model are presented for all species in Appendix 7 to the Applicants response to Deadline I. It is important to note that Option 2 is not always available (i.e. for projects that used earlier versions of the Band CRM or the preferred Option for use at certain projects, where Option 1 which uses site-specific data is that accepted by Natural England.</p>

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		would result from this predicted impact.  F) Please provide the same information for potential in-combination effects on the gannet and kittiwake features of the Flamborough and Filey Coast proposed SPA.	F) In-combination totals that have not been corrected for as-built scenarios or nocturnal activity factors for gannet and kittiwake are presented in either the RIAA (APP-051) using the Extended model or in Appendix 7 to the Applicants response to Deadline I for the Basic model.
Q1.2.82	Natural England	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?	The Applicant notes this question is directed at Natural England and the Applicant does not have anything further to add on this for Deadline I.
Q1.2.83	Applicant	Condition 11(d) of the Generation Assets DML and condition 12(d) of the Transmission Assets DML [APP-027] require the production of a Project Environmental Management and Monitoring Plan.  Please submit an outline Project Environmental Management and Monitoring Plan.	The Applicant has provided a number of outline plans as part of the DCO application in order to facilitate discussions with stakeholders during the pre-application and examination phases of the project on Hornsea Three commitments. For example, such outline plans have included an In Principle Monitoring Plan (APP-182) to allow further discussion and agreement of monitoring requirements with stakeholders and an Outline Fisheries Coexistence and Liaison Plan (APP-183) to aid discussion and agreement of measures to encourage coexistence with the fisheries industry throughout the lifetime of Hornsea Three. This exercise was completed for those plans where it was possible to produce outline documents based on information available prior to consent being granted.  It was not considered appropriate to produce outline versions of all the plans committed to within the draft DCO (APP-027) as many of these plans require specific details which are not available pre-consent. The Project Environmental Management and Monitoring Plan (PEMMP) is typically produced by a developer alongside its construction contractors (normally contracted post consent). The key dependencies for production of the PEMMP are the final DCO and the final scheme design. This document is also comprised of a number of supporting plans (e.g. marine

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			<p>pollution contingency plan, chemical risk assessment, waste management plan etc.) all of which are produced post consent and based on the final scheme design. As such, any outline PEMMP would represent a skeleton document with little or no detail. It is therefore the Applicant's position that production of an outline PEMMP would not be appropriate or informative at this stage.</p> <p>As outlined in Schedule 11, Part 2, paragraph 11(1)(d) (Generation Assets) and Schedule 12, Part 2, paragraph 12(1)(d) (Transmission Assets) of the DCO, the PEMMP will be submitted to and approved by the MMO prior to commencement of licensed activities.</p>
Q1.2.84	Applicant	<p>Paragraph 5.10.1.1 and table 5.16 of the ES [APP-065] state that there would be a number of 'designed-in' measures to reduce the potential for impacts on offshore birds with specific reference to a Code of Construction Practice.</p> <p>Why does the Outline Code of Construction Practice [APP-179] specifically exclude the offshore environment?</p>	<p>The Applicant notes that these two references to the Code of Construction Practice were incorrect and the 'designed-in' measures should have referred to the Project Environmental Management and Monitoring Plan (PEMMP), in line with other offshore ecology chapters of the Environmental Statement (i.e. Section 2.10 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062); Section 3.10 of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement (APP-063); Section 4.10 of Volume 2, Chapter 4: Marine Mammals of the Environmental Statement (APP-064)).</p> <p>The PEMMP will be developed and implemented to cover the construction, and operation and maintenance phases of Hornsea Three and not solely the operation and maintenance phase, as indicated in Table 5.16 of Volume 2, Chapter 5: Offshore Ornithology of the Environmental Statement (APP-065).</p>
Q1.2.85	Applicant	<p>Paragraph 4.11.2.25 of the ES [APP-064] states that there are no burial depths that would reduce the magnitude of the magnetic field of cables within the array and export corridor. Paragraph 4.11.2.28 and table 4.53 indicate that the strength of the emitted magnetic field would not exceed the 50 uT background for the North</p>	<p>HV cables have an earthed metallic screen which contains the electrical field within the cable insulation. This is a required to manage electrical stress within the insulation and is described in more detail in the EMF Compliance Statement [APP-087]. Therefore this assessment has assumed that direct electrical field will be blocked by the conductive sheathing used in the cable. Therefore, emitted EMF will consist of the magnetic field (B) and the resultant induced electrical field (iE). This will be further detailed in the Cable Specification and Installation Plan, which will include a desk-based assessment of attenuation of electro-magnetic field (EMF) strengths, shielding and cable burial depth in accordance with industry good practice, that must be submitted to and approved by the MMO prior to the</p>

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		<p>Sea.</p> <p>What empirical observations were used to validate the model? What assumptions were made about the design of cables in relation to conductive sheathing and transmission load?</p>	<p>commencement of construction activities, is appropriate to ensure the effect of EMF on marine mammal receptors is within the range assessed in the ES.</p> <p>There are very few examples of the empirical measurement of emitted electromagnetic fields and associated validation of models of EMF from offshore wind farm cables in the scientific literature. However, the marine mammal species relevant to this assessment are considered to be insensitive to EMF and therefore, the impact significance has been assessed as negligible (APP-064). This conclusion is reflective of the industry's understanding of EIA risk on this topic for this receptor (for example the Applicant notes that this conclusion aligns with that of the Dogger Bank Projects and also that the environmental statements prepared for other recent projects such as East Anglia Three and Norfolk Vanguard have not even reported on EMF effects on marine mammals) and is not understood to have been contested by any Interested Party.</p>
Q1.2.86	Applicant	<p>Paragraph 4.7.2.23 of the ES [APP-064] states that the highest density of grey seal 'at sea usage' is near Donna Nook haul-out site and the Wash.</p> <p>Is it possible that these findings reflect a higher survey effort in areas near coastal nature reserves associated with this species?</p>	<p>The density maps referred to in this section of the marine mammal chapter are derived from a combination of telemetry data from a sample of tagged individuals scaled up by local population counts to estimate the total at-sea usage. As such they are not subject to effort related bias in the same way that traditional survey methods might be. The haul out counts are not biased as all potential haul out sites in each region are covered by the survey – it is effectively a census of hauled out seals. The data from tagged individuals comes from a total of 330 harbour seals and 270 grey seals tagged in the UK, ROI and France. As such the Applicant is confident that these usage maps provide a robust and unbiased indication of the average distribution of at-sea seals. In addition, the use of this data source to adequately characterise the seal baseline and inform the quantitative impact assessment was agreed with SNCBs and other stakeholders through the Evidence Plan process.</p>
Q1.2.87	NE	<p>Paragraph 5.5.1 Paragraph of NE's representation [RR-097] refers to a lack of 'at source' mitigation of piling noise.</p> <p>Paragraph 4.11.1.39 of the ES [APP-064] refers to the Joint Nature Conservation Committee piling mitigation protocol.</p>	<p>The Applicant notes that this is a question for Natural England and has nothing further to add at this stage beyond confirming that no residual long term significant effects are predicted on marine mammal receptors as a result of the existing embedded measures relating to soft start to piling and MMMP commitments.</p>

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		Why do you consider that this would not ensure adequate mitigation?	
Q1.2.88	Applicant	Paragraph 5.5.1 of NE's representation [RR-097] states that no consideration has been given to pile driving noise reduction measures at source. This point has also been raised in a number of other relevant representations.	A) A pile driving soft start has been applied as an embedded measure to reduce the total amount of sound that mobile receptors are exposed to.
		<p>A) Please explain what, if any, methods have been considered to reduce noise at source?</p> <p>B) Why have you chosen not to include noise-reduction mitigation methods at source as a firm commitment?</p>	<p>B) The environmental impact assessment (see Volume 2, Chapter 4, Marine Mammals [APP-064], paragraph 4.11.3.1 onwards) concluded that there would be no significant impacts on marine mammal receptors at the population level as a result of pile driving noise, either alone or cumulatively with other plans or projects when standard mitigation is employed (e.g. by adopting the JNCC piling mitigation protocol including a soft start, alongside the use of an acoustic deterrent device) (see Volume 2, Chapter 4, Marine Mammals paragraph 4.11.1.39). Therefore further mitigation measures were not considered within the marine mammal assessment. This aligns with the conclusion of all offshore wind farm consent applications in the UK to date (i.e., there has not been a requirement for noise reduction technology to be applied for piling in UK waters to date).</p> <p>Notwithstanding this, in terms of the in-combination effects in the HRA, the Applicant accepts that there is uncertainty in relation to the timeline of other projects and the degree to which Tier Two and Three projects may overlap with construction at Hornsea Three. The Applicant accepts that theoretical (if not realistic) scenarios can be generated whereby agreed thresholds would be exceeded. As such, the Applicant has committed to a Site Integrity Plan which will ensure that any appropriate further mitigation will be applied if required, prior to the commencement of works (when there is certainty as to the final scheme design and level of overlap with other activities). This Site Integrity</p>

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			Plan proposed to be secured by Schedule 11, condition 13(5) (generation assets DML) and Schedule 12, condition 14(5) (transmission assets DML) of the draft DCO (Version 1, as submitted for Deadline 1).
Q1.2.89	Applicant	<p>Paragraph 4.11.1.84 of the ES [APP-064] states that the number of harbour porpoises affected by the proposal would be 4,046 but this value is not shown in table 4.32.</p> <p>Please explain how this value is derived and how it relates to the values in table 4.32.</p>	<p>The value of 4,046 harbour porpoises is shown in table 4.33. Each of these tables (4.32 and 4.33) presents results for the pin piling scenarios derived using alternative density sources to estimate the number of porpoises affected (as outlined in Paragraph 4.11.1.28-29 and Table 4.21 of the marine mammal chapter (APP-064)).</p> <p>Table 4.32 presents values calculated using a combination of aerial survey data over the Hornsea Three study area and SCANS III density estimates for the area out with the surveyed area, whereas Table 4.33 presents values calculated using a combination of the density surface modelled using acoustic survey data collected over the former Hornsea Zone and SCANS III density estimates for the area out with the surveyed area. Therefore, the higher values presented in table 4.33 consider the high density areas identified during the previous surveys (as shown in Figure 4.13).</p>
Q1.2.90	Applicant	<p>Figures 4.13 and 4.14 of the ES [APP-064] shows an aggregation of harbour porpoise in the array area that has been derived from both aerial and surface survey data.</p> <p>A) How has this aggregation informed the estimated magnitude and significance of disturbance effects?</p> <p>B) What biological process explains the observed pattern?</p> <p>C) Are there any high quality feeding</p>	<p>To provide clarification on this point, the ES presents survey data from a variety of sources. The data presented in Figures 4.13 and 4.14 of the ES show the modelled density surface derived from the acoustic data collected during boat based surveys of the zone. The densities derived from the aerial survey data are not presented on these figures. It is important to note for harbour porpoises, that although the potential impact was quantified using both density estimates (vessel based acoustic and aerial survey), the assessment conclusions were based on the higher of these two, to ensure a precautionary assessment.</p> <p>A) The data underlying this density surface have been explicitly used in the calculation of the maximum number of porpoises potentially within each noise contour – as presented in Table 4.31 for monopiles and Table 4.33 for pin piles. This therefore, represents a precautionary approach to the assessment.</p> <p>B) It is impossible to say for certain which biological and environmental factors explain the observed pattern. Density was modelled from the survey observations including a range of environmental covariates (e.g. season, depth, tide, sea state, depth, slope, aspect, sediment type). Of these covariates, only depth had any significant explanatory</p>



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		<p>grounds in the array area?</p> <p>D) If so, what would be the effect of displacement?</p> <p>E) If significant aggregations occur, how is the use of average densities justified?</p> <p>F) If a significant feeding ground is present, how would it alter the findings of the ES and HRA?</p>	<p>power. There was a large degree of variability between surveys in the overall distribution of sightings and it is highly likely that patterns were driven by variables that were not able to be included in the modelling, such as prey availability.</p> <p>C) It is possible, during the time of these surveys that high densities of prey species may have been present and this may explain the high observed densities of harbour porpoises. It is also important to note that the aerial surveys carried out several years after the boat surveys of the whole Hornsea Zone, and a number of other data sources (detailed in Table 4.12) indicated somewhat lower densities of harbour porpoises over these areas at other times, suggesting variability in the density of the prey resource over time.</p> <p>D) The effect of temporary displacement from areas with an abundant high quality food source would likely be a temporary reduction in foraging efficiency with an effect on individual energy balance over a period of a few hours. However, harbour porpoises are highly mobile animals and are capable of travelling large distances and can feed at very high rates. As such, individuals are expected to be able to find alternative prey patches if they are displaced from preferred areas and compensate for these lost foraging opportunities. Porpoise local densities have also been observed to recover within hours of the piling activity stopping. The resulting short term reductions in foraging efficiency is unlikely to affect individual survival but there is a small chance that breeding success, and calf survival may be affected, depending on the magnitude of the overall effect on energy balance.</p> <p>E) As the density of highly mobile marine mammal species can vary considerably over time, it is only by incorporating data across several surveys that the spatial pattern in distribution over an area can be confidently characterised with a view to predicting likely future conditions. The highest density areas indicated in Figures 4.13 and 4.14 persist through time over the whole survey period and therefore also appear in the average density surfaces derived from the amalgamated data set. It is important to note that this approach is standard across the industry and has been agreed with SNCBs and other stakeholders through the evidence plan process.</p> <p>This is also why a range of average density estimates are presented in the assessment – to indicate the range of potential effect as a result of variable distribution and abundance of a highly mobile animal. The highest density estimates were derived from the acoustic data from the boat based surveys covering the former Hornsea Zone between March 2011 to February 2013, and the lower density estimates were generated from the aerial surveys</p>

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			<p>between April 2016 and November 2017. It is important to note that the conclusions of the assessment were based on the higher of these two data sources and therefore are precautionary.</p>
			<p>F) The assessment was based on the worst case assumption that the Hornsea Three area does represent a high quality feeding ground for harbour porpoise. It was predicted that this would lead, at worst, to a reduction in breeding success in the years where such disturbance would be experienced (a total of up to 2.5 years of piling activity). The total maximum magnitude of animals affected represents a very low proportion of the total population (1.45%) and only a proportion of the animals disturbed (&lt;0.3) would be breeding females and therefore sensitive to the effects. Based on this level of impact, in terms of magnitude and duration, no change in the population trajectory would be anticipated at the management unit level.</p> <p>The HRA was carried out using guidance from the SNCBs which specified an area based threshold approach. This approach includes the implicit assumption that the harbour porpoise SCI contains high quality habitat (such as a feeding ground), as indicated by modelled persistent high density areas in the analysis that informed the site selection. Therefore significant displacement from such habitat would result in the potential for an adverse impact on site conservation objectives. A 20% threshold has been adopted to indicate the level at which significant habitat would be lost.</p> <p>On this basis, neither the EIA nor HRA conclusions would change from those presented if a significant feeding ground was found to indeed be present during the installation of the wind turbine foundations.</p>

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Q1.2.91	Applicant	<p>Figure 4.17 of the ES [APP-064] shows that there would be a wider zone of influence for concurrent piling that would affect aggregations of harbour porpoise beyond the array area.</p> <p>How have these aggregations informed the estimated magnitude and significance of the disturbance effects?</p>	<p>As described above, the explicit density surface presented in Figure 4.17 was used to predict how many individuals may be within the noise contours. As such this method takes into account the modelled aggregations beyond the array area and uses the resulting numbers of animals to derive the assessment of magnitude and significance of disturbance effects, assuming that these animals will be displaced from the area proportionate to their level of exposure and potentially suffer subsequent reductions in foraging efficiency.</p>
Q1.2.92	Applicant	<p>Paragraph 3.6.5.16 of the ES [APP-058] states that construction logs have been used to define the average pile hammer energy of 2,000 kJ.</p> <p>A) Would comparable piling equipment be used for Hornsea Project Three?</p> <p>B) If so, how would that be controlled in the dDCO?</p>	<p>A) Paragraph 3.6.5.16 of the ES [APP-058] refers to 2,000 kJ as worst case scenario for the average piling energy based on observations at several projects. The average maximum piling energy has been assumed to be 2,500 kJ with similar observations.</p> <p>Table 3.18 of the ES [APP-058] presents a piling scenario for monopile installation using a maximum hammer energy of 5,000 kJ. According to this profile, hammer energies of 4,500 kJ to 5,000 kJ would only be used at the end of a piling event, only in the case that lower energies are not sufficient to drive the pile to the desired depth.</p> <p>It is not yet known whether the selected equipment will be comparable to those used in past projects, however the information presented within the ES on average energies is based on the experience of the Applicant constructing similar projects including those within similar parts of the North Sea. The choice of piling equipment will be made once the detailed design of the foundations is completed. If monopile foundations are used, it is possible that the same or similar piling technologies will be used, including lower-hammer-energy technologies and methodologies, where these can be shown to be effective. Overall, a piling hammer with a maximum hammer energy of 5000 kJ as described in ES [APP-058] would be used.</p>

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			B) The identification of this average hammer energy has been made for context to identify that the maximum hammer energy applied for is extremely unlikely to be used for the vast majority of piling. However, all assessments in the technical chapters of the ES have been undertaken on the basis of the worst case scenario with the use of the maximum hammer energy. Therefore, as the assessments have not been undertaken on the basis of this average hammer energy, the Applicant considers that the average piling hammer energy should not be controlled in the DCO. The Applicant has committed to a condition in the dML to limit the maximum hammer energy output to 5,000kJ (see Schedule 11, condition 13(6) (generation assets DML) and Schedule 12, condition 14(6) (transmission assets DML) of the draft DCO (Version 1, as submitted for Deadline 1).
Q1.2.94	Applicant	<p>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.</p> <p>How can you rule out adverse effects on the integrity of associated European sites when such impacts are uncertain?</p>	The statements referred to are in reference to the limited amount of published information in relation to the potential impact on guillemot and razorbill as a result of disturbance impacts due to construction activities associated with offshore wind farms. As a result of this, assessments have been undertaken with a high level of precaution, assuming highly conservative levels of impact beyond which might be expected based current evidence. In addition any impacts in the construction period are unlikely to be of a magnitude larger than those that would occur during the operational phase with impacts in the operational phase assessed as having no adverse effect on the site integrity of any European site. The approach taken follows agreed standard methodologies (JNCC et al., 2017) in relation to displacement analysis albeit for an array area during the operational phase, the impacts from which are highly likely to be of a greater magnitude than would occur due to disturbance in the construction phase.
Q1.2.95	Applicant	<p>Paragraph 4.4.1.5 of the Report to Inform the Appropriate Assessment [APP-051] sets out the tiered approach that has been used for evaluating in-combination effects.</p> <p>It is noted that the in-combination assessment has not included projects that were operational at the time the Hornsea Project Three baseline data were collected. The 'evidence based approach' described in the ES includes historic data which may pre-date operational projects.</p>	For offshore ornithology, all projects that may contribute to an in-combination impact have been included in the relevant assessments. This includes those projects that were operational at the time of baseline data collection at Hornsea Three (Greater Gabbard, Humber Gateway, etc.). The suite of projects considered in the in-combination assessment for offshore ornithology is presented in Table 7.31 of the RIAA (APP-052).

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		Is it possible that some plans or projects which should be included in the in-combination assessment have been overlooked?	
Q1.2.98	NE	<p>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).</p> <p>Please list the sub-features of the sandbank feature.</p> <p>In your view, how should the assessment of site integrity take account of these sub-features?</p>	<p>Whilst not directed at the Applicant, it is material to note the Applicant's response to Natural England's Relevant Representation (RR-097), as submitted at Deadline I. In summary, all sub-features of the Annex I habitat 'Sandbanks which are slightly covered by seawater all the time' are assumed to be part of the sandbank habitat complex and their consideration is therefore inherent in the assessment of Annex I sandbank features presented within Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) and the Report to Inform Appropriate Assessment (APP-051). The assessment was undertaken by evaluating changes to the representative biotopes of the sandbank habitat complex and therefore the sub-features are assessed as represented by the characteristic biotopes.</p>
Q1.2.100	Applicant	<p>Paragraph 5.4.7 of NE's representation [RR-097] states that there is a high risk of significant impacts to designated features of The Wash and North Norfolk Coast Special Area of Conservation from cable installation and associated activities and that the Worst Case Scenario (WCS) is inadequate.</p>	<p>The Applicant's basis for the assumptions regarding impacts of cable installation on features of The Wash and North Norfolk Coast Special Area of Conservation (SAC) can be explained by reference to the following key areas which are discussed below: i) the adequacy of the baseline; ii) the confidence in the maximum design scenario for cable installation; iii) the evidence of recovery of features following sandwave clearance and cable installation; and iv) long-term effects associated with the installation of cable protection.</p> <p>i. As outlined in The Applicant's response to Ex.A Question WQ-1.2.12, the benthic ecology baseline characterisation of the section of the Hornsea Three offshore cable corridor coinciding with The Wash and</p>

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		What is the empirical basis for your assumptions about the impacts of cable installation in this area of the North Sea?	<p>North Norfolk Coast SAC was based on empirical data consisting of both published desktop data sources and Hornsea Three survey data. The Hornsea Three site-specific data sets are outlined in paragraph 2.6.1.3 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) and the desktop data sets which were used to extend the nearshore biotope map, generated from the Hornsea Three site specific benthic ecology data, into The Wash and North Norfolk Coast SAC are outlined in paragraph 2.7.6.2 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement. Since the Hornsea Three DCO application was submitted in May 2018, the Applicant has undertaken a drop down video survey of the Hornsea Three offshore cable corridor that coincides with The Wash and North Norfolk Coast SAC in the nearshore area. The Applicant has submitted the results of this survey in The Wash and North Norfolk Coast Clarification Note (presented at Appendix 5 of the Applicant's response to Deadline I), which validates the baseline characterisation presented for The Wash and North Norfolk Coast SAC in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement [APP-062] and the RIAA [APP-051].</p> <p>ii. The Applicant considers that the maximum design scenario assessed with regards to cable installation within The Wash and North Norfolk Coast SAC was adequately precautionary and was based on the Applicant's extensive experience at other offshore wind farms in the UK and overseas. This includes the requirements for cable protection and the Applicant would refer the Ex.A to the Cable Protection Clarification Note (presented at Appendix 6 of the Applicant's response to Deadline I), which provides further clarification of the assumption that a maximum of 10% of the offshore export cables within The Wash and North Norfolk Coast SAC may require protection.</p> <p>iii. The Applicant has provided a full description of the numerous sources of empirical evidence, which have been used to inform and support the assessments of impacts from cable installation on features of The Wash and North Norfolk Coast SAC, in their response to Ex.A question Q1.2.10. The Applicant would also direct the Ex.A to section 3 of The Wash and North Norfolk Coast SAC Clarification Note, as presented in Appendix 5 of the Applicant's response to Deadline I, where empirical evidence for the recovery of the seabed following cable installation in the nearshore area is provided based on data collected over installed cables in the nearshore area and recent monitoring of Hornsea Three geotechnical investigations. The</p>

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			<p>Applicant would also direct the Ex.A to the Sandwave Clearance Clarification Note, as presented in Appendix 11 of the Applicant's response to Deadline I, where empirical evidence for the recovery of sandwave features following clearance works is presented based on the findings of monitoring data at Race Bank offshore wind farm.</p> <p>iv. Long term habitat loss associated with cable protection requirements is predicted to affect only a very small proportion (0.004%) of the total area of The Wash and North Norfolk Coast SAC. In addition, the Applicant's commitment to employ sensitive cable protection measures within the SAC, as outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement [APP-062], is predicted to facilitate some continued ecological functioning in these areas. The Applicant directs the Ex.A to the Cable Protection Clarification Note presented in Appendix 6 of the Applicant's response to Deadline I which outlines empirical evidence to support this prediction and to validate the prediction that sensitive cable protection could be expect to limit the effects of long term habitat loss in contrast to other cable protection measures (e.g. concrete mattresses, larger grain sizes etc.). As outlined in paragraph 5.5.2.31 and Appendix A of the RIAA [APP-052], adverse effects on the integrity of the SAC were not predicted to arise as a result of changes to sediment transport in relation to cable protection. The Applicant refers the Ex.A to the Cable Protection Clarification Note presented in Appendix 6 of the Applicant's response to Deadline I, which includes a summary of empirical data sets (i.e. other desktop review studies, targeted analysis of high resolution bathymetry survey data and laboratory physical modelling experiments), which validate these conclusions.</p>
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.	<p>Whilst not directed at the Applicant, it is material to note the Applicant has submitted a Sandwave Clearance Clarification Note to Natural England in October 2018 (see Appendix 11 of the Applicant's response to Deadline I). The Sandwave Clearance Clarification Note presents empirical evidence from post-leveelling sandwave monitoring data at the Race Bank offshore wind farm, providing additional detail on this monitoring data, which was used to inform the impact assessment presented in paragraph 1.11.5. <i>et seq.</i> of Volume 2, Chapter 1: Marine Processes of the Environmental Statement (APP-061). This additional interpretation supports the conclusion that the levelled sandwaves in Hornsea Three would recover with time to a natural equilibrium state and supports the conclusion, as outlined in paragraph 5.5.1.13 of the Report to Inform Appropriate Assessment (APP-052), that temporary habitat</p>

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		<p>Do you agree with this assessment of the recoverability of the SAC sandbank feature?</p> <p>Please refer to any peer reviewed evidence that may be available in support of your response.</p>	<p>loss/disturbance will not adversely affect the ability for the Conservation Objectives of this SAC to be achieved with regards to the extent and distribution, supporting processes, structure and function of Annex I sandbanks which are slightly covered by seawater all the time or reef habitats.</p>
Q1.2.103	Applicant	<p>Effects on the integrity of The Wash and North Norfolk Coast SAC and the North Norfolk Sandbanks and Saturn Reef SAC have been considered in relation to each of the impacts identified for the individual phases of the development.</p> <p>Please provide an assessment of the cumulative impact on the integrity of these SACs across the lifetime of the proposal.</p>	<p>The Applicant notes that while the assessments presented in Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062) and the Report to Inform Appropriate Assessment (RIAA; APP-052) were undertaken on an impact by impact basis, consideration of repeat disturbance during the construction and operation and maintenance phase was presented. In order to provide clarity and fully address the Ex.A question, additional narrative has been provided to summarise the assessment of impacts to The Wash and North Norfolk Coast Special Area of Conservation (SAC) and the North Norfolk Sandbanks and Saturn Reef SAC as a result of cable installation across the lifetime of the project. The full response from the Applicant to Ex.A question Q1.2.103 is presented at Appendix 17 to the Applicant's response to Deadline I.</p> <p>The detailed response at Appendix 17 to the Applicant's response to Deadline I shows that the majority of impacts associated with cable installation and maintenance over the 35 year design life of Hornsea Three, to Annex I features of both The Wash and North Norfolk Coast SAC and the North Norfolk Sandbanks and Saturn Reef SAC, will be temporary and reversible. These temporary and reversible effects will therefore not represent an adverse effect on integrity of The Wash and North Norfolk Coast SAC or the North Norfolk Sandbanks and Saturn Reef SAC.</p> <p>Although effects on Annex I features associated with the maximum design scenario for cable protection requirements will last throughout the operation and maintenance phase, and potentially post decommissioning, they are predicted</p>



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			to affect a very small proportion (i.e. <0.01%) of total area of each SAC. The sensitive cable protection measures which are proposed for the project, as outlined in Table 2.18 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement, to reflect the baseline environments of the SACs will allow some ecological function (e.g. partial recovery of communities into areas affected) to continue in the areas affected during the operation and maintenance phase thus limiting the effects of long term habitat loss in contrast to other cable protection measures (e.g. concrete mattresses, larger grain sizes etc.). The effects associated with cable protection will therefore not represent an adverse effect on integrity of The Wash and North Norfolk Coast SAC or the North Norfolk Sandbanks and Saturn Reef SAC.
Q1.2.104	Applicant	<p>Paragraph 5.5.1.2 of the Report to Inform Appropriate Assessment [APP-051] states that material from sandwaves cleared within The Wash and North Norfolk Coast SAC would be deposited within the site boundary.</p> <p>How has this mitigation been secured in the dDCO and/or DMLs?</p>	<p>The Applicant notes that paragraph 2(1)(f) of each deemed marine licence specifies that these disposals must be within the order limits. The Applicant considers that paragraph 2(1)(a) would also permit deposits of this nature, and to streamline this provision has amended it as below in each DML in the draft DCO (Version 1, as submitted for Deadline 1) (the changes are underlined):</p> <p><b>2.—(1)</b> Subject to the licence conditions, this licence authorises the undertaker (and any agent or contractor acting on their behalf) to carry out the following licensable marine activities under section 66(1) of the 2009 Act—</p> <p>(a) the deposit at sea within <u>the Order Limits seaward of MHWS</u> of the substances and articles specified in paragraph 4 below <u>and up to 1,344,318 cubic metres of inert material of natural origin produced during construction drilling or seabed preparation for foundation works and cable sandwave preparation works within Work No. 1;</u></p> <p>(b) the construction of works in or over the sea and/or on or under the sea bed;</p> <p>(c) dredging for the purposes of seabed preparation for foundation works and/or electrical circuit works; the removal of sediment samples for the purposes of informing environmental monitoring under this licence during pre-construction, construction and operation;</p> <p>(d) boulder clearance works either by displacement ploughing or subsea grab technique or any other equivalent method;</p> <p>(e) removal of static fishing equipment;</p>

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			<p><del>the disposal within the Order limits seaward of MHWS of up to 1,344,318 cubic metres of inert material of natural origin produced during construction drilling or seabed preparation for foundation works and cable sand wave preparation works within Work No. 1; and</del></p> <p>(f) site preparation works.</p>
Q1.2.105	Applicant	<p>Paragraph 6.5.2.66 of the Report to Inform Appropriate Assessment [APP-051] states that it would be unrealistic to assume that all piling would be during summer months. NE advised in its relevant representation [RR-097] that it did not agree with the approach of averaging the number of piling days per season when considering effects on the Southern North Sea candidate SAC (cSAC). Instead it suggests that more work is likely to occur during the summer months.</p> <p>A) Please provide an assessment of the effects on the Southern North Sea cSAC</p>	<p>A) The assumption proposed by NE in RR-097 is very unlikely for the following reasons. Typically, installation is in stages, with monopile installation being commenced early in the year with the WTGs being installed on the foundations before winter. This staged process is used as WTGs are more sensitive to weather during installation, in particular due to the sensitivity of the blade lift process to high wind conditions. For the largest wind farms (in terms of numbers of foundations), the installation will progress over a number of months and would not be limited to the summer season. The Applicant can confirm that construction activity is likely to occur throughout the year noting that the most sensitive component of the installation process to weather conditions, is the blade lift and therefore, foundation installation is often scheduled to ensure that the installation of blades can occur before the winter months.</p> <p>Based on a highly conservative worst case scenario, it has been assumed that each piling day during the summer period would impact on the maximum possible area of the cSAC (431.74km<sup>2</sup>). This equates to a temporal impact on the cSAC of 1.6% over the 6 month summer season which is significantly less than the 10% threshold specified by the JNCC. It should be noted that these calculations are overly precautionary in that the area of effect (applying the 26km Effective Deterrence Range, as advocated by Natural England) will in reality result in a range of effect from 0km<sup>2</sup> to 431.74km<sup>2</sup>. The precise level of effect would depend on the exact layout of the turbines. Given that such information is not available at this juncture, a maximum value is applied to all piling events.</p>

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		<p>where all the piling is carried out by one vessel during the summer months.</p> <p>B) Please provide an assessment for two vessels undertaking concurrent piling during the summer months.</p>	<p>B) Based on a highly conservative worst case scenario, it has been assumed that each piling day during the summer period for concurrent piling would impact on the maximum possible combined area (from two piling vessels) of the cSAC (469.45km<sup>2</sup>). This equates to a temporal impact on the cSAC of 1.7% over the 6 month summer season which is significantly less than the 10% threshold specified by the JNCC.</p> <p>Again, this is significantly overestimating the actual level of effect given that only one pile location could result in that level of effect, and all subsequent ones would have a lesser effect.</p>
Q1.2.106	Applicant	<p>Paragraph 5.5.9 of NE's representation [RR-097] highlights a lack of consideration of combined impacts in relation to disturbance from a range of noise generating activities.</p> <p>Please provide an assessment of the in-combination effects from noise generating activities during construction (piling, increased vessel noise and the clearance of unexploded ordnance (UXO)) on the integrity of the marine mammal features of the following:</p> <ul style="list-style-type: none"> <li>•Berwickshire and North Northumberland Coast SAC;</li> <li>•The Southern North Sea cSAC;</li> <li>•The Wash and North Norfolk Coast SAC;</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>•The Humber Estuary SAC and Ramsar site.</li> </ul>	<p>It is important to note that no marine construction projects currently in the planning system (that could overlap with Hornsea Project Three's construction activity) have submitted detailed applications for marine licences for the clearance of unexploded ordnance. Therefore there is a lack of published, reliable information to inform a meaningful and realistic in-combination assessment of future levels of this activity combined with other noise generating activity on the marine mammal features of these SACs. A full in-combination assessment of UXO detonation will be completed to support a marine licence application should this activity be necessary at a future time. Therefore this assessment focuses on in-combination effects from pile driving and vessel activity during construction. It is also important to note that given the different spatial and temporal scales over which these two impacts operate (piling is a static source of disturbance operating at a particular location for a period of hours at a time, with an impact footprint that can be reasonably accurately predicted and quantified, whereas vessel disturbance is an ongoing mobile source of disturbance which will occur throughout the site at different times and it is not currently possible to accurately quantitatively predict exposure in terms of the numbers of animals affected in the same way as is done for piling noise disturbance), it is not possible to provide a meaningful and realistic quantitative combined assessment of both activities, therefore the assessment that follows is qualitative.</p> <p><b>Berwickshire and North Northumberland Coast SAC</b></p> <p>The marine mammal qualifying feature of</p> <p>Due to the very low numbers of individuals predicted to be affected by disturbance resulting from the construction of Hornsea Three (maximum of 0.13 % of the reference population), grey seals were not considered in the cumulative effects assessment in the marine mammal chapter. Summed across all projects in the CEA, within the North East and</p>

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			<p>South East England Seal Management Area the total number of grey seals potentially affected is 0.25% of the reference population within the combined North East and South East England Seal Management Areas. Therefore it is not considered likely that there is the potential for an in-combination effect of underwater noise disturbance that would significantly affect the population of grey seals associated with any SACs within those management areas. Furthermore, during construction of all the plans and projects considered in the in-combination assessment, additional vessel traffic would be constrained within existing shipping routes and focused around the array and export cable corridor and therefore, would be highly unlikely to be close to any coastal SAC sites where seals are hauled out, therefore there would be no potential to directly disturb seals hauled out or breeding at the SAC.</p> <p>In light of the above, these activities at Hornsea Three, in-combination with all other plans and projects will not result in any changes to the distribution of animals within the site, nor any changes to the size or trajectory of the population of animals associated with this site. Therefore there is no indication of an adverse effect on the integrity of the Berwickshire and North Northumberland Coast SAC taking into account the impact on grey seal as a feature of that site.</p>
			<p><b>The Southern North Sea cSAC</b></p> <p>The marine mammal qualifying feature of the Southern North Sea cSAC is the harbour porpoise. Of the three Conservation Objectives for this site, this question is relevant to the "no significant disturbance" objective.</p> <p>The RIAA undertook an assessment of disturbance effects on the site feature based on an approach advocated by the SNCBs (as detailed in the draft site management information for the SNS cSAC, and that was to apply an effective deterrence range (EDR) for certain activities of the project. Accordingly, a 26km EDR was applied to piling and UXO clearance activity. No specific EDR has been advocated by the SNCBs for disturbance from vessel presence and therefore, disturbance from this effect was informed through a consideration of the likely noise source levels from operating vessels, as presented in Section 6.5.2.132 onwards in the RIAA (AS-002).</p> <p>Section 6.7.2 of the RIAA considers the in-combination effect on underwater noise from other activity. This assessment presents a tiered and quantified assessment of the overlapping activity with the construction of Hornsea</p>

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			<p>Three. As identified above, no publicly available information exists with regard to UXO clearance for other projects and therefore, it is not possible to establish a prediction of effect between the piling of Hornsea Three and any other UXO clearance. What can be established however, is that the assessment considered a 26km EDR for a number of projects that may overlap in time with Hornsea Three. The UXO clearance and piling for any given project is very unlikely to have a direct temporal overlap. Therefore, whilst the assessment has not explicitly assessed UXO clearance for other activities (as there is no information to draw on) it has considered an EDR that is indicative of both piling and UXO clearance already. Furthermore, as identified in the consideration of precaution within the marine mammal assessment, as submitted at Appendix 14 of the Applicant's response to Deadline I, the cumulative / in-combination assessments will have significantly overestimated both the level of activity that may overlap and the duration of that activity. Therefore, it is more than likely that the existing assessment will have captured the effect of any UXO clearance (if undertaken) associated with other wind farm projects, that may overlap with the construction of Hornsea Three. With regard to additional vessel activity being considered at the same time as piling and UXO clearance, it is considered that any disturbance effects from vessels associated with the construction works of the projects identified within the in-combination assessment, would, for the majority of cases, be captured within the 26km EDR that has been applied for the piling works associated with those projects, and therefore, it would not extend the level of predicted impact (in spatial terms) beyond that already assessed to any material extent.</p> <p>As a consequence it is considered that the existing conclusions of the in-combination assessment within the RIAA remain valid in this regard and that the likelihood of thresholds being exceeded is low. The existing control measure (now updated to comprise a commitment to a Site Integrity Plan in condition 13(5) of the generation assets DML and 14(5) of the transmission assets DML (Schedule 11 and 12 respectively of the draft DCO (Version 1, submitted for Deadline 1)) will ensure that prior to the commence of construction the undertaker has accurately (based on final scheme design and certainty with regard to overlapping projects) represented the risk to site integrity and applied any necessary mitigation to reduce effects to acceptable levels.</p>

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			<p><b>The Wash and North Norfolk Coast SAC</b></p> <p>The marine mammal qualifying feature of the Wash and North Norfolk Coast SAC is the harbour seal, which haul out to rest and breed in large numbers at the SAC.</p> <p>Due to the very low numbers of individuals predicted to be affected by disturbance resulting from the construction of Hornsea Three (maximum of 0.12 % of the reference population), harbour seals were not considered in the cumulative effects assessment in the marine mammal chapter, therefore it is not considered likely that there is the potential for an in-combination effect of underwater noise disturbance that would significantly affect the population of harbour seals associated with the SAC. Summed across all projects in the CEA, within the South East England Seal Management Area, the total number of harbour seals potentially affected is 0.24% of the reference population. Furthermore, during construction of all the plans and projects considered in the in-combination assessment, additional vessel traffic would be constrained within existing shipping routes and would be highly unlikely to be close to any SAC sites where seals are hauled out and/or breeding, therefore there would be no potential to directly disturb seals hauled out or breeding at the SAC.</p> <p>In light of the above, these activities in-combination with other plans and projects will not result in any changes to the distribution of animals within the site, nor any changes to the size or trajectory of the population of animals associated with this site. Therefore there is no indication of an adverse effect on the integrity of the Wash and North Norfolk Coast SAC taking into account the impact on harbour seal as a feature of that site.</p>
			<p><b>The Humber Estuary SAC and Ramsar site</b></p> <p>The marine mammal qualifying feature of the Humber Estuary SAC and Ramsar site is the grey seal, which haul out to rest and breed in large numbers at the SAC.</p> <p>As discussed above, due to the very low numbers of individuals predicted to be affected by disturbance resulting from the construction of Hornsea Three (maximum of 0.13 % of the reference population), grey seals were not considered in the cumulative effects assessment in the marine mammal chapter. Summed across all projects in the CEA, within the North East and South East England Seal Management Area the total number of grey seals potentially affected is</p>

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			<p>0.25% of the reference population within the combined North East and South East England Seal Management Areas. Therefore it is not considered likely that there is the potential for an in-combination effect of underwater noise disturbance that would significantly affect the population of grey seals associated with any SAC within those management areas. Furthermore, during construction of all the plans and projects considered in the in-combination assessment, additional vessel traffic would be constrained within existing shipping routes and would be highly unlikely to be close to any coastal SAC sites where seals are hauled out, therefore there would be no potential to directly disturb seals hauled out or breeding at the SAC.</p> <p>In light of the above, these activities at Hornsea Three, in-combination with all other plans and projects will not result in any changes to the distribution of animals within the site, nor any changes to the size or trajectory of the population of animals associated with this site. Therefore there is no indication of an adverse effect on the integrity of the Humber Estuary SAC and Ramsar site taking into account the impact on grey seal as a feature of that site.</p>
Q1.2.109	NE	<p>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.</p> <p>Please explain how this effect could be meaningfully addressed given the significant uncertainties associated with the specific locations of UXO?</p>	<p>The Applicant notes that this question is not directed at them, however notes that this issue is being discussed between the Applicant and Natural England as part of the Statement of Common Ground process. Specifically, the Applicant notes that the consideration of UXO detonations has not been assessed for cable and pipeline installations due to the current lack of information regarding UXO detonations for these projects. The Applicant can only consider information on other licenced activity that is publicly available. In the absence of such information the Applicant does not consider it appropriate to generate hypothetical numbers and produce an entirely speculative assessment for an activity that may not occur.</p> <p>Finally, the Applicant notes that it has committed to the production of a SIP closer to the construction period which will include consideration of any known UXO clearance works from any other licenced scheme at that stage.</p>

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Q1.2.110	Applicant	<p>Table 4.6 of the Report to Inform Appropriate Assessment [APP-051] refers to a UXO specific Marine Mammal Mitigation Plan that would mitigate the risk of physical or permanent auditory injury to marine mammals.</p> <p>How has this mitigation been secured in the dDCO and DMLs?</p>	<p>The Applicant confirms that it is not seeking consent for the clearance of UXO within the application for a DCO for Hornsea Project Three and therefore no conditions relating to UXO clearance are included in the draft DCO or DMLs (Version 1, as submitted for Deadline 1).</p> <p>However, and importantly, if and when UXO clearance is deemed necessary and the number, type, location and nature of any UXO are known, a separate marine licence will have to be applied for, which will have to contain a commitment for a UXO specific MMMP, in the same way that the draft DMLs require a MMMP for piling. This approach is standard offshore wind industry practice.</p>
Q1.2.111	TWT	<p>TWT [RR-047] states that the science underpinning underwater noise management is weak, difficult to deliver and does not encourage noise reduction.</p> <p>Please provide further information on the reasons for your concerns.</p> <p>In your view, what alternative noise impact mitigation would be effective?</p>	<p>The Applicant notes that this question is directed at TWT. The Applicant would advise that the techniques employed are industry standard, and therefore if TWT is able to substantiate its comments, they represent a general criticism of the management of underwater noise and not specifically concerned with Hornsea Project Three.</p>
Q1.2.112	TWT	<p>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.</p> <p>In your view, how should this application contribute to such activities?</p>	<p>The Applicant has responded to this point (1) in the TWT Relevant Representation (RR-047). The Applicant notes that this question is directed at TWT, however the Applicant confirms that the key uncertainty (within the marine mammal assessment) relates to the population level consequence of disturbance when considering cumulative level disturbance. It is well established that addressing such a high level uncertainty is best achieved through industry wide studies / initiatives that have the ability to tackle these population level cumulative concerns. It is possible therefore, that a commitment to contribute to any such industry wide studies would be the most pragmatic approach to monitoring for this topic. However, whilst it is recognised that monitoring at the individual project level is too small scale to address such population scale cumulative level uncertainty, consideration will be given to site-specific monitoring based on where it is established that there is a specific information gap within a wider strategic study that could be meaningfully filled at the individual project level.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			The current proposed monitoring conditions in the draft DMLs (Conditions 18, 19 and 20 in each of Schedule 11 and 12 of the draft DCO [APP-027] (Version 1, as submitted for Deadline 1)) for marine mammals are linked to the production of a Plan for Marine Mammal Monitoring in line with the objectives as set out in the In-Principle Monitoring Plan (IPMP). The IPMP makes clear that any monitoring may be delivered via strategic or site specific means. The Applicant therefore, considers that its existing proposed commitments are appropriate to ensure the most pragmatic option can be developed once it is clear what the final scheme design equates to and what the key knowledge gaps are, at that pre-construction juncture.
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?	The Applicant notes that this question is directed at Natural England, however the Applicant would highlight that the original proposed commitments made within the draft DCO (Application version [APP-027]) (Conditions 11(4), (5) and (6) of Schedule 11 (generation assets DML) and conditions 12 (4),(5) and (6) of Schedule 12 (transmission assets DMLs respectively) would effectively provide the same controls as a Site Integrity Plan (SIP). Furthermore, the Applicant confirms that it has agreed with Natural England and the MMO to commit to a SIP as part of the project mitigation (an outline version of which has been submitted at Appendix 15 to the Applicants response to Deadline 1). This would be secured by proposed conditions of the DMLs (see condition 13(5) of Schedule 11 (generation assets) and condition 14(5) of Schedule 12 of the of the draft DCO (Version 1, as submitted for Deadline 1). Therefore, the Applicant considers that this matter is agreed with both Natural England and the MMO.
Q1.2.114	NE, MMO, TWT, Whale and Dolphin Conservation	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?	The Applicant notes that this question is not to the Applicant but as stated above in the response to Q1.2.113, the Applicant confirms that it has agreed with Natural England that a Site Integrity Plan (SIP) will be produced and approved prior to construction works taking place.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.115	Applicant	<p>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.</p> <p>Please comment on NE's concerns and provide any additional data that may assist.</p>	<p>In December 2017, as part of Natural England's Discretionary Advice Service, Natural England requested a number of clarifications / additional information in relation to the age class data used to support the calculation of apportioning values for the breeding season for gannet, kittiwake and puffin in the draft Offshore Ornithology Environmental Statement for Hornsea Three. Specifically, these were:</p> <ul style="list-style-type: none"> <li>• "Natural England seeks clarification as to whether the proportions presented of adults and immatures (e.g. Tables 1.4, 1.5 &amp; 1.7 of Annex 3) are restricted to the breeding season.";</li> <li>• "...we [Natural England] request that age proportions are either presented per month, or as per the two breeding seasons in Table 2 above."</li> <li>• "We [Natural England] request that data regarding the proportion of 'unaged' and juvenile birds are presented."</li> </ul> <p>Clarification in relation to the first of these points was added to the Report to Inform Appropriate Assessment (RIAA) Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA (APP_054 and discussion in relation to the proportion of birds that were unaged during both boat and aerial surveys was provided (see paragraphs 1.4.2.8, 1.4.2.9 and 1.4.3.10). Monthly age proportion data was not presented as part of the application.</p> <p>The Applicant has not previously provided data at such a resolution with the approach applied in Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA (APP-054) and accepted by Natural England during the examination of Hornsea Project Two.</p> <p>As part of their relevant representation Natural England requested the following:</p> <ul style="list-style-type: none"> <li>• "...age class data month by month for the full breeding seasons as defined by Natural England..."</li> <li>• "...proportions of unaged birds are specifically presented (month by month) for each relevant data set for both boat based and (where appropriate) aerial survey data..."</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>The Applicant presented data relating to the proportion of birds that were unaged during boat-based and aerial surveys as part of RIAA Annex 3: Phenology, connectivity and apportioning for features of FFC pSPA (APP-054) in line with Natural England's previous request.</p> <p>A Clarification Note detailing Age class data has been provided to Natural England and is presented at Appendix 3 to the Applicants response to Deadline I</p>
Q1.2.117	Applicant, NE	<p>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.</p> <p>Please could NE provide further detail on this point and indicate how it considers that the long-term effects on bird populations associated with the pSPA should be assessed?</p> <p>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?</p>	<p>During consultation undertaken in connection with the preparation of the Evidence Plan, it was agreed with the Expert Working Group that PVA would be used to explore the implications of the additional mortality predicted for Hornsea Three, although the specifics of the methodology are still under discussion (see paragraph 4.3.3.10 in Consultation Report Annex 1 – Evidence Plan (APP-035)). The Applicant indicated that it would use the model produced for Hornsea Two as all input parameters for that model remained valid and appropriate for this assessment. Natural England raised two issues. First, that the model used for Hornsea Two did not used a 'matched pairs' approach, which involves conducting model runs for impact and unimpacted populations in parallel. And, second that the model had previously been run for 25 years whereas the proposed design life for Hornsea Three is 35 years.</p> <p>The Applicant sought advice from the author of the PVA model who indicated that for models the use of a matched pairs approach would not significantly alter model predictions, because, for each scenario modelled, very many runs are made (with and without the predicted additional mortality) and it is the average of these that is used. With respect to timeframe, the modeller also explained that, as the model does not include any density dependency, it is straightforward to extrapolate the outputs to 35 years.</p> <p>Nevertheless, to validate predictions, the model has been re-run for 35 years using a matched pairs and is presented at Appendix 9 to the Applicants response to Deadline I. As assumed, this model made predictions that are effectively the same as those predicted using the extrapolations of the Hornsea Two model and made no difference to the conclusions reached in the RIAA (APP-052).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.2.118	Applicant, NE	<p>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).</p> <p>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.</p>	<p>The Applicant does not consider that case C-164/17 has any implications for the appropriate assessment in this case (see response to Question 1.4.24) sites.</p> <p>The issue in C-164/17 concerned the distinction between protective measures (mitigation) and compensation; specifically what can properly be regarded mitigation for the purposes of appropriate assessment under article 6(3) and what are more properly compensatory measures which could only be relevant for the purposes of a derogation pursuant to article 6(4), if a project would adversely affect the integrity of a European site but is nevertheless to proceed because there are imperative reasons of overriding public interest and no alternatives.</p> <p>The Applicant's conclusions in the RIAA (that there are no adverse effects on the integrity of any European site) are not considered to depend on any compensatory measures, having regard to case C-164/17.</p>

## 1.4 Written Question 1.3 Marine Processes

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
n/a	n/a	The ExA has no questions on this issue at this stage. Effects on receptors affected by marine processes are covered in other sections.	Noted

## 1.5 Written Question 1.4 Ecology - Onshore

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.4.1	Applicant	<p>Paragraph 3.5.4.1 of the ES [APP-094] outlines a number of modifications, as defined in figure 3.22, that were made to the onshore export cable route (ECR).</p> <p>What field surveys have been undertaken since the application was submitted to determine the significance of any onshore ecological impacts in the re-route areas as well as any additional mitigation measures that may be necessary?</p>	<p>The Applicant can confirm that no further field surveys relating to onshore ecology have been undertaken since the application was submitted.</p> <p>It has not been considered necessary to undertake such further field surveys (post-application) in connection with the refinements made to the Order Limits following the PEIR but before the point of application.</p> <p>(1) In cases where refinements to the Order Limits were within the Phase 1 habitat survey boundary assessed at PEIR stage, additional field surveys were undertaken, where seasonal restrictions on species survey periods and access allowed.</p> <p>(2) In cases where refinements to the Order Limits fell outside the Phase 1 habitat survey boundary, additional Phase 1 habitat survey and species surveys were undertaken again where access and seasonal restrictions allowed.</p> <p>(3) For those remaining areas where access was not available, information gathered from the desktop survey, observations from Public Rights of Way and recent aerial photographs were considered adequate to identify habitats in the re-route areas. As stated in paragraph 3.3.1.7 of Volume 3 Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075], the surveys undertaken coupled with the desktop information is considered to provide sufficient information to enable baseline characterisation and to inform the assessment of effects including in respect of the re-routed sections.</p> <p>As stated in Table 3.2 of Volume 3 Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075] and the Outline Ecological Management Plan [APP-180], measures necessary to mitigate Hornsea Three's effects on ecology and nature conservation will be updated if necessary following pre-construction surveys.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.4.2	Applicant	<p>Table 1.10 of the ES [APP-073] states that there would be up to 105 minor and 15 major locations where Horizontal Directional Drilling (HDD) would be deployed and that site investigations would be carried out at each location to confirm that the underlying geology is suitable.</p> <p>Have site investigations been carried out for all HDD crossings and, if so, what are the conclusions in terms of their suitability for HDD?</p>	<p>Whilst technical site visits have been undertaken along the route, in combination with desktop reviews of available information on ground conditions, the full site investigations consisting of borehole geotechnical and geophysical evaluations have not been carried out at the locations of all proposed HDD locations along the cable route, as they are not deemed necessary at this time. Paragraph 6.9.1.9 of the Outline CoCP (APP-179) has been updated to read (new text shown in underline) '<u>Site investigations will be undertaken at each proposed HDD location at regular intervals along the onshore cable corridor and/or at sensitive HDD locations during the detailed design stage to confirm local geological conditions. The Environment Agency will be consulted on the location and methodology of the site investigations.</u>'</p> <p>HDD is a standard technology used on such projects for the installation of cables at particular locations where open cut trenching is not considered suitable, such as underground obstructions, water courses and such like. In line with experience from similar projects where HDD methods have been used, it is considered that due to the relatively short length of HDD drills required on this project and the relatively small drilling bore diameter, it is considered unlikely that HDD operations could not be carried out successfully at all locations, by utilising a combination of the suitable drilling equipment, appropriate drilling depth and suitable planning and execution of the works.</p>
Q1.4.3	Applicant	<p>Paragraph 1.11.1.22 of the ES [APP-073] states that direct impacts on the principal aquifer may occur from deeper ground workings associated with HDD whilst paragraph 1.11.1.23 goes on to state that the depth of the HDD is likely to be contained within superficial deposits with limited 'downward migration' potential.</p> <p>A) Please clarify these apparently contradictory statements.</p>	<p>A) The Applicant would clarify that there is the potential for direct impacts on the principal aquifer in the absence of mitigation and also if the principal aquifer is encountered close to the surface where superficial deposits are shallow in depth. Similarly, impacts may also occur where deeper workings are required, e.g. at major HDD locations or for piling works (potentially required at the onshore HVAC booster station or the HVDC converter/HVAC substation). However, for the majority of crossing locations, it is considered likely that the HDDs will be contained within the superficial deposits and this will be confirmed by the proposed site investigations. The mitigation measures (set out in Table 1.15 of Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement ([APP-073]) commit to undertake site investigations and hydrogeological risk assessments at specific HDD crossing locations and method statements for watercourse crossings which will be agreed with the Environment Agency. These measures will together ensure that there are no direct impacts on the principal aquifer, such that no significant effects are anticipated (Volume 3, Chapter 2: Hydrology and Flood Risk (APP-074))</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>B) Given the seemingly limited number of British Geological Survey boreholes, what level of confidence is there that there are impermeable superficial deposits at a thickness of 2m or more along the ECR?</p> <p>C) Which locations would require HDD at a depth greater than 2.5m?</p>	<p>B) The characterisation of the geology along the onshore cable corridor and at the onshore HVAC booster station and HVDC converter/HVAC substation is predominantly based on published 1:10,000 and 1:50,000 geological data from British Geological Survey (as set out section 1.7.3 of Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement [APP-073]. Where BGS borehole data is available, borehole logs have been used to confirm the local geological conditions. The Applicant acknowledges that the BGS boreholes are only available for a limited proportion of the onshore cable corridor, onshore HVAC booster station and HVDC converter/HVAC substation (see Volume 6, Annex 1.1: Borehole Logs of the Environmental Statement [APP-120]. As noted in paragraph 1.7.4.3 of Volume 3, Chapter 1: Geology and Ground Conditions [APP-073] of the Environmental Statement, the chalk aquifer is generally located at approximately 10 m Above Ordnance Datum along the Hornsea Three geology and ground conditions study area, indicating a significant depth (considerably more than 2 m) of superficial deposits along much of the corridor. The BGS descriptions of these superficial deposits are in paragraph 1.7.3.8 of APP-073, and the hydrogeology of these deposits is discussed in paragraphs 1.7.4.12-1.7.4.16. The depth of superficial deposits will be variable along the onshore cable corridor and at the onshore HVAC booster station and HVDC converter/HVAC substation. This has been taken into account in the assessment by identifying the potential for direct impacts on the principal aquifer to occur.</p> <p>The Applicant has updated the text of paragraph 6.9.1.9 of the Outline CoCP [APP-179] as follows: "Site investigations will be undertaken <u>at regular intervals along the onshore cable corridor, likely at complex HDDs and/or sensitive locations during the detailed design stage to confirm local geological conditions at each proposed HDD location during the detailed design phase to confirm local geological conditions.</u> The Environment Agency will be consulted on the <u>locations and</u> methodology of the site investigations."</p> <p>C) The Applicant would refer the Examining Authority to Table 3.52 of Volume 1, Chapter 3: Project Description [APP-058] which identifies the minimum and maximum parameters for HDD burial depth, with the minimum depth being 5m. As such the Applicant can confirm that all HDD locations would be installed at a depth greater than 2.5 m. The text within paragraph 6.1.1.5 of Volume 6, Annex 1.4: Water Framework Directive Groundwater Assessment of the Environmental Statement [APP-123] refers to 2.5 m as the depth of excavated trenches, and states that HDD crossings would be deeper than these trenches.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.4.4	Applicant	<p>Paragraph 6.1.1.5 of the ES [APP-123] states that any bentonite break-outs that might occur from deeper HDD would be contained and that there would be a short recovery time.</p> <p>A) How would any such pollution be recovered either from the principal aquifer or from superficial perched pockets of shallower groundwater?</p> <p>B) Please provide an outline Bentonite Break-Out Plan</p>	<p>A) The text within paragraph 6.1.1.5 of the ES [APP-123] is referring to all HDDs as deeper than trench excavations, and therefore the containment and recovery measures described in Annex C of the Outline CoCP [APP-179] are applicable. It is not expected that HDD operations will lead to pollution of the principle aquifer or smaller aquifers in the superficial deposits, because in areas identified as sensitive (paragraph 6.9.1.5 of the Outline CoCP), a prior hydrogeological risk assessment will inform a crossing method statement which will be agreed with the Environment Agency.</p> <p>As detailed in Table 1.15 of Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement, deep trenchless excavations (i.e for pile foundations, and where necessary at certain crossings) will be mitigated by casing off shallow groundwater units during construction works and sealing off once the casing is removed, based on guidance in: Piling and Penetrative Ground Improvement Methods on land Affected by Contamination: Guidance on Pollution Prevention (Environment Agency, 2001).</p> <p>In all cases, the objective of mitigation and designed in measures is to prevent pollution reaching any aquifer.</p> <p>B) The Applicant would direct the Examining Authority to Appendix C of the Outline Code of Construction Practice [APP-179] which provides an outline Bentonite Break-Out Plan. The plan sets out the risks associated with bentonite reaching the surface water environment; potential pathways and associated mitigation measures; geotechnical evaluations; and the location of drill entry and exits points. The outline Bentonite Break-Out Plan will be developed in consultation with the Environment Agency [paragraph 6.4.1.15 of the Outline CoCP] and forms part of the Outline Code of Construction Practice, and therefore will be agreed with the relevant local planning authority in consultation with the Environment Agency prior to works commencing.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.4.6	Applicant	<p>Paragraph 5.6.8 of NE's representation [RR-097] states that a single flood event could overwhelm soil storage protection measures and deposit large amounts of sediment into watercourses. NE goes on to state that of the 11 intense rainfall events (&gt;31 mm/day) in the last 26 years, 9 have been in the last 10 years.</p> <p>A) What run off control measures are envisaged to mitigate this type of event?</p> <p>B) How would this be secured through the dDCO?</p>	<p>A) Appropriate measures to control impacts associated with runoff from construction, including from the access tracks and compounds, are detailed in the Outline Code of Construction Practice (CoCP) [APP-179] and are in line with best practice (Table 2.17 of Volume 2, Chapter 2: Hydrology and Flood Risk of the Environmental Statement [APP-074]). On this basis, it has been agreed with Norfolk County Council (as documented in the Norfolk County Council SoCG submitted with the Applicant's Deadline I response), as Lead Local Flood Authority, that control measures identified in the application documents relating to run-off along the onshore cable corridor are appropriate, and that details on specific measures will be provided during detailed design once a contractor has been appointed. The measures will be in accordance with industry best practice guidance and will take into account extreme rainfall events. As documented in the Natural England SoCG submitted with the Applicant's Deadline I response, the following clarification text has been added to paragraph 6.4.1.13 of the outline CoCP: <u>'Measures to avoid or minimise sediment and potential contaminants from entering surface water will be designed to accommodate 1 in 100 year plus climate change worst case storm events.'</u> Issues relating to hydrology and hydrogeology have been agreed in Table 4.1 of the Natural England SoCG.</p> <p>B) These measures will be captured within the final Code of Construction Practice (CoCP) (which must accord with the Outline Code of Construction Practice APP-179), which will be agreed with the relevant local planning authority. This is stated in Schedule 1, Part 3, Requirement 17 of the draft Development Consent Order. It is additionally relevant to note that the Outline CoCP includes (final bullet at paragraph 6.4.1.17) a provision for ongoing consultation with the Environment Agency and Natural England during the construction period to promote best practice and to implement the proposed mitigation measures.</p>
Q1.4.7	Applicant	<p>Paragraph B.2.4.2 of the Outline Code of Construction Practice [APP-179] states that bentonite settling lagoons may be used to accommodate drill arisings and slurry from HDD operations.</p> <p>How would you ensure that extreme rainfall events do not lead to spillages from these</p>	<p>It is anticipated that bentonite settling lagoons would only be potentially required at major HDD crossings (i.e. typically greater than 200m) at either or both the entry and exit point locations. This includes HDD crossings located across the River Wensum SAC, Blackwater Drain (boundary of Norfolk Valley Fens SAC) and crossings close to Kelling Heath Site of Special Scientific Interest.</p> <p>Such settlement lagoons, if required, would be suitably sized to accommodate all the expected slurry arising with sufficient freeboard to accommodate rainfall events. Tankers would be used to remove materials from site for disposal to mitigate any potential for spillages; in normal weather conditions they would be used regularly to control the levels of slurry in the settlement lagoons, and in anticipation of more extreme weather events lagoons would be emptied. All</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		lagoons which may affect the River Wensum Special Area of Conservation (SAC), the Norfolk Valley Fens SAC and/or the Kelling Heath Site of Special Scientific Interest (SSSI)?	measures to avoid or minimise pollution of surface water will be designed to accommodate extreme rainfall events as detailed in the response to part A of this question.
Q1.4.8	Applicant	<p>Paragraph 3.6.12.4 of the ES [APP-058] states that a landfall construction compound would be required. The approximate location is shown on Sheet 1 of the Works Plan - Onshore [APP-013]. Paragraphs 3.7.2.49 and 3.7.2.50 of the ES [APP-075] indicate that breeding populations of little ringed plover and Cetti's warbler are present in the vicinity.</p> <p>A) What would be the effect of the siting and operation of the landfall construction compound on little ringed plover and Cetti's warbler?</p> <p>B) How would such effects be mitigated and controlled through the dDCO?</p>	<p>A) The Applicant considers that the siting and operation of the landfall construction compound would not be expected to result in an effect on the Cetti's warbler or little ringed plover populations for the following reasons:</p> <p>i) The Cetti's warbler population (paragraph 3.4.1.1 of APP-138) is restricted to the wetland habitat west of the Weybourne Beach car park. This area lies over 200 metres from the Works No 7. Onshore connection works area within which the land fall construction is proposed (Sheet 1 of the Works Plan - Onshore [APP-013]), and therefore disturbance is unlikely.</p> <p>ii) As described in paragraph 3.7.2.49 of Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075]), a single little ringed plover adult was observed in breeding behaviour during baseline surveys. This behaviour occurred 150 metres south from Works No 7. Onshore connection works (Sheet 1 of the Works Plan - Onshore [APP-013]). It is pertinent to note that no breeding attempt has previously been recorded in the vicinity of the proposed landfall since regular monitoring of the bird community began in 1972 (Moss Taylor <i>in litt.</i>).</p> <p>The Applicant considers that should a pair of little ringed plover return to breed within the locality some level of disturbance can be expected in the absence of mitigation (outline in response to B below).</p> <p>B) The Applicant considers that as siting and operation of the landfall construction compound would not result in an significant effect on the Cetti's warbler , no mitigation with respect to this species is necessary.</p> <p>Pre-construction surveys for nesting little ringed plover, informed by the existing data for the species, will be undertaken where construction at the landfall overlaps with the breeding season.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>As described in the Outline Ecological Management Plan [APP-180], no habitat containing an active nest will be removed or disturbed, and measures will be set in place to protect the nest until the Ecological Clerk of Works (ECoW) has confirmed young have fully fledged and left the nest.</p> <p>The final Ecological Management Plan (EMP) (which must accord with the Outline Ecological Management Plan APP-179) will be agreed with the relevant local planning authority and Natural England prior to commencement. This is secured in Schedule 1, Part 3, Requirement 10 of the draft Development Consent Order [APP-027].</p>
Q1.4.11	Applicant	<p>Paragraph 5.6.5 of NE's representation [RR-097] states that a significant bat population is present at the Alderford Common SSSI.</p> <p>A) To what extent would bat species associated with Alderford Common SSSI be affected by a loss of commuting and foraging routes?</p> <p>B) How would this affect the viability of the roost and the favourable conservation status of the species concerned?</p>	<p>A) The Applicant would direct the Examining Authority to Sheet 9 of the ecological constraints drawing (Figure 10.1 of the Outline Ecological Management Plan [APP-180] and Figure 3.2 of Volume 3 Chapter 3: Ecology and Nature Conservation [APP-075] of the Environmental Statement.</p> <p>The Applicant considered that there is no significant loss of likely bat foraging / commuting routes associated with Alderford Common. The onshore cable corridor passes west and south of the Common so any foraging routes to the north and east are not affected.</p> <p>As shown on the constraints plan and Volume 4 Annex 3.5: Onshore Crossing Schedule of the Environmental Statement [APP-089], Horizontal Directional Drilling (HDD) is proposed for approximately 200 m comprising two hedgerows and a stream (HDD45) which connects Alderford Common SSSI to Bush Meadow Plantation County Wildlife Site (CWS) to the south, and from there to the River Wensum SSSI / SAC and Marriotts Way CWS (both corridors also crossed by HDD43 and HDD44 respectively). This is the route most likely to be used by bats commuting from roosts in Alderford Common to reach foraging areas south of the SSSI, and therefore, the ability of bats roosting in Alderford Common to forage or commute in these areas would not be affected by habitat loss.</p> <p>B) The Applicant considers that for the reasons set out in response to A) above, there would be no adverse effect on the favourable conservation status of bat populations present at Alderford Common SSSI.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.4.12	Applicant	<p>Paragraph 3.7.2.26 of the ES [APP-075] states that no reptile records were found in areas of permanent land take.</p> <p>A) Were there any records that coincided with the areas of temporary land take, including storage areas?</p> <p>B) If so, where were these located?</p>	<p>A) The Applicant can confirm that there were no reptile records received from the data search that were located within areas of temporary land take.</p> <p>The reptile field survey (Volume 6 Annex 3.6: Reptile Survey) recorded reptiles at 15 locations within the Order Limits in areas of temporary land-take (including storage areas). Of these, 10 are located on areas where HDD only is proposed and therefore no reptile mitigation measures should be required. Three are located on areas where HDD with haul road over is proposed, and two are located on areas proposed for HDD or open cut. In these locations, reptile habitat would be affected by habitat loss from temporary land-take and where mitigation measures are therefore likely to be required</p> <p>All reptile records from the survey are shown on Figure 3.2 of Volume 3 Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075].</p> <p>In addition, a response received from Dr. Taylor (Honorary Warden of the Weybourne Camp Reserve) during the s42 consultation process indicated that there are adders present within the onshore cable corridor at Weybourne Camp (paragraph 3.7.2.17 of Volume 3, Chapter 3, Ecology and Nature Conservation [APP-075]). Access was not granted for a field survey. Whilst the precise location of this record is not known, for the purposes of the assessment and the identification of mitigation measures, it was assumed that this species is present within the Hornsea Three onshore cable corridor in the area identified as reptile habitat on Sheet 1 of Figure 3.2 of Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075]. Mitigation for these species is secured in Outline Ecological Management Plan [APP-180].</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>B) The three locations where reptiles were recorded in or adjacent to areas of reptile habitat within temporary land take areas which will be directly affected by habitat loss are on Sheets 13 and 14 of Figure 3.2 of Volume 3 Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075], south of Watton Road (614798 E 307601 N), south of Great Melton Road (615851E 306625 N) and south of Intwood Lane (619213 E 303642 N). These three records are all Grass Snake.</p> <p>The area of habitat where adders are reported to be present at Weybourne Camp is on Sheet 1 of Figure 3.2 of Volume 3 Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075] at 610583 E 343665 N.</p>
Q1.4.13	Applicant	<p>Paragraph 5.6.10 of Natural England's representation [RR-097] states that no draft European Protected Species (EPS) licences had been submitted prior to the application submission.</p> <p>If any draft EPS licences have been submitted since the submission of the application, please provide copies of any Letters of No Impediment which have been issued.</p>	<p>The applicant is developing the documentation required to secure the LONI. This will be submitted to Natural England shortly.</p>
Q1.4.14	Applicant	<p>Paragraph 3.11.1.104 of the ES [APP-075] states that artificial hedgerows would be provided in areas of high bat activity.</p> <p>A) Please show where these measures would be deployed.</p>	<p>A) Artificial hedgerows will be deployed where hedgerows with high or very high levels of bat activity recorded are removed. The exact number and locations of these will be finalised following pre-commencement surveys, although further clarification on the design of the artificial hedgerows is provided in updated paragraphs 5.4.5.2 and 5.4.5.3 of the Outline EMP (APP-180) as follows (new text shown in underline):</p> <p><u>"5.4.5.2 Artificial hedges will comprise sections of fencing without gaps and at least 2 m high in order to retain bat flight paths. At locations where construction is ongoing, covered heras fencing (for example with brush retained from</u></p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		B) What scientific evidence do you have concerning the effectiveness of such measures in maintaining commuting routes for the affected species?	<p><u>hedgerow clearance or camouflage mesh) may be used to allow the artificial hedges to be removed during working hours.</u></p> <p><u>5.4.5.3 When construction is completed on a particular section, a more permanent artificial hedge will be installed until replacement planting creates a continuous connecting habitat. If construction is carried out in two phases, a more permanent artificial hedge will be installed after construction of the first phase, and removed prior to construction of the second phase. These fences would again be without gaps and at least 2 m and may include willow woven fencing, wooden or close-boarded fencing, heras fencing covered with brush, or panels of artificial foliage (or a combination of these). Artificial hedges will comprise sections of Heras fencing containing branches from cleared hedgerow sections which will be threaded along the fence sections so as to enhance the connective value of the fence and help provide some wind shelter effect.</u></p> <p><u>5.4.5.3 — If construction comprises two phases, a more permanent artificial hedge will be installed after construction of the first phase, and removed prior to construction of the second phase."</u></p> <p>The Applicant has updated Figure 10.1: Ecological Constraints Plan of the Outline EMP [APP-180] to identify all currently known locations where artificial hedgerows may be required under the maximum design scenario, the updated Outline EMP has been submitted as Appendix 46 to the Applicant's response to Deadline 1. All hedgerows will be retained where practicable.</p> <p>Areas of high bat activity were identified on the baseline surveys, and this was taken into account when assessing the sensitivity of the receptor. The overall magnitude of impact of the construction of Hornsea Three on bats is unchanged and the same mitigation (i.e replacement planting reinforced by artificial flightlines until new planting matures) will be applied in all locations where high activity flightlines are affected.</p> <p>The Applicant can confirm that the conclusion of the assessment on bats (as reported in Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075]) has not changed.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>B) Artificial hedgerows have been proposed as a temporary mitigation measure where hedgerows of high bat activity will be affected by clearance works. Further details are set out below but in summary this proposal is based on the consensus of expert opinion amongst bat ecologists, supported by scientific evidence, that it is best practice to maintain a linear feature where it is necessary to remove a hedgerow.</p> <p>Scientific literature concerning the effectiveness of replacement or artificial hedgerows for maintaining commuting routes for bats is mainly focused on examining whether they are an effective measure to direct bats away from attempting to cross roads and towards safer crossing points. In these situations, the intention of artificial hedgerows is often to divert bats from an existing flightline (where they might be exposed to risk by collision with vehicles) to a different but safer crossing point if they continued to use the existing flightline after road construction.</p> <p><b><u>Evidence that bats are disturbed by the loss of a linear feature</u></b></p> <p>There is a consensus opinion amongst bat ecologists that a gap as little as 10 m wide can be enough to impact on commuting routes (BCT, 2007) and if impacts on flightlines cannot be avoided, it is preferable to provide replacement artificial flightlines along existing flightlines (e.g. Brinkmann (2003) and Brinkmann et al (2008), cited in O'Connor &amp; Green (2011), due to the preference of some bats to use consistent flightlines.</p> <p><b><u>Evidence that bats will follow an artificial flightline when it diverts them from their original path:</u></b></p> <p>Guiding fences or hedges were used by some of the monitored bats in two studies (Britschigi et al. 2004 and Koelman, 2008). Britschigi et al (2004) looked at the use of artificial hedgerows to connect Lesser Horseshoe bats to foraging habitat and found evidence of increasing levels of use of artificial hedgerows by the bats over the duration of the experiment, indicating that the species was adaptable and would use artificial flightlines. Two studies found evidence of guiding structures (a linear feature such as a fence) being successful in diverting bats from an existing flightline (where they would be at risk of collision mortality crossing operational roads at traffic height) towards a crossing point where bat mortality would be less likely (Fuhrmann &amp; Kiefer, 1996 and Picard, 2014). In one study, efforts to divert bats to new mitigation measures by planting trees and shrubs leading to the crossing point seemed</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>unsuccessful (Berthinussen &amp; Altringham, 2012). However, Lüttmann (2012 and 2013) found an increased movement of bats along fenced road stretches, particularly for Myotis, Plecotus and Pipistrellus species.</p> <p>While the evidence to prove that artificial flightlines are effective to <u>divert</u> bats from their pre-existing commuting route is mixed, this literature agrees that bats have strong fidelity to their commuting route, and also have a preference to stay within a hedgerow-like feature. The Applicant's proposal to maintain artificial hedgerows on existing flightlines is in line with both these points, as artificial hedgerows will not be used to divert bats from a pre-existing commuting route.</p> <p>The likely potential response of bats to artificial hedgerows could be summarised in three potential categories:</p> <ul style="list-style-type: none"> <li>I) The bats continue to use the artificial flightlines as a feature to guide their echolocation when traversing the onshore cable corridor, in which case no fragmentation effect would occur.</li> <li>II) The bats detect that the artificial hedgerow is different from the hedgerow that has been removed, but continue to use the flightline because of a preference to favoured foraging or commuting routes, in which case no fragmentation effect would occur;</li> <li>III) The presence of the artificial flightlines deters bats from crossing the onshore cable corridor, leading them to seek alternative flightpaths across the onshore cable corridor. It is considered that this reaction is the least likely to occur, given the consensus view that it is gaps in flightlines that can deter bats from commuting routes, not the construction of the flightlines themselves. However, if this reaction does occur, the bats have the option of flying across open ground (where there will be no permanent disturbance effect that might otherwise effect behaviour) or they can seek alternative routes via hedgerow crossings that are not affected by clearance works for onshore export cable installation. The frequency of HDDs means that alternative crossing points are available in fairly close proximity in the majority of cases. In this case the routes the bats might take across the landscape could be longer, but feasible.</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>The use of artificial hedgerows to close gaps created in flightlines by temporary works such as cable trenching is a commonly recommended mitigation measure. The measure has the best opportunity of being effective if it is installed along existing flightlines, to provide a feature that the bats can use to echolocate along while replacement planting matures.</p> <p>The Applicant considers that because there are no medium or long-term disturbance or mortality effects associated with the Hornsea Three onshore cable corridor that might reduce the effectiveness of artificial hedgerows, and given that the intention of the artificial hedgerows is to maintain existing flightlines rather than permanently divert them, it is reasonable to conclude that the use of artificial hedgerows will help maintain flightlines for bats in the short-medium term before hedgerow restoration planting matures. In the less likely scenario that the presence of artificial hedgerows actively deter bats, alternative flightlines are available which link likely roost areas to foraging areas.</p> <p><b>Reports cited within O'Connor &amp; Green (2011):</b></p> <p>Brinkmann R., Bach L., Biedermann M., Dietz M., Dense C., Fiedler W., Fuhrmann M., Kiefer A., Limpens H., Niermann I., Schorcht W., Rahmel U., Reiter G., Simon M., Steck C. &amp; Zahn A. (2003). Schadensbegrenzung bei der Lebensraumzerschneidung durch Verkehrsprojekte – Kenntnisstand-Untersuchungsbedarf im Einzelfall-fachliche Standards zur Ausführung. Positionspapier der Arbeitsgemeinschaft Querungshilfen.</p> <p>Brinkmann R., Biedermann M., Bontadina F., Dietz M., Hintemann G., Karst I., Schmidt C. &amp; Schorcht W. (2008). Planung und Gestaltung von Querungshilfen für Fledermäuse. Ein Leitfaden für Straßenbauvorhaben im Freistaat Sachsen. Sächsisches Staatsministerium für Wirtschaft und Arbeit, 134 Seiten.</p> <p><b>Reports cited within Møller et al (2016):</b></p> <p>Britschgi A, Theiler A &amp; Bontadina F 2004 Wirkungskontrolle von Verbindungsstrukturen. Teilbericht innerhalb der Sonderuntersuchung zur Wochenstube der Kleinen Hufeisennase in Friedrichswalde-Ottendorf / Sachsen. Unveröffentlichter Bericht, ausgeführt von BMS GbR, Erfurt &amp; SWILD, Zürich im Auftrage der DEGES, Berlin.</p> <p>Koelman RM 2008. Vliegrouete vleermuizen Noordelijke Hogeschool Leeuwarden. Beoordeling van de effectiviteit van een tijdelijke vliegrouete voor vleermuizen in juli 2008. Rapport 2008.29. Zoogdiervereniging VZZ, Arnhem.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>Fuhrmann M &amp; Kiefer A 1996. Fledermausschutz bei einer Strassenneubauplanung: Ergebnisse einer zweijährigen Untersuchung an einem Wochenstubenquartier von Grossen Mausohren (<i>Myotis BORKHAUSEN</i>, 1797). Fauna Flora Rheinland-Pfalz 21, pp. 133-140.</p> <p>Picard J 2014. Llanwnda to south of Llanllyfni Improvement—Assessment of Longer Term Implications on European Sites. Hyder Consulting (UK) Limited-2212959.</p> <p>Berthinussen A &amp; Altringham J 2012. Do bat gantries and underpasses help bats cross roads safely? PloS One 7. e38775. doi:10.1371/journal.pone.0038775</p> <p>Lüttmann J 2012. Are barrier fences effective mitigating measures to reduce road traffic bat mortality and movement barrier effects? Proceedings from the IENE 2012 International Conference, October 21 – 24, 2012, Berlin-Potsdam, Germany, p. 108.</p> <p>Lüttmann J 2013. Beeinflussen Querungshilfen und Schutzzäune das Querungsverhalten von Fledermäusen. Poster presented on FGSV-Landschaftstagung 2013.</p>
Q1.4.15	Applicant	<p>Paragraph 3.11.1.102 of the ES [APP-075] states that, in most cases, bats would be able to use alternative routes at 8 locations where important hedgerows would be lost.</p> <p>A) What scientific evidence do you have to support this assumption and how have you quantified the suitability of alternative routes?</p> <p>B) Given the proposed use of HDD at 37 hedgerow locations where bat activity is high, would it be appropriate to use the</p>	<p>A) As established in the response to Q1.4.14, the Applicant considers that bats are most likely to use the artificial flightlines for commuting across the onshore cable corridor in these locations, given that it is severance of flightlines by creation of gaps that is the key potential driver of an adverse effect. The Applicant acknowledges that there is variation within the bat population which may mean that some bats prefer to not use the artificial flightlines, but in that (less likely scenario) alternative flightlines along retained hedgerows or across open ground are available for bats and the availability of such alternative routes in the vicinity (up to c500m from the flightline) is itself a key mitigation measure.</p> <p>Artificial flightlines and alternative routes should be viewed in combination as a best practice solution to the short to medium term loss of hedgerows. For the purposes of the bat flightlines affected by the installation of the Hornsea Three onshore cable corridor, the mitigation proposed is considered to be an acceptable measure to minimise disruption to flightlines.</p> <p>The suitability of alternative routes was assessed by looking for the availability of suitable connective habitat such as hedgerows that provides a clear alternative uninterrupted flightline that enables bats to cross the onshore cable corridor within a reasonable distance of the potentially affected flightline (i.e. up to c500m from the flightline).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		same approach at the remaining 8 locations?	B) The Applicant has employed a robust process to decide which features will be crossed using HDD. Annex E to the updated Outline Code of Construction Practice [APP-179] shows the location of HDD only, HDD with haul road over and HDD with ducting laydown crossings which the Applicant is committing to. The decision regarding which crossing method to use at which location has involved a review of ecological, landscape and underground protected features, among other factors including commercial and planning considerations. The Applicant considers it is not appropriate to propose to HDD under all hedgerows with high bat activity as the mitigation measures proposed to maintain commuting paths for bats are considered to be effective (set out in part A of this question).
Q1.4.17	Applicant	<p>Paragraph 6.5.1.19 of the Outline Code of Construction Practice [APP-179] states that the impact of vegetation clearance on reptiles would be mitigated by 'gradual strimming of above-ground vegetation'.</p> <p>A) What level of risk is there that this method could kill reptiles that have emerged from hibernation with restricted movement due to low body temperature?</p> <p>B) Please explain the apparent inconsistencies with paragraphs 4.3.3.5 and 4.3.3.7 of the Outline Ecological Management Plan [APP-180].</p> <p>C) Why have these measures not been incorporated into the Outline Code of Construction Practice?</p>	<p>A) Gradual strimming refers to a technique whereby vegetation that might support active reptiles is progressively and carefully strimmed in phases in order to minimise the risk of mortality that might occur if the vegetation was cut down to ground level in one pass. Instead, an initial cut to 10 cm is undertaken, followed by a further cut to 5 cm. Reptiles would be encouraged to move out of the strimming area on the first pass but would not be at risk of injury from the strimming action. The second, lower cut, is intended to make the habitat unsuitable for reptiles so that they do not move back in to the cut area. This method would only be used where there is alternative habitat available.</p> <p>There are two potential causes of mortality resulting from the proposed mitigation method when reptiles emerge from hibernation with potentially restricted movement due to low body temperature.</p> <p>Firstly, that the reptiles are unable to move out of the way of the strimming operation in time and are killed. This risk is avoided by the two-phase cut, as the first cut is sufficiently high such that any reptiles that do not move away from the strimming operation will not be harmed. The time between the first and second cut, which would be advised by the ECoW, allows reptiles to move away before the second cut commences. The potential restricted movement due to lower body temperature immediately after hibernation should therefore not result in increased mortality from the strimming operation itself.</p> <p>The second potential cause of mortality is that reptiles emerging from hibernation in areas that have been completely cleared of vegetation are more at risk of predation and exposure to cold conditions if there is no suitable cover available to them. Edgar et al (2010) states that flailing vegetation to ground level in areas used for early spring basking (i.e. after emerging from hibernation) by reptiles can result in a 'moderate' impact on a population from increased predation.</p> <p>The Applicant does not consider that clearing trees and scrub to a height of 30 cm (as specified in in Paragraph 6.5.1.20 of the Outline Code of Construction Practice [APP-0179]) in areas where reptiles might be hibernating would</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>result in a significantly increased risk of mortality for reptiles emerging from hibernation provided that sufficient ground cover remains to give reptiles refuge from predation and cold temperatures on emergence from hibernation. Furthermore, measures (such as uprooting of vegetation of potential value to hibernating reptiles) would be taken prior to the start of the hibernation period to deter reptiles from hibernating in the area (Table 3.19 of Volume 3, Chapter 3: Ecology and Nature Conservation of the Environmental Statement [APP-075] and Paragraph 6.5.1.20 of the Outline Code of Construction Practice [APP-0179].</p> <p>(Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.)</p>
			<p>B) The Applicant has reviewed the Outline Ecological Management Plan [APP-180] as part of its Deadline I submission and has amended the wording of paragraph 4.3.3.5 as follows: <u>"If habitat is cleared during the reptile hibernation period (November until February inclusive, dependent on local weather conditions), trees and scrub will be cut using brushcutters or chainsaws, to a height of approximately 30 cm above ground level, so as to minimise the potential for disturbance to root balls where hibernating reptiles may be located."</u></p> <p>The amended paragraph 4.3.3.5 relates to reptile habitat management that may have to be undertaken during the hibernation season, which may be required to deter breeding birds from nesting in the area.</p> <p>Paragraph 4.3.3.7 of the Outline Ecological Management Plan [APP-180] relates to operations undertaken in areas of reptile habitat during the reptile active season in order to encourage reptiles to move out of the works area and to deter reptiles from hibernating. This paragraph provides detail on the manner by which habitat clearance would be undertaken and is summarised in paragraph 6.5.1.20 of the Outline Code of Construction Practice [APP-179].</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			C) The purpose of the Outline Ecological Management Plan [APP-180] is to describe the ecology and nature conservation mitigation measures that will be implemented, whereas the Outline Code of Construction Practice [APP-179] sets out the management measures for all environmental topics. To avoid duplication of information, a summary of the ecology and nature conservation measures are included in the Outline Code of Construction Practice [APP-179] and further detail is provided in the Outline Ecological Management Plan [APP-180].
Q1.4.18	Applicant	<p>Paragraph 4.3.6.6 of the Outline Ecological Management Plan [APP-180] states that all construction lighting in the vicinity of bat roosts should conform to guidelines produced by the Bat Conservation Trust.</p> <p>A) Should this be incorporated into the Outline Code of Construction Practice [APP-179]?</p> <p>B) Should this also be applied to key foraging and commuting routes?</p>	<p>A) The Applicant has reviewed the Outline Code of Construction Practice [APP-179] as part of its Deadline I submission and has amended the wording of paragraph 6.5.1.6 as follows:</p> <p><i>"Night working will be avoided where practicable. Where night working is unavoidable, light fixtures will be directed away from habitat of value to protected or otherwise notable species including badgers, birds and bats, to minimise likely disturbance effects of light spillage. Lighting will be kept to an absolute practicable minimum where located nearby to any active badger setts. <u>Construction lighting in the vicinity of bat roosts and hedgerows where high or very high levels of bat activity have been recorded will follow best practice guidelines produced by the BCT (BCT, 2011)".</u></i></p> <p>B) In addition to the amendment to paragraph 6.5.1.6 of the Outline Code of Construction Practice (CoCP) [APP-179] above, the Applicant has reviewed the Outline Ecological Management Plan [APP-180] as part of its Deadline I submission and has amended the wording of paragraph 4.3.6.5 as follows:</p> <p><i>"Hedgerow restoration will take place immediately following each cabling phase. However, replacement planting will take time to mature after each phase of construction. Therefore, artificial hedgerows will be provided in locations where hedgerows supporting high or very high levels of bat activity have been recorded in the locations shown on Figure 10.1. This will ensure that connectivity will be maintained across gaps created by the hedgerow until the second phase restoration planting matures. Construction lighting in the vicinity of hedgerows where high or very high levels of bat activity have been recorded will follow best practice guidelines produced by the BCT (BCT, 2011)".</i></p>
Q1.4.19	Applicant	Table 4.4 of the Report to Inform the Appropriate Assessment [APP-051] differs from the maximum design parameters	The Applicant acknowledges that the correct parameters for the maximum design scenario (MDS) are listed in Table 3.14 of the Environmental Statement [APP-075]. Full details of these parameters are included in Appendix 37 of the Applicant's response to Deadline I.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		listed in table 3.14 of the ES [APP-075]. Please explain which values are correct for the number of link boxes and the dimensions of the substations and booster station.	
Q1.4.20	Applicant	<p>Paragraph 5.6.3 of NE's representation [RR-097] states that there is insufficient information to comment on the likely effectiveness of the pink-footed geese mitigation plan.</p> <p>A) Please explain what measures you are considering to reduce disturbance to pink-footed geese populations during the installation of the onshore cable connection.</p> <p>B) Would it be possible to avoid construction activities during the period when the geese are present?</p>	<p>A. As seasonal, spatial and economic (beet harvesting schedules) aspects affect the existence of useable foraging habitat within the onshore cable corridor, and construction timelines and processes will not be finally decided until the appointment of a contractor, there are variables as to whether an impact as a result of cable installation works will occur, and if so the scale of such an impact on pink-footed geese. Therefore, the Applicant has committed to the preparation of a Pink-footed Goose mitigation plan, the final version will form an appendix to the final CoCP (Requirement 17 of the dDCO), as stated in updated paragraph 6.5.1.40* of the Outline CoCP (APP-179) (new text shown in underline)</p> <p><i>"6.5.1.40 If construction work on functionally linked sugar beet fields is likely to take place between November and January inclusive, a pink-footed goose mitigation plan will be formulated and submitted to Natural England for approval in the 12 months prior to construction. <u>The final version of this document will have as an appendix the approved Pink-footed Goose mitigation plan.</u> There would be two steps to the plan: ..."</i></p> <p>This plan will incorporate a decision tree process to promote adaptive management, incorporating all relevant variables and milestones in order to inform appropriate mitigation that is targeted and proportional in light of the circumstances at the time of construction. Should it be determined pursuant to the decision-tree process of the Pink-footed Goose mitigation plan that mitigation is necessary, options which would be considered include assigning an ECoW with experience working with pink-footed geese, toolbox talks with contractors to make them aware of disturbance pathways, and restricting the timing of works which involve a team of people and equipment working gradually along the cable corridor i.e. trench excavation and fencing.</p> <p>*It is noted that an error within the numbering of paragraphs 6.5.1.40 – 6.5.1.42 of the Outline CoCP (as submitted) has also been corrected within the updated Outline CoCP (APP-179) provided as Appendix 44 to the Applicant's response to Deadline I.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>B. The Applicant does not consider it feasible or necessary to stop all construction while geese are present. Should mitigation be deemed necessary following the decision tree process described above, an appropriate level of mitigation (which could include the measures listed in the Applicant's response to part A of this question) will be agreed through the approval process of the Pink-footed Goose mitigation plan.</p>
Q1.4.23	Applicant	<p>Screening and integrity matrices have been submitted in response to s51 advice from the Inspectorate [PD-003].</p> <p>Please provide updated versions of the Stage 2 matrices to deal with the following points: Footnote 'd' is missing from the Stage 2 Matrix for the Southern North Sea candidate SAC.</p> <p>Matrix 3.17 for the Norfolk Valley Fens SAC only lists one feature - this does not match the list of features for which likely significant effects were identified in the Report to Inform Appropriate Assessment.</p> <p>All the features which were assessed for effects on integrity should be included in the matrix. The footnotes for the North Norfolk Coast Ramsar site include footnote 'e' which does not appear in the matrix.</p>	<p>Please see Appendix 1 of the Applicant's response to Deadline I which provides an updated version of the HRA Screening and Integrity Matrices and addresses each of these points.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.4.24	Applicant, NE	<p>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.</p> <p>Do you have any further or different comments in relation to onshore European sites?</p>	<p>The implications of these recent rulings have been considered in relation to both offshore (see response to Question 1.2.118) and onshore European sites. There is no indication that screening of European sites or the Report to Inform Appropriate Assessment [APP- 051] require amendment in light of these rulings.</p> <p>We believe the implications of these rulings apply equally to both offshore and onshore sites.</p>

## 1.6 Written Question 1.5 Navigation and other offshore operations

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.5.1	Applicant, Maritime and Coastguard Agency (MCA)	<p>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 1 in 152 years. Paragraph 7.11.2.39 of the ES [APP-067] characterises this as a negligible effect.</p> <p>A) Please can the Applicant provide further explanation as to why this increase in collision risk should be regarded as negligible?</p> <p>B) Is the MCA in agreement with the approach to collision risk modelling and do you consider the outputs of the modelling to be realistic?</p>	<p>A) The annual vessel to vessel collision frequency following the installation of Hornsea Three was estimated to be <math>6.59 \times 10^{-3}</math>, corresponding to a major collision return period of one in 152 years. This value was based on a precautionary vessel routing assumption of vessels passing a minimum of 1 nm from any structure within Layout A (see Figure 9.1 of Volume 5, Annex 7.1: Navigational Risk Assessment [APP-112]). In reality vessels will likely pass at a more variable distance resulting in the potential for collision risk being reduced. It is also noted that the one in 152 years value is considering Hornsea Three in isolation. The presence of Hornsea Project One and Hornsea Project Two will displace traffic to the north from existing routes, further reducing the potential collision risk, prior to Hornsea Three becoming operational.</p> <p>Table 1.1 in Appendix 35 to the Applicants response to Deadline I presents the vessel to vessel collision return periods for the pre-wind farm and post-wind farm scenarios for a selection of other submitted and consented offshore wind farm projects. The increase in collision risk for Hornsea Three Offshore Wind Farm is 21%. As presented in Table 1.1 of Appendix 35 to the Applicants response to Deadline I, this increase, based on conservative routing, is in line with that for Norfolk Vanguard and lower than that of Hornsea Project One and Hornsea Project Two. The increase in collision risk is therefore within As Low As Reasonably Practicable (ALARP) parameters when compared to increases associated with other consented wind farm projects.</p> <p>It is also noted that collision risk modelling is one of many inputs used to assign rankings to effects. Other inputs include lessons learnt, consultation and importantly the Hazard Workshop which all indicated increased collision risk to be a negligible risk.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			B) This question is directed to the MCA but the Applicant would like to note that the method and modelling processes were agreed in advance of the Navigational Risk Assessment being undertaken with key consultees and Hazard Workshop attendees.
Q1.5.2	Applicant	<p>Figure 16.1 in the Navigational Risk Assessment [APP-112] shows an adverse weather route for the Cuxhaven-Immingham ferry passing through the area of the proposed array.</p> <p>A)How does the availability of this route benefit the operation of the ferry at present?</p> <p>B)What would be the consequences for ferry operations of the loss of this route?</p> <p>C)Would there be an alternative adverse weather route or would ferries revert to one of the standard routes shown on Figure 16.1?</p>	<p>A-C) Adverse weather routes are assessed to be significant course adjustments to mitigate vessel movement in adverse weather conditions. For the purposes of the assessment into adverse weather, indicative transit routes were provided by the ferry operator. These routes are only potential routes the vessels may take and when considered against real time data were shown not to be frequently used. There are no fixed requirements to any route that a vessel may take.</p> <p>For the operation and maintenance phase, pre PEIR consultation with ferry operator DFDS Seaways identified that the Hornsea Three array area was intersected by one indicative adverse weather route for the Immingham to Cuxhaven route. However, analysis of vessel Automatic Identification System (AIS) survey data from 2016 undertaken as part of the Navigational Risk Assessment (NRA) (see Section 22.6 of Volume 5, Annex 7.1: NRA [APP-112]), identified eight potential adverse weather transits (transits that deviated from typical routes and therefore assumed to be adverse weather mitigation). When considered against the number of potential standard crossings recorded via AIS this equates to less than 2% of total transits (during the 2016 sample) using adverse weather routeing which is notably to the north of the Hornsea Three array area. The actual adverse weather tracks (as assumed) were also to the north of the Hornsea Three array area.</p> <p>It is also noted that the vessels on the Immingham to Cuxhaven route are commercial Ro Ro vessels that carry a limited number of passengers and are therefore more able to withstand adverse weather conditions than passenger ferries (due to health and safety risks to on-board passengers) however, there are still viable and safe options open to</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>them should conditions on their normal routes deteriorate as is shown in Figure 1.1 in Appendix 35 to the Applicants response to Deadline I.</p> <p>Therefore, given the limited use of indicative adverse weather routes that transit through the site and the potential for the vessel to utilise other viable and safe adverse weather route options, especially given the limited numbers of passengers carried, there are not expected to be any negative effects on the Immingham to Cuxhaven route.</p> <p>A representative from DFDS Seaways, who operate the Immingham to Cuxhaven route, did attend the Hazard Workshop for Hornsea Three and no response was received to the Section 42 consultation. It is also noted that DFDS Seaways have not submitted a relevant representation.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.5.3	Applicant	<p>The ES [APP-067] discusses the vessel to subsea structure allision risk resulting from presence of subsea high voltage alternating current (HVAC) booster stations and cable protection. Section 18.4 of the Navigational Risk Assessment [APP-112] identifies a key area of risk approximately 5nm north of the landfall location, together with specific cable/pipeline crossings which may be of concern.</p> <p>A) Please provide further information about the existing depths of water, the likely reductions in depth due to subsea works and the range of draughts of vessels typically navigating through these areas of risk/concern.</p> <p>B) The ES refers to potential further mitigation being required should subsea offshore HVAC booster stations be utilised. Please give examples of what such further mitigation might be.</p>	<p>A) It is noted that the MCA accept up to a 5% reduction in water depth in surrounding charted depths referenced to Chart Datum (MGN 543 (Annex 1 (section 3d), MCA 2016), beyond which consultation must be undertaken with the MCA to evidence that any navigational risks to any vessel type are satisfactorily mitigated.</p> <p>Section 18.4 of Volume 5, Annex 7.1: Navigational Risk Assessment [APP-112] includes an initial assessment of under keel clearance associated with cable burial and protection that was undertaken post section 42 consultation to address concerns raised by the MCA with regard to reductions in water depth greater than 5%. As noted in the ExA's question, the NRA identified areas of potential risk approximately 5nm to the north of the export cable landfall where the cables cross shallow waters west of the Sheringham Shoal bank. Shallows above banks further offshore (the Leman Bank and the Ower Bank) were also identified as areas of potential under keel clearance impact, although it was noted that traffic was less dense within these areas and largely comprised of oil and gas related traffic.</p> <p>The crossings of the Dudgeon offshore wind farm export cable area, the Stratos 1 cable, and the Clipper to Galleon (all &lt;25 m depth) and Clipper to Skiff pipelines (&lt;35 m depth) were identified as specific areas of potential concern with regards to under keel clearance and the likely need for cable protection material at these points that would likely lie above the existing charted depths and therefore have the potential to reduce navigable depths. Additionally, the Applicant notes that pipeline and other crossing agreements will be required with various cable/pipeline owners for all assets crossing within 500m of Hornsea Three's export cables as discussed in paragraph 11.7.15.2 of Volume 2, Chapter 11: Infrastructure and Other Users [APP-071]. It is noted that, post consent and prior to construction, and once the detailed design of the Hornsea Three export cable route is finalised, a cable crossing agreement will need to be entered into with the relevant cable/pipeline operators; these agreements will set out the requirements for cable crossing design and installation methods.</p> <p>The Applicant proposes to control the risk relating to reductions in navigable depth through the 'industry standard' process and by consultation with the MCA during the post consent phase; the process is already secured by condition in the dMLs. The process post-consent will be as follows:</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>Undertake a full detailed bathymetric survey will be undertaken prior to commencement of the works including areas where there is a risk that navigable depths will be reduced beyond the 5% MCA threshold (as detailed within the updated In Principle Monitoring Plan (IPMP) [APP-182] and secured via appropriate condition within the dMLs).</li> <li>Complete commercial crossing agreements with other cable/pipeline operators (to define requirements relating to crossing design).</li> <li>Finalise cable installation methodology and burial requirements, including identifying areas potentially requiring cable protection; including final cable/pipeline crossing designs identifying location and height of crossing infrastructure above prevailing charted depths (as confirmed by the bathymetric survey).</li> <li>Set out the cable installation and design in the Cable Specification and Installation Plan (CSIP) under conditions 13(1)(h)(ii) and 14(1)(h)(ii) in the dDCO [APP-027] for approval by the MMO in consultation with the MCA (the CSIP will identify reductions in navigable depth of &gt;5%). Approval of this plan will be dependent on the MCA being satisfied that any risk arising from reductions in navigable depth are ALARP and by reference to the location of the cable protection/crossings and prevailing marine traffic type and density.</li> </ul> <p>Where necessary, and by consultation with the MCA on the CSIP, identify any further mitigation required to ensure the safety of navigation in the vicinity of cable protection/crossing infrastructure.</p> <p>Such further mitigation measures which could be employed to ensure safety of navigation in the vicinity of cable protection/crossing infrastructure include those outlined in Part B below for the subsea HVAC booster stations (e.g. promulgation of information, marking on admiralty charts and buoyage).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>B) The following mitigations are proposed to reduce the risk of allision for the subsea HVAC booster stations.</p> <ul style="list-style-type: none"> <li>• <b><u>Allision modelling</u></b> Under keel allision risk modelling will be undertaken post consent if the subsea option is selected and once number, location and size have been defined. This will be done in consultation with the MCA and Trinity House.</li> <li>• <b><u>Promulgation of information</u></b> Where water depths are reduced in the vicinity of regular traffic, the relevant vessel operators (identified via marine traffic analysis) should be made aware of reductions.</li> <li>• <b><u>Marking on Admiralty charts</u></b> All relevant details with regards to the HVAC booster stations will be provided to the UK Hydrographic Office (UKHO), who will mark this information on Admiralty charts as appropriate. The UKHO may consider adding notes to charts highlighting hazards arising from subsea infrastructure.</li> <li>• <b><u>Buoyage</u></b> Should subsurface HVAC booster stations be installed, it was recommended by Trinity House that their presence be indicated by permanent buoyage.</li> <li>• <b><u>Safety zones</u></b> Inclusion of operational safety zones around the subsurface HVAC booster stations in the Hornsea Three safety zone application may also be considered in conjunction with the Department for Business, Environment and Industrial Strategy.</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.5.4	MCA	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. What would the MCA regard as an acceptable tolerance?	<p>The Applicant notes that this question is directed at the MCA but points out that the MCA's relevant representation stated that a 300 m Development Lane (<math>\pm 150</math> 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 (<math>\pm 150</math> 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's SAR specialist has provided information on the equipment available on SAR helicopters to allow a close approach and search of the area between the widely spaced turbines within the Development Lanes including:</p> <p>Star SAFIRE HD- The MCA SAR Helicopters use an Electro-Optical System made by FLIR Systems, the Star SAFIRE HD. Unlike previous systems, this product can combine visual and IR imagery onto a single screen which optimises the search in difficult conditions. This would permit a search of the Development Lanes from the SAR Lanes in all but the poorest visibility. The system can use Merlin software which cues the operator to possible survivors and so enhances the search capability.</p> <p>Radar Honeywell Primus 701A - The S92 is equipped with the Primus 701 radar which has a minimum range of 137m (450 ft). This system enables ground/sea mapping and weather detection optimised for SAR operations. The Primus 701A has a variable pulse width that is automatically optimised for range and mode setting. The system also includes selectable sea clutter reduction and operator modified gain and tilt thereby allowing for optimum search capability. The radar is capable of discriminating between individual turbines and mapping an obstacle free track between turbines.</p> <p>Automatic Identification System - The MCA SAR helicopters are equipped with AIS which will allow them to identify any equipped vessels or turbines fitted with AIS.</p> <p>Navigation systems - The MCA SAR helicopters are equipped with integrated navigation and display systems which will show the crew all obstacles held in the database. As the turbines will be accurately mapped, the system will provide a clear display of the obstacles. There is the ability to add the turbines to the EGPWS database giving</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			approximately 20 seconds of warning before an obstacle, but this should be balanced against the frequency of nuisance alerts.
Q1.5.5	Applicant, MCA	<p>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.</p> <p>A) What would be the advantages and disadvantages of incorporating a helicopter refuge area as suggested by the MCA?</p> <p>B) Are there examples of offshore windfarms with turbine development corridors of a length comparable to this proposal?</p> <p>C) If there are, what approach was taken to</p>	<p>A) For arrays comprised of tightly spaced turbines, a dedicated helicopter refuge area may allow an area for the SAR helicopter to manoeuvre in poor weather or when faced with an emergency. It is noted that this is not the case for Hornsea Three or other current Round Three projects where turbine spacing is at least 1 km in all directions.</p> <p>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 identify obstacles without the need for a refuge area.</p> <p>Critically, to be effective a helicopter refuge area would have to be located where the SAR operation was being conducted and/or where the emergency occurred, which is unlikely and not predictable.</p> <p>Although the MCA Guidance mentions refuge areas, this requirement does not appear to be necessary in the case of Hornsea Three due to the spacing of turbines.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		maintaining SAR capability in those examples?	<p>B) Of publicly available projects only the in-construction Hornsea Project One have SAR lanes of around 10 nm in length.</p> <p>C) Given the shape of Hornsea One only two lanes are near this 10nm length and no additional mitigations were included (outside of those mentioned in MGN 543 i.e., turbine ID marking).</p>
Q1.5.6	Neptune E&P UK Limited (Neptune)	<p>Neptune [RR-063] considers that Hornsea Project Three, in combination with Hornsea Projects One and Two, would create a barrier to helicopters flying between Norwich and the Cygnus gas field, thereby increasing flight times. A safe corridor for helicopters between Hornsea Projects Two and Three is suggested.</p> <p>Please illustrate, in plan form, the dimensions and approximate location of the suggested safe corridor.</p> <p>Please quantify any impacts on flight times, payload, fuel usage and emergency response times resulting from Hornsea Project Three (on the assumption that Hornsea Projects One and Two are constructed).</p> <p>How would the resulting flight times compare with the range of flight times currently experienced between oil and gas</p>	<p>The Applicant refers the Ex.A to the Applicant's response to Neptune Energy's Relevant Representations (RR-063) submitted to Deadline I. The Applicant and Neptune are in ongoing dialogue regarding the necessary mitigation measures to address concerns raised in the Neptune Relevant Representation. A summary of these discussions and the proposed mitigation measures are outlined in a Letter of Comfort between the Applicant and Neptune which is presented in the Applicants response to Deadline I.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		installations in the North Sea generally and the UK?	
Q1.5.7	Spirit Energy Nederland BV, Spirit Energy North Sea Limited and Spirit Energy Resources Limited (Spirit Energy)	<p>Spirit Energy [RR-107, RR-108, RR-109] is concerned about a range of effects on its Greater Markham Area operations.</p> <p>A) Please provide further detail about the specific assets which are of concern and their respective distances from the proposed windfarm.</p> <p>B) How do those distances compare with other installations operated by Spirit Energy in the vicinity of offshore windfarms?</p> <p>C) What further mitigation measures do you consider to be necessary?</p>	<p>Hornsea Three is engaged in ongoing discussions with Spirit Energy in relation to concerns raised in their Relevant Representations (RR-107, RR-108, RR-109). The Applicant would also refer the Ex.A to the Applicant's response to the Spirit Energy Relevant Representations submitted to Deadline I.</p> <p>A) With regard to Spirit Energy's concerns in relation to the proximity of Hornsea Three to Spirit Energy infrastructure, these fall into two categories, (i) those concerned with helicopter access and (ii) those concerned with vessel access and available sea room. These are discussed in further detail in the Applicant's response to the Spirit Energy Relevant Representation submitted to Deadline I.</p> <p>B) The Applicant notes that, due to the spatial coverage of UK oil and gas licensing, many UK offshore wind farm developments coexist with the oil and gas sector to some degree. There are examples of offshore wind farms which are operating in similar proximity to oil and gas assets as compared to the Spirit Energy platforms and Hornsea Three.</p> <p>The examples listed below involve oil and gas infrastructure that is currently listed as operational on the OGA website.</p> <ul style="list-style-type: none"> <li>• The Perenco operated Waveney platform is 2.6 nm from the operational Dudgeon wind farm;</li> <li>• The Eni operated Douglas group of platforms are 2.8 nm from the operational Gwynt y Mor wind farm; and</li> <li>• The Amethyst B1D platform is 1.4 nm from the consented Triton Knoll wind farm.</li> </ul> <p>The Applicant notes that the Spirit Energy operated Millom West platform is 3.7 nm from the operational Walney Extension wind farm.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:									
			<p>The Applicant considers that the proximity of Hornsea Three to the Spirit Energy assets is not a significant impediment to operations.</p> <p>C) The Applicant's position is that due to the absence of significant effects on Spirit Energy activities and assets (including within the Greater Markham Area), no further mitigation is required. However, the Applicant would note that discussions are ongoing with Spirit Energy on their concerns.</p>									
Q1.5.8	Conoco Phillips (UK) Limited	<p>ConocoPhillips (UK) Limited [RR-036] is concerned about a range of effects on its onshore and offshore operations.</p> <p>Please provide further detail about the specific assets which are of concern and their respective distances from the proposed development.</p> <p>What further mitigation measures do you consider to be necessary?</p>	<p>The Applicant is responding in regard to ConocoPhillips (COP) offshore operations.</p> <p>The Applicant has identified all the ConocoPhillips assets that have the potential to be affected by Hornsea Three, within Volume 2, Chapter 11: Infrastructure and Other Users of the Environmental Statement [APP-071].</p> <p>The Applicant notes that there are no COP assets which are coincident with the Hornsea Three array area or within 1 km of the Hornsea Three array area and that there are no COP platforms within the helicopter 9 nm consultation zones, in line with latest Civil Aviation Authority (CAA) guidance (CAP 764) (see paragraph 8.7.4.10 of Volume 2, Chapter 8: Aviation, Military and Communication of the Environmental Statement [APP-068] or which overlap with the Hornsea Three array area.</p> <p>There are two COP platforms, listed below, with Radar Early Warning Systems (REWS) which are just within the potential detection range of the Hornsea Three array area, both of which have been assessed within the Environmental Statement (see the Applicant's response to the COP Relevant Representation submitted to Deadline I).</p> <table><tr><th></th><th colspan="2">Distance to Hornsea Three array area</th></tr><tr><th>Name of Platform</th><th>nm</th><th>km</th></tr><tr><td></td><td></td><td></td></tr></table>		Distance to Hornsea Three array area		Name of Platform	nm	km			
	Distance to Hornsea Three array area											
Name of Platform	nm	km										

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:																		
			<table><tr><td>Murdoch</td><td>16.9</td><td>31.3</td></tr><tr><td>Saturn</td><td>17.7</td><td>32.7</td></tr></table> <p>The Murdoch platform is at the edge of potential detection and shares its REWS coverage with the Katy platform which is outside the range of the Hornsea Three array area (meaning overall REWS coverage would not be impacted) and so has not been considered further within the assessments.</p> <p>Radar modelling was carried out in order to identify the impact of Hornsea Three on the Saturn platform REWS and is presented in Section 5.2 of Volume 5, Annex 11.1: Radar Early Warning Systems Technical Annex of the Environmental Statement [APP-119]. A summary of this modelling is provided in the Applicants response to the COP Relevant Representations submitted to Deadline I. On the basis of the outputs of this modelling, the effect on the Saturn platform REWS was predicted to be of negligible significance, which is not significant in EIA terms.</p> <p>The Applicant notes that the following COP licences are coincident with the Hornsea Three offshore cable corridor.</p> <table><tr><th>Block</th><th>Licence</th><th>Type</th></tr><tr><td>49/11a</td><td>P28</td><td>Production</td></tr><tr><td>49/11b</td><td>P130</td><td>Production</td></tr><tr><td>48/15a</td><td>P130</td><td>Production</td></tr></table>	Murdoch	16.9	31.3	Saturn	17.7	32.7	Block	Licence	Type	49/11a	P28	Production	49/11b	P130	Production	48/15a	P130	Production
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49/11b	P130	Production																			
48/15a	P130	Production																			

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:														
			<p>The Applicant notes that since the Hornsea Three Development Consent Order (DCO) application, COP have surrendered licence P130 which was coincident with the Hornsea Three offshore cable corridor.</p> <p>The Applicant notes the following licences are within 1 km of the Hornsea Three offshore cable corridor.</p> <table><tr><th>Block</th><th>Licence</th><th>Type</th></tr><tr><td>49/16a</td><td>P33</td><td>Production</td></tr></table> <p>The Applicant notes that COP have several platforms within the vicinity of the Hornsea Three offshore cable corridor, however only two of these platforms, listed below, are within licence blocks which are within 1 km of the Hornsea Three offshore cable corridor.</p> <table><tr><th>Platform</th><th>Distance from cable route</th><th>Block</th></tr><tr><td>Viscount VO platform,</td><td>15.4 km</td><td rowspan="2">49/16a (within 1 km of the Hornsea Three offshore cable corridor).</td></tr><tr><td>Vampire OD platform</td><td>4.4 km</td></tr></table> <p>The Applicant notes that the Viscount VO platform and the Vampire OD platform are due for decommissioning. COP have confirmed during post Application consultation that these two platforms, and associated pipelines and subsea infrastructure, have been given Decommissioning Programme Approval by the Secretary of State and will be</p>	Block	Licence	Type	49/16a	P33	Production	Platform	Distance from cable route	Block	Viscount VO platform,	15.4 km	49/16a (within 1 km of the Hornsea Three offshore cable corridor).	Vampire OD platform	4.4 km
Block	Licence	Type															
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PINS Question number:	Question is addressed to:	Question:	Applicant's Response:																								
			<p>decommissioned prior to the construction of Hornsea Three. These platforms were not considered further within the Environmental Statement.</p> <p>The Applicant notes that there are no subsea facilities coincident or within 1 km of the Hornsea Three offshore cable corridor.</p> <p>The Applicant notes that at the time of the Hornsea Three DCO application there were seven COP operated pipelines as listed below which cross the Hornsea Three offshore cable corridor. One of these pipelines (OID_38) has subsequently been transferred to another operator.</p> <table><tr><th>Crossing ID</th><th>Platform Source/Destination</th><th>Fluid</th></tr><tr><td>OID_21</td><td>LOGGS PP TO THEDDLETHORPE MEOH LINE</td><td>Methanol</td></tr><tr><td>OID_22</td><td>LOGGS PP TO THEDDLETHORPE GAS LINE</td><td>Gas</td></tr><tr><td>OID_26</td><td>Viking AR to Theddlethorpe Gas Line</td><td>Gas</td></tr><tr><td>OID_27</td><td>Viking AR to Theddlethorpe Meoh Line</td><td>Methanol</td></tr><tr><td>OID_38</td><td>Audrey XW to Alison KX</td><td>Unknown</td></tr><tr><td>OID_39</td><td>Saturn ND to Loggs PR</td><td>Gas</td></tr><tr><td>OID_40</td><td>Loggs PR to Saturn ND</td><td>Methanol</td></tr></table>	Crossing ID	Platform Source/Destination	Fluid	OID_21	LOGGS PP TO THEDDLETHORPE MEOH LINE	Methanol	OID_22	LOGGS PP TO THEDDLETHORPE GAS LINE	Gas	OID_26	Viking AR to Theddlethorpe Gas Line	Gas	OID_27	Viking AR to Theddlethorpe Meoh Line	Methanol	OID_38	Audrey XW to Alison KX	Unknown	OID_39	Saturn ND to Loggs PR	Gas	OID_40	Loggs PR to Saturn ND	Methanol
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PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>The Applicant has consulted with COP since submission of the Application (24 October 2018) in regard to issues raised within their relevant representation (RR-036). COP and the Applicant are in ongoing discussion regarding the potential to prepare crossing and proximity agreements for all COP operated pipelines, as discussed in paragraph 11.7.15.2 of Volume 2, Chapter 11: Infrastructure and Other Users of the Environmental Statement [APP-071].</p> <p>The Applicant understands from the consultation with COP on 24 October 2018 that COP remains concerned in regard to potential issues relating to decommissioning. The Applicant is aware of the decommissioning plans in the vicinity of the offshore cable route corridor and is in discussions with COP in regard to these or other plans that may overlap with the construction and operation and maintenance activities along the Hornsea Three offshore cable route corridor.</p> <p>The Applicant intends to continue discussions to resolve COP's outstanding concerns.</p>



## 1.7 Written Question 1.6 Commercial fishing

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.6.1	Applicant	<p>Paragraph 2.7.1.5 of the ES [APP-062] states that the arsenic levels at 24 sites exceeds the Cefas AL1 threshold of 20mg/kg with three of those sites being located in the cable corridor.</p> <p>Please explain why you consider that the disturbance and disposal of affected sediments near to their point of origin would not lead to significant bioaccumulation in commercially important species.</p> <p>How might this factor affect any dredging disposal licensing decision?</p>	<p>As outlined in section 2.6.1 of Volume 5, Annex 2.1: Benthic Ecology Technical Report of the Environmental Statement (APP-102), the Cefas Guideline Action Levels (AL) for the disposal of dredged material are not statutory contaminant standards for dredged material but are used as part of a weight of evidence approach to decision-making on the disposal of dredged material to sea. They are also used as a screening trigger for the assessment of marine dredging activities under the Water Framework Directive. Sediments with contamination levels below Cefas Action Level 1 (AL1) would be unlikely to be refused a sea disposal licence on the grounds of contamination. Materials with contamination levels above Cefas Action Level 2 (AL2) are likely to be deemed unacceptable for sea disposal.</p> <p>While arsenic levels exceeded the Cefas AL1 at three locations on the Hornsea Three Offshore Cable Corridor, all sites were well within the Cefas AL2 (i.e. 100 mg/kg). As noted in paragraph 2.7.1.6 of Volume 2, Chapter 2: Benthic Ecology of the Environmental Statement (APP-062), arsenic concentrations within sediments in the Hornsea Three benthic ecology study area are similar to those reported by Whalley et al. (1999) and therefore are considered unlikely to represent excessive levels for the region.</p>
			<p>On the basis of the low levels of sediment contamination record within the Hornsea Three array area and offshore cable corridor, it was agreed during the Marine Processes, Benthic Ecology and Fish and Shellfish Ecology expert working group (EWG), that the effect of resuspension of contaminated sediments on marine ecological receptors (including benthic ecology and fish and shellfish ecology) could be scoped out of the impact assessment (see Appendices C.2 and C.7 of Consultation Report Annex 1 - Evidence Plan; [APP-035]; and section 3.8.2 of Volume 2, Chapter 3: Fish and Shellfish Ecology of the Environmental Statement; [APP-063]). Such effects would include bioaccumulation of contaminants (including arsenic) in fish and shellfish species, including those of commercial importance to the fishing industry.</p> <p>Volume 4, Annex 3.2: Dredging and Disposal: Site Characterisation of the Environmental Statement [App-086] provides a characterisation of the Hornsea Three Array Disposal Site and the Hornsea Three Offshore Cable Corridor</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			Disposal Site to support the application for licensing of marine disposal sites in relation to the offshore elements of Hornsea Three. Section 5 of Volume 4, Annex 3.2: Dredging and Disposal of the Environmental Statement provides an evaluation of potential adverse effects of in situ disposal of dredge/drill material, drawing on the findings of the topic specific chapters in Volume 2 of the Environmental Statement (Chapters 1 to 11). This concluded that all effects of dredging and disposal were not significant in Environmental Impact Assessment terms and that contaminant concentrations were below levels at which adverse biological effects on marine ecological receptors (including benthic ecology communities and fish and shellfish populations) are likely to occur.
Q1.6.3	Applicant	The EIFCA representation [RR-070] highlights concerns regarding the use of rock cable protection. Please comment on EIFCA's concerns.	<p>The Applicant has responded to this point (1) in the TWT Relevant Representation (RR-70).</p> <p>Further clarification on the requirements for, and assessment of, cable protection in designated sites is provided in the Clarification Note on Cable Protection (As presented at Appendix 6 of the Applicant's Response to Deadline 1).</p>
Q1.6.4	Applicant	<p>Table 6.18 of the ES [APP-066] summarises the potential commercial fisheries impacts associated with the construction, operation and decommissioning phases of the proposal.</p> <p>What disruption of fishing activities would occur during pre-construction activities and how would this be controlled through the dDCO?</p>	<p>Pre-construction activities are considered within the maximum design scenario in Table 6.9 of Volume 2, Chapter 6: Commercial Fisheries of the Environmental Statement (APP-066). Disruption during these activities is therefore considered within the assessments presented in Section 6.11 of this chapter of the Environmental Statement.</p> <p>The requirement to produce a Fisheries Coexistence and Liaison Plan post-consent is proposed to be secured in the DMLs at condition 13(4), schedule 11 (generation assets DML) and condition 14(4) (transmission assets DML) of the draft DCO (Version 1, as submitted for Deadline 1). In the Outline Fisheries Coexistence and Liaison Plan (APP-183), Table 4.1 details the procedure the Applicant will follow for information distribution at different stages in the project, including pre-construction. The Outline Fisheries Coexistence and Liaison Plan has been updated to specifically refer to pre-construction activities (and is submitted at Appendix 36 to the Applicant's response to Deadline 1).</p>

## 1.8 Written Question 1.7 Landscape, seascape and visual impacts

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.7.1	Applicant	<p>Table 1.10 of the ES [APP-073] states that there would be up to 15 major Horizontal Directional Drilling (HDD) locations with associated compounds measuring 60m x 60m.</p> <p>Please show the locations of the proposed major HDD compounds and provide further details of the likely structures, fencing, parking, materials and lighting that would characterise these facilities.</p>	<p>The location of major HDD compounds will be determined for each individual major HDD location once a contractor is appointed and the detailed design of the onshore cable corridor, including length of cables and cable trench location are known. Given the number of technological and environmental interactions it is not possible to confirm the major HDD compounds locations at this stage of the design as a range of factors will determine where these will be located. Notwithstanding this, Hornsea Three will seek to site major HDD compounds in areas which reduce interference with farming operations and minimise impacts to landowners' use of their land and ecological sensitive receptors. The Applicant has amended paragraph 4.1.7.14 of the Outline CoCP (APP-179) to secure this (see below).</p> <p>The Applicant would refer the Examining Authority to paragraphs 3.7.3.19 – 3.7.3.20 of Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058) where a description of the major HDD compounds is provided. The size and equipment needed at the major HDD compounds is, to some extent, dependent on the length and complexity of the HDD. However, to provide additional clarity, the Applicant can confirm that the major HDD compounds are likely to comprise: the HDD drilling rig, storage for associated materials and equipment, temporary welfare facilities, parking of contractor vehicles and potentially a bentonite settling lagoon (see related response to Q.1.4.7). Welfare facilities and any other structures would be no greater than one storey in height.</p> <p>Although portable task lighting would be required for any evening and night-time working, it is envisaged that lighting would not be required during normal daylight hours unless visibility is poor due to weather conditions or low light levels. Low levels of security lighting may be required at the HDD compounds, including located at the entrance to any portable welfare facilities and potentially around the perimeter of the compound. No lighting fixtures would be no greater than 4 m in height and will be directional, avoiding upward light spill and baffled to avoid spill towards sensitive receptors. The Applicant has amended the wording in paragraph 4.1.7.14 of the Outline CoCP to reflect these clarifications (new text underlined):</p> <p><i>"4.1.7.14 It is envisaged that only the major HDDs (i.e. typically greater than 200 m in length) will require a compound, which will be used to contain the drilling rig, equipment and the drill entry and exit pit. <u>Any structures at the compounds will be no greater than one storey in height, whilst any portable task lighting or security lighting fixtures (used in times of low natural light) would be no greater than 4 m in height and directional to avoid light spill. These</u></i></p>

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			<p><i>compounds have all been provided for within the onshore cable corridor (i.e. within the Order Limits) and will where possible, be located in areas which reduce interference with farming operations and minimise impacts to residential properties, ecologically sensitive receptors and landowners use of their land. The size of the HDD compounds is dependent on the amount of equipment that is required to construct the crossing, which in turn is primarily governed by the length of the HDD or its complexity."</i></p> <p>The major HDD compound will also contain the drill entry and exit pits and depending on the location, may also provide sufficient working area to allow the presence of an HGV tanker to provide lubrication water and removal of liquid slurry arising from the drilling operation, and/or for excavators to remove slurry. Fencing would be provided around the major HDD compound, will lockable gates or equivalent, and on-site security may be deployed.</p>

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Q1.7.2	Applicant	<p>Paragraph 3.7.2.18 of the ES [APP-058] states that an 80m wide corridor of hedges and vegetation would be removed ahead of each working section of the cable corridor.</p> <p>A) Please explain how the visual impact of this clearance would be minimised, including the length of corridor cleared at any one time.</p> <p>B) How would this be controlled through the dDCO?"</p>	<p>A) During construction the onshore export cables would be installed as described in Section 3.4 of Volume 1, Chapter 3: Project Description of the Environmental Statement [APP-058] resulting in removal of landscape features and elements such as hedgerows and trees within this corridor. The Applicant has and will minimise this removal through route refinement in early design, the use of HDD to cross sensitive or valuable features as well as through implementation of mitigation measures as set out in the Outline CoCP (APP-179), for example, through the implementation of buffer zones.</p> <p>The Applicant has committed to using HDD to cross all public roads, all main and most ordinary rivers and rail routes, a number of woodlands and designated wildlife sites. This would ensure retention of vegetation associated with these features including roadside hedgerows which are a characteristic feature of the landscape at locations where a large proportion of people would have potential to see the cable installation works. Norfolk river valleys are recognised as being one of the more sensitive landscape types within the County and in South Norfolk are protected by Local Plan Development Management Policy DM 4.5 which states <i>"Particular regard will be had to protecting the distinctive characteristics, special qualities and geographical extents of the identified Rural River Valleys and Valley Urban Fringe landscape character types."</i> Trenchless crossing of the watercourses and areas of landscape either side would retain landscape features within the valleys, helping to protect their distinctive characteristics. A vegetated disused railway line containing Marriott's Way long distance walking route and National Cycle Route 1 would be crossed using HDD, retaining this landscape feature and minimising visual effects and disturbance to recreational receptors. Impacts on public rights of way as a result of visual effects are assessed in paragraph 4.11.1.46 and 4.11.1.47 of Volume 3, Chapter 4: Landscape and Visual Resources (APP-076) and the assessment concluded no significant effects.</p> <p>As set out at in Table 4.6 of Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Assessment [APP-076] the maximum design scenario was assessed, which comprises removal of all vegetation within the onshore cable corridor for the longest duration over which construction works on the onshore cable corridor could occur i.e. a 5.5 year duration comprising two phases with the maximum anticipated gap of three years in between. To minimize visual effects, the length of hedges removed across the width of the onshore cable corridor would be limited where possible – for example, where an HDD with a</p>

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			<p>haul road, or HDD with ducting laydown is proposed, the exact location of the haul road/ducting laydown within the Order Limits would be optimised through agreement with a suitably qualified ecologist to further minimise hedgerow and tree removal (thus minimizing visual effects). This is secured through the Outline CoCP (APP-179) at amended paragraph 6.5.1.14 which itself must be abided by when the final CoCP is drafted under requirement 17 of the draft DCO (Version 1, as submitted for Deadline 1). Furthermore, if Hornsea Three is delivered in two phases the construction contractor may not need to remove the full width of the onshore cable corridor in each phase.</p> <p>Upon completion of cable installation on a working section, hedgerows would be fully reinstated during the next available planting season and the haul road removed where possible. Some haul roads may need to be retained for a limited duration to provide access; in this case, the corridor to either side would be reinstated when cable installation is completed with the haul road removed and reinstated when it is no longer required for access. If delivered in two phases, and there is a gap between them, restoration, including the re-planting of hedges would be undertaken during the first planting season after completion of each working section of the first phase unless agreed otherwise with the relevant local planning authority. During the second phase these would, where necessary, be removed and re-planted a second time, during the first planting season after completion of each working section of the second phase. Replacement planting would comprise native shallow-rooting hedgerow species typical of the area, planted as 40 – 60 cm high whips that would quickly establish to form dense hedgerows similar to those removed. The hedgerow structure would therefore be re-instated minimizing the long term visual effects of the authorized development.</p> <p>In addition to the reinstatement of hedgerows removed during construction of the onshore cable corridor, where practicable and where agreed with the landowner, hedgerow enhancement would be undertaken within a 100 m wide corridor that will contain the onshore cable corridor. The aim of enhancement would be to increase native species diversity and / or improve habitat structure and connectivity across the landscape. Where practical native broadleaf trees would also be planted within hedgerows within the enhancement area, albeit outside of the onshore cable corridor to protect the cables.</p>
			<p>B) The commitments noted above are secured through the Outline CoCP (APP-179), Outline EMP (APP-180) and Outline LMP (APP-181). Measures in each of these documents must be incorporated into the final</p>

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			versions of the management plans to be developed and agreed with the relevant planning authority (in consultation with Natural England, Environment Agency and/or the MMO) as required by Requirements 17, Requirement 10 and Requirement 9 of the dDCO (Version 1, as submitted for Deadline 1).

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Q1.7.3	Applicant	<p>"Paragraph 1.2.1.1 of the ES [APP-148] identifies two viewpoint locations from which the visual impact of the offshore high voltage alternating current (HVAC) booster station was considered.</p> <p>A) Would the station be illuminated by anything other than aviation warning lights during the hours of darkness?</p> <p>B) If this is the case, then how might this alter the findings of the ES and the effect of the proposal on the significance and special qualities of the Norfolk Coast Area of Outstanding Natural Beauty?"</p>	<p>A) Condition 8 of Schedule 11 (generation assets DML) and condition 9 of Schedule 12 (transmission assets) DML of the draft DCO (Version 1, as submitted for Deadline 1) mandate that the undertaker must exhibit such lights, marks, sounds, signals and other aids to navigation as required by Trinity House. Lighting and marking requirements of the offshore structure(s) will be discussed and designed in consultation with Civil Aviation Authority (CAA) as well as the Trinity House Lighthouse Services (TH) during detailed design. This will be necessary to mitigate any risk to aircraft and shipping. The marking will be based on the recommendations of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA, 2013).</p> <p>The maximum design height of offshore HVAC booster stations is provided in Table 3.42 of Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058) and comprises:</p> <ol style="list-style-type: none"> <li>1. Topside – height excluding helideck and lightning protection at LAT 70m and,</li> <li>2. And height including lightning protection above topside at LAT 90 m.</li> </ol> <p>Based on experience from other offshore wind farms the following is provided as guidance to inform the findings of the Environmental Statement and the effect of the proposal on the significance and special qualities of the Norfolk Coast Area of Outstanding Natural Beauty (AONB) presented in Volume 6, Annex 4.7: Effects of the Offshore HVAC Booster Station (APP-148).</p> <p>With respect to navigation lighting requirements will be made in consultation with Trinity House, but based on other similar structures, is likely to be classified as an isolated structure, requiring a 15 nm white light. This was the case for the Hornsea One Offshore Wind Farm (HOW01) substation.</p> <p>With respect to aviation lighting, the HOW01 substation CAA consultation on Air Navigation Order 2009 (219) (Lighting of en-route obstacles) determined that no operational aviation warning lights were required to be installed on the main structure of the substation. Air Navigation Order 2009 (219) defines an "en-route obstacle" as any structure which is 150 m or above ground level.</p>



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			<p>B) Navigation lights and, if required, aviation lights on the offshore HVAC booster station at closest 35km from the coast (if the offshore HVAC booster station is required) could potentially be visible from parts of the Norfolk Coast AONB in very clear conditions and would not be visible at other times due to atmospheric conditions reducing visibility. Furthermore, any lights would be seen as a very small feature in conjunction with other lighting from existing elements including shipping and offshore wind farms.</p> <p>Effects of such lighting would not change the landscape or visual effects, or effects on the Qualities of Natural Beauty of the Norfolk Coast AONB, from that presented in Volume 6, Annex 4.7: Effects of the Offshore HVAC Booster Station of the Environmental Statement (APP-148). This is further clarified in Appendix 23 Impacts on the Qualities of Natural Beauty of the Norfolk Coast AONB to the Applicant's response to Deadline 1. On the basis of this, the effects on the Norfolk Coast AONB from the offshore HVAC booster station remain negligible.</p>

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Q1.7.4	Applicant	<p>Paragraph 4.11.1.7 of the ES [APP-076] states that the visual impact of the cable corridor would be short term in duration.</p> <p>How has the assessment accounted for the cumulative impact with Norfolk Vanguard and Norfolk Boreas at the Reepham cable crossing?</p>	<p>Para 4.11.1.7 of the ES [APP-076] refers to landscape effects of Hornsea Three when considered individually and states that <i>"The impacts are predicted to be of local spatial extent, short term duration (two construction phases of three months at any particular location), small scale and reversible. It is predicted that the effects would affect landscape receptors directly. The magnitude of impact would be negligible."</i></p> <p>Similarly, Para 4.11.1.13 of APP-076 refers to the short term duration of visual effects of Hornsea Three when considered individually.</p> <p>Section 4.13.2 of APP-076 provides a cumulative effect assessment. Within this assessment, Norfolk Vanguard and the associated elements of Norfolk Boreas are identified as a Tier 3 cumulative project, with potential to result in in-combination effects with the construction of the Hornsea Three onshore cable corridor (Table 4.16 of APP-076).</p> <p>In this regard, Section 4.13.2.3 of APP-076 considers the cumulative landscape and visual effects of the projects (Hornsea Three and Norfolk Vanguard) should they be constructed at the same time in the areas of overlap including north of Reepham. Construction activity in this location would increase if the projects were to be constructed at the same time. However, within this local area the combined duration is still likely to be short term and cumulative effects on landscape character and visual effects would not be significant.</p>

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Q1.7.5	Applicant	<p>Paragraph 3.7.3.13 of the ES [APP-058] states that the concrete link boxes would be likely to be completely buried.</p> <p>A) Can you confirm that this would be the case and that landscape impacts (during operation) would therefore be avoided?</p> <p>B) How would this be controlled through the dDCO?"</p>	<p>A) As set out in paragraph 3.7.3.14 of APP-058, link boxes along the onshore cable corridor will be buried, with land above re-instated; however, manhole covers will be required to provide access at all link boxes for the purpose of cable integrity testing during the operations and maintenance phase. The only exception is where it is only the fibre optic cables which are jointed which do not require regular operations and maintenance access and thus will not require manhole covers.</p> <p>As part of ongoing discussions with landowners, the Applicant has committed to placing marker posts on each corner of the surface feature, if requested by the landowner to do so as part of the option and lease agreements. Small marker posts and manhole covers are encountered in the existing landscape and neither are particularly unusual or obtrusive, thus where used, will have negligible effects on landscape and visual receptors. Therefore, the landscape and visual effects of link boxes within the onshore cable corridor would not be significant. This commitment is captured in updated paragraph 6.8.1.3 of the Outline CoCP (APP-179) (new text shown in underline):</p> <p><i><u>"6.8.1.3 Appropriate fencing of the construction corridor will be provided per the nature of the individual farm holding affected. Where requested to do so by the landowner, markers posts will be placed on the corner of manhole covers associated with link boxes to clearly demarcate their location."</u></i></p> <p>B) The draft DCO (Version 1, as submitted for Deadline 1) defines link boxes as being an "underground metal box". Therefore, in order to comply with the DCO, if this definition is retained in the final order, the boxes would have to be underground.</p>

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Q1.7.6	Applicant	<p>Paragraph 4.7.2.4 of the ES [APP-076] describes Zones of Visual Influence (ZVI) that take account of screening by local features. However, it is unclear how ZVIs were delineated.</p> <p>A) Please explain more fully the methodology used to define the ZVIs.</p> <p>B) Were the ZVI assessments made by the same person at all locations?</p>	<p>A) As defined in the Glossary of Volume 3, Chapter 4: Landscape and Visual Resources (APP-076), the ZVI is the "Area within which a proposed development may have an influence or effect on visual amenity." These areas were determined by field based assessment and desk based review of maps and aerial photographs, to identify the main areas within which visual effects are likely to occur. The process is described in paragraphs 4.7.2.4 to 4.7.2.8 of APP-076.</p> <p>B) In the case of Hornsea Three, the ZVIs were determined by a team of two people comprising the same two people in all locations.</p>

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Q1.7.7	Applicant	<p>Paragraph 4.9.3.2 of the ES [APP-076] states that effects of moderate significance were not considered significant.</p> <p>Please explain the apparent inconsistency in relation to other chapters of the ES where moderate impacts are considered significant.</p> <p>Would a more consistent approach alter the findings of the ES with regard to landscape impact?</p>	<p>The assessment methodology utilised in the assessment of landscape and visual effects in Volume 3, Chapter 4: Landscape Visual Resources of the Environmental Statement (APP-076) is set out in Volume 6, Annex 4.1 - Landscape and Visual Impact Assessment Methodology (APP-142).</p> <p>Both the PEIR and the Environmental Statement LVIA chapters use a significance threshold of major (i.e. major and above is 'significant') rather than moderate (PEIR Annex 4.1, paragraph 2.1.5.8 and Environmental Statement Volume 6, Annex 4.1, paragraph 2.1.4.2 (APP-142)). In practice the Environmental Statement LVIA (APP-076) identifies all effects of major-moderate (i.e. falling between major and moderate) and greater as significant. However, the generic Environmental Statement method uses moderate as the significant threshold stating "<i>In general, a significance of effect of moderate or greater is considered 'significant' in EIA terms. For each topic chapter, what is considered 'significant' will be clearly defined.</i>" (Volume 1, Chapter 5: Environmental Impact Assessment Methodology of the Environmental Statement, paragraph 5.3.5.15 (Document APP-060).)</p> <p>LDA Design authored APP-076, and co-authored with RPS APP-142 using significance threshold terminology that is consistent with the generic Environmental Statement method terminology (Substantial, Major, Moderate, Minor and Negligible). This terminology is slightly different to LDA Design's standard LVIA method terminology (e.g. the use of the term 'Major' rather than 'Substantial' to represent the most significant effects (see table below)). The significance terms used in LDA Design's standard methodology for LVIAs and those used in the LVIA of the Environmental Statement (Volume 3, Chapter 4 Landscape and Visual Resources (Document APP-076), and Volume 6, Annex 4.1 Landscape and Visual Impact Assessment Methodology (Document APP-142)) are set out below so that they can be compared. This illustrates that the threshold for identifying significant effects is consistent in relation to the five scale ratings.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:																		
			<table><tr><th>LDA Design's standard LVIA methodology</th><th>Environmental Statement LVIA methodology</th><th>Significant or not significant</th></tr><tr><td>Major</td><td>Substantial</td><td>Significant</td></tr><tr><td>Major-Moderate</td><td>Major</td><td>Significant</td></tr><tr><td>Moderate</td><td>Moderate</td><td>Not significant</td></tr><tr><td>Slight</td><td>Minor</td><td>Not significant</td></tr><tr><td>Negligible</td><td>Negligible</td><td>Not significant</td></tr></table> <p>All LDA Design's team use their professional judgement in undertaking the assessment and would not permit an outcome where an effect which they judged to be significant was identified as not significant.</p> <p>The Institute of Environmental Management &amp; Assessment (IEMA) produced a report 'The State of EIA Practice in the UK (June 2011)' which discussed the trending methods used by practitioners in EIA and how these relate (or don't relate) to the EIA Regulations and directives. Specifically, with regard to 'Significance' on page 5 of the aforementioned document, it states: <i>"Effective EIA practice ensures that the methods used to evaluate significance can be readily understood by those reading the ES. An over-arching approach to the discussion of significance across all the topic specific assessments can be a useful tool to achieve this; however, the key is to ensure that where different methodologies are used they are clearly justified and explained in a simple manner"</i></p> <p>It further states on page 60, section 6.3 Evaluating the Significance of Environmental Effects: <i>"In reporting the EIA's findings, ESs often set out a generic methodology at the start of the document indicating that significance has been assessed using a standard matrix style approach, with magnitude on</i></p>	LDA Design's standard LVIA methodology	Environmental Statement LVIA methodology	Significant or not significant	Major	Substantial	Significant	Major-Moderate	Major	Significant	Moderate	Moderate	Not significant	Slight	Minor	Not significant	Negligible	Negligible	Not significant
LDA Design's standard LVIA methodology	Environmental Statement LVIA methodology	Significant or not significant																			
Major	Substantial	Significant																			
Major-Moderate	Major	Significant																			
Moderate	Moderate	Not significant																			
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Negligible	Negligible	Not significant																			

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			<p>one axis and receptor sensitivity on the other... Despite this, it remains relatively common for one or more ES chapters to use an alternative approach. This is not a legal concern, as there is no regulatory requirement to apply the same methodological approach to significance evaluation across an EIA.."</p> <p>This is important to note as it is commonly LDA Design's experience that LVIA necessarily follows a different approach to impact assessment and the identification of significant effects compared to many other of the EIA topics. This is substantially a reflection of the more detailed, nationally recognised and tested, guidance available through the Guidelines for Landscape and Visual Impact Assessment (GLVIA) and a desire for a consistent approach to be followed by the practice in all its LVIA work.</p> <p>Whilst there may be perceived benefits to some in maintaining a standard correlation matrix and 'Significance' threshold across the full spectrum of topics included within an Environmental Statement it is considered that this standard approach could impose an unhelpful and unreasonable constraint upon the implementation of tried and tested significance thresholds that have been honed over many years in order that best allow the assessment of landscape and visual impacts. It is also deemed unrealistic to expect that a topic such as LVIA, which relies upon considerable professional judgement, should be shoe-horned into an assessment framework that, being imposed by others, might well not be best suited to LVIA and, conversely, be more suited to other disciplines where, for example, measured readings are then taken and set against an established technical threshold in order to determine whether they are 'Significant' or not under the terms of the EIA Regulations.</p> <p>In this regard, whilst it is important to understand the level of significance attributed to a receptor there are no specified legal thresholds. On page 61 of the IEMA report it states that the: "EIA regulations do not set out terms for evaluating whether an assessment's findings are significant or not."</p> <p>GLVIA states on page 40, paragraph 3.33 that: "It is not essential to establish a series of thresholds for different levels of significance of landscape and visual effects, provided that it is made clear whether or not they are considered significant."</p>

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			<p>In addition, in paragraph 3.35 it states: <i>"the main aim should be to draw out the key issues and ensure that the significance of effects and the scope for reducing any negative/adverse effects are properly understood by the public and the competent authority before it makes its decision."</i></p> <p>Thus, to summarise, the assessment presented in Volume 3, Chapter 4: Landscape Visual Resources of the Environmental Statement (APP-076) identifies Substantial, Major and Major-Moderate effects as significant, whilst effects of Moderate or lesser significance are not considered significant. Although this is different from the thresholds applied in other topics of the Environmental Statement, this threshold is considered appropriate for the assessment of landscape and visual effects and is used by many other practitioners. A <i>"more consistent approach"</i> would not alter the findings of the ES with regard to landscape impacts in terms of identifying which effects are significant.</p>
Q1.7.8	Applicant	<p>"Paragraph 4.10.2.2 of the ES [APP-076] states that a two phase implementation may not require the full removal of vegetation within the 80m corridor.</p> <p>Please explain why this would be the case."</p>	<p>For a two-phase implementation, it would be expected that the corridor would be divided across the 80m dependent on the number of cable circuits in each phase. In this case, only the vegetation associated with a particular phase would be removed.</p> <p>As the maximum design scenario, Volume 3, Chapter 4: Landscape and Visual Resources (APP-076) assumes that the whole 80m width would be required to be removed for each phase.</p>
Q1.7.9	Applicant	<p>Paragraph 4.10.4.4 of the ES [APP-076] states that structures within the HVAC booster station and high voltage direct current (HVDC) converter/HVAC substation would not be a uniform height. However, only slab-like structures have been shown in the photomontage in the ES [APP-146].</p> <p>Please provide a revised photomontage with more realistic indicative structures as</p>	<p>Volume 6, Annex 4.5: Photographic Panels, Wireframes and Photomontages of the Environmental Statement (APP-146) contains a series of visualisations illustrating the Hornsea Three onshore HVAC booster station and onshore HVDC converter/HVAC substation. These include wireframes illustrating the maximum design scenarios, and from some viewpoints photomontages of an illustrative design of the booster station and substation (as presented in Figure 3.34 and 3.37 of Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058)). The photomontages show the illustrative design at year 1 (after completion of construction before mitigation planting has matured) and at year 15 after mitigation planting has matured, showing how views will change as mitigation planting matures.</p>



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		presented in figures 3.34 and 3.37 of the ES [APP-058].	<p>Where wirelines indicate that views of the onshore HVAC booster station or onshore HVDC converter/HVAC substation would be very limited, photomontages have not been produced. This approach was agreed with SNDC and NCC.</p> <p>The assessment presented in Volume 3, Chapter 4: Landscape and Visual Resources (APP-076) is based on the wirelines illustrating the maximum design scenario. This approach is appropriate as it ensures the assessment is undertaken on the maximum design scenario i.e. determines the maximum potential scale (height and breadth) of the intervention into the landscape which could occur and be visible, as a result of the onshore HVAC booster station and onshore HVDC converter/HVAC substation. The detailed design of the onshore HVAC booster station and HVDC converter/HVAC substation (Work Nos. 9 and 10 respectively) will be progressed post-consent, and construction of the connection works associated with Work Nos.9 and 10 shall not commence until details including the layout, scale, proposed finished ground levels, external appearance, hard surfacing materials, access and implementation timetables for all landscaping works have been submitted to and approved in writing by the relevant planning authority (Requirement 7 of the dDCO; APP-027). Thus, until these final design solutions have been determined and agreed post-consent, it is not possible to prepare photomontages of the design which will ultimately be delivered.</p> <p>In summary, the Applicant's position is that the use of the wireframes illustrating the maximum design scenario to inform the assessment of effects arising from the onshore HVAC booster station and onshore HVDC converter/HVAC substation on landscape and visual receptors, is appropriate. It is noted that the extent of actual visibility of the onshore HVAC booster station and onshore HVDC converter/HVAC substation may be less, either due to the buildings being smaller, or absent within the extent of the 'slab' which is illustrated in the wirelines. For example, buildings and equipment will not be a uniform height throughout the site, and as such much of the equipment could be lower and cover smaller footprints than the maximum design scenarios used in the assessment. However, the Applicant has demonstrated this in the illustrative photomontages which have been presented in Volume 6, Annex 4.5: Photographic Panels, Wireframes and Photomontages of the Environmental Statement (APP-147) which provide sufficient material for the reader and Examining Authority to understand the context and the indicative extent of the onshore HVAC booster station and onshore HVDC converter/HVAC substation.</p>

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Q1.7.10	Applicant	<p>The mitigation of the landscape and visual impacts of the HVAC booster station and HVDC converter/HVAC substation would rely on new woodland and scrub planting as well as the strengthening of existing hedgerows (for example at paragraph 4.10.4.7 of the ES [APP-076]).</p> <p>How effective is such planting likely to be, bearing in mind the likely use of deciduous species and the need for new planting to become established over time?</p>	<p>Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076) highlights the strong existing landscape structure around the HVAC booster station, including an area of woodland to the east (paragraph 4.7.2.5, 4.7.6.19 and section 4.10.4), and the onshore HVDC converter/HVAC substation (paragraph 4.7.2.7, 4.7.6.31 and section 4.10.4) which would assist in mitigating visual and landscape impacts by filtering and screening views of the developments and integrating them into their landscape contexts.</p> <p>To supplement this existing landscape screening, the Applicant has committed to providing mitigation planting in order to provide further screening, proposals for which are presented in the Outline LMP (APP-181).</p> <p>The planting will be mostly deciduous reflecting and respecting local character. As hedges and trees grow, their size and 'bulk' will increase, and during late spring to Autumn, leaf cover will screen or filter views. The extent of screening is a product of the height, density of leaf/branch/twig cover and how close the viewer is to the screening feature. During winter, tree belts or woodland areas between a viewer and the structure will filter views to a lesser or greater extent depending on the width of the belt or woodland and density of the tracery provided by twigs and branches.</p> <p>The assessment presented within Volume 3, Chapter 4: Landscape and Visual Resources (APP-076) takes account of the size of planting illustrated in the photomontages at the completion of construction (year 1) and year 15 scenario (based on the rates of growth as shown in Tables 2.2 and 3.2 in Volume 6, Annex 4.5 (APP-146)). This approach is appropriate as it provides a transparent assessment of effects at different stages of planting maturity.</p> <p>The baseline photographs used in the wireframes and illustrative photomontages presented in Volume 6, Annex 4.5: Photograph Panels, Wirelines and Photomontages of the ES (APP-146) were taken between November 2017 to February 2018 and illustrate winter views. This demonstrates the effect of the tracery of intervening tree canopies during winter; summer views would demonstrate greater screening of filtering effects when deciduous trees were in full leaf.</p>

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			<p>In summary, although the level of screening and filtering of views of the onshore HVAC booster station and onshore HVDC converter/HVAC substation would vary over time, due to increasing maturity and seasonal variations, the assessment presented in APP-076 has been undertaken considering the maximum design scenario which includes year 1 scenario in winter views and the effect of maturing mitigation planting over time. The mitigation proposed is therefore sufficient to mitigate the identified landscape and visual effects such that no significant landscape effects are anticipated outside of the onshore HVAC booster station and onshore HVDC converter/HVAC substation sites, and the only significant visual effects identified during the operation and maintenance phase (effects due to the onshore HVDC converter/HVAC substation on users of Public Rights of Way between the B1113 and A140, north of Swainsthorpe on completion of development (i.e, Year 1)) would reduce and be 'not significant' as mitigation planting matures (APP-076 paragraphs 4.11.2.127 and 4.11.2.128) .</p> <p>Notwithstanding this, it is noted that since the point of application, the Applicant has committed to planting sections of the mitigation planting at the commencement of construction works at the onshore HVAC booster station, and onshore HVDC converter/HVAC substation which could be up to two years or three years (respectively) ahead of the planned completion of construction works. This commitment is provided in newly created paragraphs 3.1.2.3 and 3.1.3.4 in the Outline CoCP (APP-179, Version 2) and will be secured in the dDCO through Requirement 17.</p>
Q1.7.11	Applicant	<p>Paragraph 4.11.1.38 of the ES [APP-076] states that activities outside core working hours (which may have associated lighting impacts) would be agreed post-consent with the relevant Environmental Health Office.</p> <p>How would the impact of lighting on landscape be controlled through the dDCO?</p>	<p>Lighting during construction, including any requirement for lighting outside of the core working hours, will be controlled through design which will take into account relevant standards, guidance and requirements set out in BS EN 12464-2:2014 and GN01:2011 Guidance Notes for the reduction of obtrusive light (The Institute of Lighting Professionals). The design will seek to minimise illumination outside of the construction works areas through the use of directional, task orientated lighting. These commitments are set out in section 4.1.4 of the Outline CoCP and will be secured through the final CoCP which will be submitted for the approval of the local planning authority under DCO Schedule 1, Part 3, Requirement 17 Code of Construction Practice. As noted in Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076), where construction lighting is required outside of the core working hours (which is anticipated to be limited to periods where working hours extend beyond the hours of daylight e.g. during autumn and winter or during major HDDs), the activities would be agreed with the relevant Environmental Health Office and where necessary communicated to local sensitive receptors through the communication plan (details of which would also be developed as part of the CoCP).</p>

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			Details of the lighting design for during the operation and maintenance phase (i.e. permanent) will be submitted for the approval of the relevant local planning authorities under DCO Schedule 1, Part 3, Requirement 7 (Detailed design approval onshore). This design will seek to provide enough illumination to safely undertake required activities, whilst minimising potential impacts on nearby sensitive receptors, including landscape receptors.
Q1.7.12	Applicant	<p>Paragraphs 5.7.1 and 5.7.2 of Natural England's representation [RR-097] outline concerns regarding the impact of the export cable corridor on the special qualities of the Norfolk Coast Area of Outstanding Natural Beauty and the impact of the landfall on the visual amenity of users of national trails.</p> <p>Please comment on the concerns raised by Natural England.</p>	<p>The first part of paragraph 5.7.1 of Natural England's representation [RR-097] states that it is their view that there is insufficient information in the application to determine impact from the onshore cable corridor on special qualities of the Norfolk Coast Area of Outstanding Natural Beauty (AONB) and that they would expect to see a detailed analysis of the impacts on key landscape elements within the AONB which contribute to biodiversity and landscape character, including loss of key landscape features, such as veteran trees and important hedgerows.</p> <p>It is considered that sufficient information is presented in Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076) to determine the impacts from the onshore works on the Norfolk Coast AONB.</p> <p>To reinforce this conclusion, clarification is provided in Appendix 23 Impacts on the Qualities of Natural Beauty of the Norfolk Coast AONB to the Applicant's response to Deadline I.</p> <p>As shown on Figure 4.3 of Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076), the onshore cable route does not pass through landscape character type Coastal Towns and Villages CTV1: Weybourne to Sheringham. A short section of access corridor would pass through CTV1 west of Weybourne and no hedgerow vegetation would be removed. The onshore cable corridor would not affect the character of landscape character type Coastal Towns and Villages CTV1: Weybourne to Sheringham.</p> <p>In respect to tree and hedgerow loss along the onshore cable corridor, details of the measures designed in to the project to minimise impacts are identified in Volume 1, Chapter 3: Project Description (APP-058), Volume 3, Chapter 3: Ecology and Nature Conservation (APP-075), Outline CoCP (APP-179), Outline EMP (APP-180) and Outline LMP (APP-181). These measures include the use of trenchless technology to avoid direct impacts on the features. Where works are required to hedgerows, these will be minimised, with the course of action for each hedgerow to have been pre-determined and outlined in the Outline EMP and Outline LMP. The potential for impacts on the landscape, including the removal of hedgerows has been taken into account in the assessment presented in Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076).</p>

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			<p>A clarification of the landscape effects associated with the removal of hedgerows and trees during construction of Hornsea Three, specifically within the AONB, is included in Appendix 23 Impacts on the Qualities of Natural Beauty of the Norfolk Coast AONB to the Applicant's response to Deadline 1. This confirms the conclusions on effects on the AONB presented in Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076), which applies to the construction, operational and decommissioning phases of Hornsea Three. This includes consideration of hedgerows which are Important Hedgerows under The Hedgerows Regulations (1997). Figures 1 to 3 of Appendix 38 Important Hedgerows to the Applicant's response to Deadline 1, that several 'Important Hedgerows' and some other hedgerows and areas of woodland within the AONB would be retained by HDD, and that no surveyed hedgerows identified as 'Important' within the AONB would be removed.</p> <p>The second part of paragraph 5.7.1 of Natural England's representation [RR-097] states:  <i>"We understand that following completion of construction, there would be a period of a minimum of five years for the new hedgerow planting to fully mature. This means that the time for the landscape to recover is temporary long term."</i></p> <p>Hedgerows will be re-planted during the first planting season following installation of each section of the onshore cable corridor works. New planting will have an instant effect in providing hedgerow continuity (resulting in short-term effects) and will mature over time.</p> <p>The third part of paragraph 5.7.1 of Natural England's representation [RR-097] states:  <i>"In addition to the impact of the cable route, the construction impacts of any joint bays, link boxes, compounds etc. within the AONB should be assessed in full."</i></p> <p>Construction impacts arising from all works within the onshore cable corridor, including joint bays, link boxes and compounds, are assessed within Volume 3, Chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076).</p> <p>Paragraph 5.7.2 of Natural England's representation [RR-097] states that there is likely to be a significant impact on the visual amenity of users of the national trails, that construction activities would potentially require their temporary closure or diversion, and that they consider that the effect on them would be significant for the duration of the</p>

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			<p>construction. They also state that there are no details of what measures might be taken to mitigate for any adverse visual impacts and whether any footpath improvements might be required for the diversion. Potential impacts of the construction works along the onshore cable corridor, including landfall works, on visual receptors including users of local routes (roads and public rights of way), are assessed in Volume 3, chapter 4: Landscape and Visual Resources of the Environmental Statement (APP-076). Effects were not assessed to be significant. As set out in Table 4.7 of APP-076, impacts during construction associated with the offshore elements of Hornsea Three were scoped out of the assessment due to the short to medium term and temporary nature of the impacts. As a result of these conclusions, no mitigation measures beyond those designed-in to Hornsea Three (set out in Table 4.12 of Volume 3, Chapter 4: Landscape and Visual Resources (APP-076) and Table 6.28 of Volume 3, Chapter 6: Land Use and Recreation (APP-078)) are considered necessary. As noted in Table 6.35 of APP-078 in relation to the Peddars Way and Norfolk Coast Path at chainage 51.5:</p> <p><i>"If HDD, the route remains open.</i></p> <p><i>If open cut trench, the route would be temporarily diverted for a maximum of 1 month on up to six occasions.</i></p> <p><i>A diversion route has been identified along existing tracks to the immediate south. This dedicated route, and access to it from the beach on either side, would be fenced and gated and managed in accordance with beach access measures as part of the PRoW Management Plan, as set out in the Outline CoCP [APP-179]."</i></p> <p>Effects during decommissioning of the onshore cable corridor are addressed in:</p> <ul style="list-style-type: none"> <li>Table 4.7 of Volume 3, Chapter 4: Landscape and Visual Resources (APP-076) which states <i>"The decommissioning requirements of the onshore cable route will not cause any changes to the landscape character or visual amenity of the onshore cable corridor study area due to the minimal activities (i.e. cables will be left in the ground, as described in volume 1, chapter 3: Project Description) . Decommissioning activities for the onshore cable corridor will not be likely to give rise to any adverse landscape or visual effects that could be considered significant."</i></li> <li>Table 6.24 of Volume 3, Chapter 6: Land Use and Recreation (APP-078) which states <i>"It is anticipated that the export cable would not be removed during decommissioning, instead it would remain buried in situ. Therefore, there would be no change to recreational resources including PRoWs within the Hornsea Three land use and recreation study area during or as a result of the decommissioning phase."</i></li> </ul>

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			Notwithstanding this, Public Rights of Way management measures are documented in the Outline CoCP (APP-179). Details of the mitigation measures to be taken in respect of Norfolk Coast Path/Peddars Way, comprising a local diversion during the construction phase, will be further developed post-consent in consultation with Norfolk County Council and captured in the Public Rights of Way Management Plan which will form part of the CoCP to be submitted for approval by the relevant local planning authorities under DCO Schedule 1, Part 3, Requirement 17.

## 1.10 Written Question 1.8 Historic environment

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.8.1	Applicant	The Planning Statement [APP-177] states that there is potential for conflict with Policy EN8 of the North Norfolk District Council Local Plan (paragraph 5.2.5.16) and South Norfolk Council's (SNC) Joint Core Strategy Policy 1 (paragraph 5.2.5.21). However, paragraph 5.2.5.27 states that the proposals are in accordance with the relevant policies regarding the historic environment. Please explain this apparent inconsistency.	<p>Paragraph 5.2.5.16 and paragraph 5.2.5.21 of the Planning Statement [APP-177] identify potential for conflict with the objectives of Policy EN8 of the North Norfolk District Council Local Plan and South Norfolk Council's Joint Core Strategy Policy 1 respectively. In each case, it is concluded that where conflict might occur it is considered, on balance, that the significant benefits of the project in terms of the delivery of renewable energy is material to this application and would outweigh that conflict.</p> <p>The Applicant would clarify that paragraph 5.2.5.27 of the Planning Statement [APP-177] was not intended to supersede the conclusions in paragraph 5.2.5.16 and 5.2.5.21. It was established in the findings of the judge in the <i>Rochdale</i> case that a development proposal does not need to comply with each and every policy in, say, a local plan, for it to be concluded that the proposal generally complies with policy. That is all that is being said in para 5.2.5.27, i.e. on balance there is general compliance with historic environment policies.</p>
Q1.8.2	Applicant	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.	<p>Volume 6, Annex 5.4: Screening Assessment – Onshore HVDC Converter/HVAC Substation [APP-152] and Annex 5.9: Screening Assessment – Onshore HVAC Booster Station [APP-153] of the Environmental Statement provides a screening assessment for each heritage asset and identifies where further assessment was undertaken in Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077]. The Applicant would clarify that listed buildings located within Conservation Areas (e.g. Church of St Peter) have been assessed as part of the Conservation Area assessment (e.g. Melton Constable Hall Conservation Area) and a separate assessment has not been undertaken. For some of listed buildings outside Conservation Areas (and also Mannington and Wolterton Conservation Area) the screening assessments state that further consideration is provided in Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077]. However, these heritage assets have been screened out as there will not be an impact on these assets or their settings and therefore, do not require further assessment. Appendix 28 Onshore HVDC Converter/HVAC Substation Screening Clarification and Appendix 27 Onshore HVAC Booster Station Screening Clarification to the Applicant's Response to Deadline 1 identifies these assets and the appropriate screening assessment.</p>



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		Please provide an assessment for each listed building where the Screening Assessments indicate that a further assessment is provided in the ES.	The Applicant confirms that the conclusions of the assessment as reported in Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077] remains robust.
Q1.8.3	Applicant	<p>Figure 3.37 of the ES [APP-058] provides an illustrative layout/design of the proposed onshore HVDC converter/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.</p> <p>A) Please explain how this illustrative layout/design along with the design parameters in table 3.63 of the ES [APP-058] have taken into account the desirability of sustaining the setting and significance of heritage assets in the vicinity of</p>	<p>A) The Applicant has had regard the desirability of sustaining the setting and significance of heritage assets in the vicinity of the onshore HVDC converter/HVAC substation.</p> <p>The decision process for selecting the site is described in paragraphs 4.11.5.1 to 4.11.5.3 of Volume 1, Chapter 4: Site Selection and Consideration of Alternatives [APP-059]. A screening exercise was undertaken including heritage assets.</p> <p>The best site was selected considering commercial, environmental (including heritage matters) and planning, and engineering/technical considerations.</p> <p>As Hornsea Three is a nationally significant infrastructure project in a constantly evolving industry, it is not possible to provide precise final design details a number of years ahead of the time it will be constructed. An assessment of the effects arising from the maximum design scenario at this site (as demonstrated in the wireframes shown in Volume 4, Annex 5.7: Historic Environment Visualisations, APP-155) is presented in Volume 3, Chapter 5: Historic Environment of the Environmental Statement (APP-077). This concludes that the significance of the effects of the onshore HVDC converter/HVAC substation on heritage assets during the construction phase varies from negligible to moderate adverse. The significance of effects during the operation and maintenance phase would range from minor to moderate adverse and decommissioning effects would be negligible to minor adverse.</p> <p>The final design will be secured through Requirement 7 of the dDCO [APP-027], which requires details including the layout, scale, finished ground levels, external appearance, materials, access and circulation areas, and timetables for the landscaping works at the HVDC converter/HVAC substation to be submitted to</p>

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		<p>the onshore HVDC converter/HVAC substation.</p> <p>B) What would be the differences in layout and design, along with any difference in effects, between a HVDC converter and a HVAC substation?</p> <p>C) What scope is there to refine the parameters of the HVDC converter/HVAC substation in order to minimise as far as possible any adverse effects upon heritage assets?</p>	<p>and approved by the relevant planning authority prior to commencement of construction. In preparing those details the Applicant should have regard to relevant policies including EN-1, and when determining related applications, the LPA should also have regard to those policies. Therefore, the ExA can be confident that the final design will be taken into account the desirability of sustaining the setting and significance of heritage assets in the vicinity of the onshore HVDC converter/HVAC substation.</p> <p>Furthermore, designed-in mitigation includes a landscape planting and management scheme around the onshore HVDC converter/HVAC substation (see Outline Landscape Management Plan [APP -181]) and existing hedgerows and trees will be retained where practicable. The Applicant has also committed to implementing sections of the mitigation planting at the commencement of works at the onshore HVDC converter/HVAC substation which could be up to three years ahead of the planned construction works, in order to maximise the screening provided in the shortest period of time. Together with sympathetic detailed design, this mitigation will also serve to sustain the setting and significance of heritage assets in the vicinity of the onshore HVDC converter/HVAC substation.</p> <p>B) Differences in the parameters and design for the onshore HVDC converter/HVAC substation, as well as any differences in the likely effects, are provided within Appendix 22 to the Applicant's response to Deadline 1.</p> <p>C) Please see the response to (A) above – the Applicant does not consider it necessary to further refine the parameters of the HVDC converter/HVAC substation because the Applicant and LPA are required to have regard to historic environment related policies and legislation when preparing and approving (respectively) the detailed design of the HVDC converter/HVAC substation. If the LPA is not satisfied that the design respects nearby heritage assets then it may refuse approval.</p>

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Q1.8.4	Applicant	<p>The photomontages relating to Gowthorpe Manor and Mangreen Hall [APP-155] are taken from viewpoints close to existing and/or proposed landscaping.</p> <p>Please provide additional photomontages relating to these heritage assets.</p>	<p>The Applicant notes that while the current photomontages of Gowthorpe Manor and Mangreen Hall as shown in Volume 6, Annex 5.7: Historic Environment Visualisations of the Environmental Statement [APP-155] may be close to existing/proposed landscaping, they represent the maximum design scenario views of the proposed onshore HVDC converter/HVAC substation.</p> <p>Visualisations to illustrate the impact of Hornsea Three on the settings of Gowthorpe Manor and Mangreen Hall were requested by Historic England (HIE) in their Section 42 response. Further consultation on this issue was undertaken with Historic England during a meeting held on 6 November 2017. The exact locations of viewpoint photography were finalised on site based on the professional judgement of the Hornsea Three landscape architect and historic environment specialist. Ventus Augmented Reality software was used to produce an approximation of the location and of the structures.</p> <p>The viewpoints presented within Volume 6, Annex 5.7 – Historic Environment Visualisations [APP-155] are therefore considered to be representative. It is noted that in the case of each designated asset, from most if not all nearby viewpoints the onshore HVDC converter/HVAC substation would not be visible. In this area, the roads are characterised by tall hedgerows with trees.</p> <p>On this basis it is not proposed to provide further photomontages relating to these heritage assets as these would present unrealistic viewpoints. The ExA may of course consider the viewpoints and local context further when undertaking site visits.</p>
Q1.8.5	Applicant	<p>The photomontages from the Keswick Hall viewpoint [APP-155] show the proposed HVDC converter/HVAC substation to be clearly visible. Representations have been made in this regard by South Norfolk</p>	<p>The impact of the onshore HVDC converter/HVAC substation on Keswick Hall and its parkland setting is assessed in paragraphs 5.11.1.92 to 5.11.1.99 of Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP_077], which concluded that the magnitude of impact on the setting of Keswick Hall would be minor (i.e. there would be no physical impact on the designated asset) and that the significance of the effect would be minor adverse.</p>

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		<p>Council (SNC) [RR-054] and Historic England (HE) [RR-078].</p> <p>Please provide a more detailed assessment of the effect upon the setting of Keswick Hall, taking account of these representations.</p>	<p>Representations from Historic England [RR-078] state that the visualisations provided in Volume 6, Annex 5.7: Historic Environmental Visualisations of the Environmental Statement [APP-155] have "indicated that the development would erode the rural setting of a number of other highly graded heritage assets, which would result in a high degree of harm to their significance....We also have concerns about the impact of the development on a number of Grade II listed buildings such as Keswick Hall".</p> <p>Representations from South Norfolk Council [RR-054] confirm their agreement with the sensitivity assigned to Keswick Hall in the Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077], referring specifically to the parkland. However, they suggest that the magnitude of impact should be increased to moderate as the views from Keswick Hall across the parkland of the onshore HVDC converter/HVAC substation would result in "a change within the setting leading to some loss of significance of the asset".</p> <p>The annex to South Norfolk Council's Representation notes that Historic England <i>Historic Environment Good Practice Advice</i> in Planning Note 3 "The Setting of Heritage Assets" advises that "many heritage assets have settings that have been designed to enhance their presence and visual interest or to create experiences of drama or surprise. In these special circumstances, these designed settings may be regarded as heritage assets in their own right, for instance the designed landscape around a country house. Furthermore, they may, themselves, have a wider setting: a park may form the immediate surroundings of a great house, while having its own setting that includes lines-of-sight to more distant heritage assets or natural features beyond the park boundary."</p> <p>In addition the annex notes that "Keswick Hall is grade II listed with the attached designed parkland undesignated" and considers that "the impact on the parkland as a designed landscape garden of some significance requires a separate assessment as a undesignated heritage asset"</p> <p>The Applicant has reconsidered its assessment in detail and in light of those representations, and notes the following:</p> <ul style="list-style-type: none"> <li>(i) the parkland at Keswick Hall does not have lines of sight to the more distant heritage assets beyond the park boundary (e.g. Intwood Hall);</li> <li>(ii) Keswick Hall's setting is limited in extent, being severed from the wider area by the A47 road;</li> <li>(iii) the park and its setting are seriously compromised by modern development within it;</li> </ul>

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			<p>(iv) the Applicant considers the park an example of a Robust Undesignated Historic Landscape and that the parkland is of low significance; and</p> <p>(v), the setting of the parkland is of very limited significance because it has been severed from the surrounding area by the A47.</p> <p>Furthermore, the Applicant considers that regardless of the sensitivity and magnitude attributed, there would be no substantial harm to Keswick Hall and its parkland setting, and the proposed mitigation would remain the same.</p> <p>In view of the above the above the Applicant's conclusions in respect of Keswick Hall and its setting remain the same as set out in Volume 3, Chapter 5: Historic Environment of the Environmental Statement and having regard to the representations of Historic England and SNC.</p>
Q1.8.6	Applicant	What effects would any external lighting at the onshore HVDC converter/HVAC substation and onshore HVAC booster station have on the setting of heritage assets?	<p>Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077] concludes , with respect to the onshore HVAC booster station, that significant effects on heritage assets are unlikely.</p> <p>Impacts from permanent lighting at the onshore HVDC converter/HVAC substation (such as security lighting during operation and task lighting to ensure a safe working environment), would be minimised through design, in particular through the use of directional lighting. The detailed lighting strategy for the operation and maintenance phase (i.e. permanent) will be submitted for the approval of the relevant local planning authorities under DCO Requirement 7 Detailed design approval onshore. Based on the mitigation and management measures proposed, no significant light spill is anticipated during construction or operation that would affect the setting of heritage assets.</p>
Q1.8.7	Applicant	"Paragraph 3.8.1.2 of the ES [APP-058] states that Hornsea Project Three may be constructed in two phases.	<p>The Applicant has committed to the reinstatement of land along the onshore cable corridor and at the onshore HVDC converter/HVAC substation (including replanting of damaged or cleared vegetation) as soon as practicable on the completion of each construction phase, which would minimise the impact of Hornsea Three between phases. The commitment to reinstate the temporary construction compound at the onshore HVDC converter/HVAC substation is</p>

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		<p>Under a two phase scenario, what effects upon the setting of heritage assets would arise in terms of the visual appearance of the cable corridor when left between phases (for example where the cable route adjoins Baconsthorpe Castle or in the vicinity of the onshore HVDC convertor/HVAC substation)?</p> <p>How could any adverse impacts be mitigated?"</p>	<p>captured in paragraph 4.1.6.1 and updated paragraph 4.1.6.2 of the Outline CoCP (APP-179) (new text shown in underline):</p> <p><i>Paragraph 4.1.6.2 "If works are delivered in phases, temporary construction compounds and accesses will be removed <u>and the land reinstated on completion of construction work associated with that phase unless otherwise approved by the Local Planning Authority.</u>"</i></p> <p>The commitment to reinstate the onshore cable corridor is captured in updated paragraph 4.1.6.3 of the Outline CoCP (APP-179) as follows (new text shown in underline):</p> <p><i>Paragraph 4.1.6.3 "Following completion of the onshore cable installation, the working area will be reinstated to a state commensurate with condition prior to the commencement of works. <u>If works are delivered in phases, the working area will be reinstated on completion of construction work associated with that phase unless otherwise agreed by the local planning authority.</u> This will include:</i></p> <ul style="list-style-type: none"> <li>• <i>Reinstatement of topsoil and subsoil, including loosening or ripping of compacted soil;</i></li> <li>• <i>Reinstatement of land drainage systems, where necessary post construction drains may be installed, typically parallel to the cable corridor;</i></li> <li>• <i>Reseeding of any fields of grassland, grass margins and ditch banks;</i></li> </ul> <p><i>Reconstruction of any drains, ditches or roads crossed using an open cut method;</i></p> <ul style="list-style-type: none"> <li>• <i>Replanting of any hedgerows or felled shrubs as detailed in the Landscape Management Plan (approved by the Local Planning Authority in accordance with the principles established in the Outline Landscape Management Plan (document reference A8.7);</i></li> <li>• <i>Restoration or repair of fences, gates, tracks or hard standing; and</i></li> <li>• <i>Reinstatement of PRow where temporary diversions have been put in place during construction."</i></li> </ul> <p>On this basis, the impacts between phases would be comparable to the operational impacts caused by the onshore cable corridor. Operational impacts from the onshore cable corridor were scoped out of the assessment reported in Volume 3, Chapter 5: Historic Environment [APP-077], because the onshore cable corridor will be buried underground</p>

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			<p>and there are no routine operation and maintenance activities which would cause an impact to the setting of heritage assets or the overall historic landscape.</p> <p>Impacts upon the setting of heritage assets, in terms of the visual appearance of the cable corridor when left between phases (for example where the onshore cable route passes Baconsthorpe Castle or in the vicinity of the onshore HVDC converter/HVAC substation), would be as those operational impacts described above.</p> <p>Since the submission of the DCO application, the Applicant has committed to implementing sections of mitigation planting at the commencement of works at the onshore HVDC converter/HVAC substation, which could be up to three years ahead of the planned completion of construction works, in order to maximise the screening provided in the shortest period of time. This commitment is captured in the SOCG with South Norfolk Council and the Outline LMP [APP-181].</p>
Q1.8.8	Applicant, The National Trust (NT)	The NT [RR-056] refers to Oulton Airfield as a non-designated heritage asset. 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.	The Applicant would refer the Examining Authority to the Historic Environment section of Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1.
Q1.8.9	Applicant, Broadland District	NT [RR-056] and BDC [RR-057] refer to the impact of the main construction compound on the Blickling Conservation Area.	The Applicant would refer the Examining Authority to the Historic Environment section of Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1.

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	Council (BDC), NT	<p>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.</p> <p>Please can BDC also provide a plan showing the boundary of the conservation area.</p>	
Q1.8.10	Applicant	<p>Paragraph 5.11.1.143 of the ES [APP-077] states that there are no registered parks and gardens requiring assessment in relation to the onshore HVAC booster station. However, paragraphs 5.11.1.39 to 5.11.1.48 include such an assessment of Salle Park.</p> <p>Please explain this apparent inconsistency.</p>	To add clarity, what is meant by paragraph 5.11.1.143 is there are no other registered parks and gardens located within the Hornsea three historic environment study area, that fall within the ZTV of the onshore HVAC booster station and which require further assessment.
Q1.8.11	Applicant	<p>The assessments of the effects upon the settings of heritage assets in the ES [APP-077] appear to be largely focused on visual considerations.</p> <p>What other factors, including for example other environmental factors and the historic relationships between places, have been</p>	<p>The assessment of the effects upon settings of heritage assets as reported in Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077] has been undertaken in accordance with the guidance from Historic England 'Historic Environment Good Practice Advice' in 'Planning Note 3: The Settings of Heritage Assets' (Historic England, 2017). The guidance states that assessments of changes within the settings of heritage assets "<i>can involve non-visual issues such as noise [however] it is more often the visual aspects of a development that form the major part of the assessment</i>".</p> <p>The Applicant confirms that where there is potential for changes within the setting of heritage assets due to non-visual factors (including noise and vibration, air quality (particularly dust) and traffic) have been considered in the</p>



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		taken into account in assessing the effects upon the settings of heritage assets?	<p>assessment. For example, the assessment for Keswick Hall at paragraph 5.11.1.98 of Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077] notes the intrusiveness of traffic noise.</p> <p>The historic relationship between places has also been taken into account in assessing the effects upon the settings of heritage assets; e.g. paragraph 5.11.1.59 of Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077] considers the setting of Gowthorpe Manor and concludes that it is the relationship between the elements of the surrounding landscape which form the setting of the listed building. A similar setting is considered at Mangreen Hall at paragraph 5.11.1.68 [APP-077]. Paragraphs 1.7.1.8 to 1.1.1.51 of Volume 6, Annex 5.1: Desk Based Assessment of the Environmental Statement [APP-149] examines the setting baseline for Keswick Hall and parkland, including its design by national architect William Wilkins.</p>
Q1.8.12	Applicant	Have the assessments of the effects upon the setting of heritage assets in the ES [APP-077] been made solely on the basis of the maximum design parameters or have they been influenced by the indicative layouts provided in the ES [APP-058] (Figures 3.34 and 3.37)?	<p>The Applicant confirms that the assessment of effects on the settings of heritage assets in Volume 3, Chapter 5: Historic Environment of the Environmental Statement [APP-077] is based solely on the maximum design parameters as set out in Volume 1, Chapter 3: Project Description of the Environmental Statement [APP-058] and shown in the wirelines in Volume 6, Annex 5.7: Historic Environment Visualisations [APP-155].</p> <p>The Historic Environment Visualisations [APP-155] document contains, for those viewpoints with a relatively clear view of the onshore HVAC booster station or HVDC converter/HVAC substation, illustrative photomontages which were produced using the indicative layouts provided in the Project Description [APP-058]. These are for illustrative purposes only and were not used in the assessment of effects.</p>
Q1.8.13	Applicant	South Norfolk Council's representation [RR-054] states that there is an absence of information on important hedgerows as defined under the Hedgerows Regulations 1997.	<p>Paragraph 5.11.1.166 et seq of Volume 3, Chapter 5: Historic Environment [APP-077] assesses the effect of construction works throughout the Order Limits on the overall historic landscape. Whilst hedgerows of historical importance have not been specifically referenced in the baseline characterisation, field enclosures have been taken into consideration.</p> <p>Following the submission of the draft DCO, the Applicant has undertaken a desktop review of important hedgerows as defined under the Hedgerows Regulations 1997 (see Appendix 38 Important Hedgerows to the Applicant's response to Deadline 1), which identifies hedgerows of historical interest (see Figure 2 of Appendix 38 Important Hedgerows to</p>

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		Would any hedgerows of historical importance be lost or their original course altered by the proposal?	<p>the Applicant's Deadline 1 submission). This information will be transposed onto the Tree Preservation and Hedgerow Plan (APP-021) and submitted at Deadline 1. Clarification of the criteria which informs the identification of Important Hedgerows has also been provided in paragraph 2.2.7.1 of the Outline EMP (APP-180):</p> <p><i>"2.2.7.1 The Hedgerow Regulations 1997 protect hedgerows from removal, with particular protection for 'important' hedgerows. A hedgerow is 'important' if it is at least 30 years old and meets at least one of the eight archaeology, history, wildlife or landscape criteria defined in the Regulations. <del>Important hedgerows are defined in the Regulations.</del> A hedgerows is 'protected' if it is <del>The Regulations apply to any hedgerow</del> growing in, or adjacent to, any common land, protected land (Local Nature Reserves (LNRs) and SSSIs), or land used for agriculture (including dairy farming and the breeding and keeping of livestock), forestry or the breeding or keeping of horses, ponies or donkeys, if it: (a) has a continuous length of, or exceeding, 20 m; or (b) it has a continuous length of less than 20 m and, at each end, meets another hedgerow."</i></p> <p>Based on this desktop review, the Applicant can confirm that there are 13 hedgerows within the Order Limits which have been identified as important for historic environment reasons, of which:</p> <ul style="list-style-type: none"> <li>(i) one is crossed by HDD only,</li> <li>(ii) five are HDD with haul road over,</li> <li>(iii) five are on the boundary of the Order Limits and therefore will be retained where practicable, and</li> <li>(iv) two will likely be removed where they cross the Order Limits.</li> </ul> <p>That means that there is the potential for removal of seven hedgerows identified as Important Hedgerows for historic environment reasons may need to be removed. A further five hedgerows may be partially removed due to the need to install a 6 m wide haul road within the onshore cable corridor. However, as noted in paragraph 6.5.1.14 of the Outline CoCP (APP-179), the length of hedgerow to be removed will be reduced as far as practicable.</p> <p>The Applicant would refer the Examining Authority to the updated Outline Code of Construction Practice [APP-179] and Outline Landscape Management Plan [APP-181] for further details of mitigation, reinstatement and management measures which apply to all hedgerows.</p>

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			The likely loss (and reinstatement) of seven hedgerows classified as important under Criteria 1 of the Hedgerow Regulations 1997 (56a-56b, 120a-120b), with a partial loss of an additional five hedgerows, is not considered to affect the historic landscape. No hedgerows important for historic environment reasons will have their original course altered by the authorized development.
Q1.8.14	Applicant, NT	<p>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.</p> <p>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.</p>	<p>The Applicant has reconsidered its assessment in detail and in light of those representations, and notes the following:</p> <ul style="list-style-type: none"> <li>• Volume 2, Chapter 9: Marine Archaeology of the Environmental Statement [APP-069] sets out the assessment of the heritage interest below Mean High Water Springs (MHWS). Coastal geology deposits and their associated archaeological remains are set out in Volume 5, Annex 9.1: Marine Archaeological Technical Report of the Environmental Statement [APP-114]. The presence of material possibly associated with Second World War Coastal Defenses is described in paragraph 3.7.3.2.</li> <li>• Mitigation measures are summarised in Volume 2, Chapter 9: Marine Archaeology [APP-069] and described in more detailed 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]). Mitigation measures include a protocol for archaeological discoveries during construction works and procedures for recording and reporting finds.</li> <li>• Volume 3, Chapter 5, Historic Environment of the Environmental Statement [APP-077] sets out the assessment of the heritage interest above MHWS. Coastal geology deposits and their associated archaeological remains are set out in Volume 6, Annex 5.1: Desk Based Assessment [APP-149]. The annex also notes the likely presence of Roman remains in the vicinity of Weybourne at paragraph 1.6.2.28 and military remains in the coastal area and beyond are described in 1.6.2.49. Whilst these resources are not been specifically referenced, they have been considered in the assessment of construction of Hornsea Three on buried archaeology which concludes that the effects would be of minor adverse significance.</li> </ul>

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			<ul style="list-style-type: none"> <li>Volume 3, Chapter 5, Historic Environment [APP-077] provides mitigation measures for archaeological remains above MHWS and includes a programme of advance archaeological investigation post consent focusing on identified sites. An Outline WSI will be agreed with the relevant authorities prior to commencement of the consented works. This makes provision for a suite of mitigation techniques including geophysical survey, trial trenching, watching brief, strip map and assessment and a methodology for addressing unexpected archaeological remains. On this basis an appropriate level of mitigation can be achieved for any remains encountered during construction.</li> </ul> <p>In view of the above the above the Applicant's conclusions in respect of archaeological interest of the North Norfolk coast in the area of the proposed cable landfall remain the same as set out in Volume 2, Chapter 9: Marine Archaeology of the Environmental Statement and Volume 3, Chapter 5: Historic Environment of the Environmental Statement and having regard to the representations of NE.</p>
Q1.8.15	Marine Management Organisation (MMO), Historic England (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?	While this is not directed to the Applicant, the Applicant would note that Volume 5, Annex 9.2: Outline Written Scheme of Investigation (APP-115) was informed by pre-application consultation with Historic England (see section 9.5 of Volume 2, Chapter 9: Marine Archaeology of the Environmental Statement (APP-069) for a summary of consultation). This included specific comment and discussion regarding the content of the Outline Written Scheme of Investigation, most notably during Section 42 consultation. Comments provided by Historic England have been taken on board and the Outline Written Scheme of Investigation updated to reflect these discussions.
Q1.8.16	Applicant, 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.  A) Whilst impacts are predicted to be localised, given the total maximum area of	A) As outlined in section 9.11.1 of Volume 2, Chapter 9: Marine Archaeology of the Environmental Statement (APP-069), the magnitude of impact for construction phase impacts is considered to be negligible for effects on palaeo-channels, due to the widespread extent of these features. The total area of seabed affected by Hornsea Three construction represents a very small proportion of the overall extent of these features. For more discrete archaeological features (e.g. shipwrecks, aircraft wrecks), the measures adopted in accordance with the Outline Written Scheme of Investigation of the project will ensure direct impacts on features of archaeological importance are avoided (see section 9.10.2 of Volume 2, Chapter 9: Marine Archaeology of the Environmental Statement).

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		<p>proposed disturbance, what confidence is there that the magnitude of impacts would remain as being negligible?</p> <p>B) Do the MMO and HE agree with the applicant's assessment of magnitude of impact on marine archaeology?</p>	<p>The assessment considers the maximum design scenario for each identified potential impact from the range of relevant design parameters outlined in the Project Description (Volume 1, Chapter 3: Project Description of the Environmental Statement; (APP-058)) for Hornsea Three alone and cumulatively with other activities, plans and projects. Effects of greater adverse significance are not predicted should any other development scenario be taken forward in the final design scheme and as such the Applicant is confident that the magnitude of impact would remain as negligible and not significant in EIA terms.</p> <p>B) No issues regarding the Applicant's assessment of magnitude of impact on marine archaeology have been raised by the MMO or Historic England within consultation either during pre-application or post-application</p>
Q1.8.17	Applicant	<p>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.</p> <p>A) What would be the process by which matters would be determined where the approval of the Archaeological Curator was required?</p> <p>B) What consultations would the Archaeological Curator carry out?</p>	<p>A) Volume 5, Annex 9.2: Outline Written Scheme of Investigation (APP-115) defines the Archaeological Curator as a: "Public sector archaeologist retained to advise the determining authority". The Historic England Marine Planning Unit is the Archaeological Curator responsible for providing advice to the determining authority on heritage matters offshore .</p> <p>The Archaeological Curator will be responsible for the approval of various requirements specified in the Outline Written Scheme of Investigation. Contact with the Archaeological Curator will be administered by Hornsea Three under advice from a suitably qualified and experience archaeological contractor (the Retained Archaeologist).</p> <p>The Archaeological Curator will be responsible for the approval of method statements relating to geophysical and geotechnical surveys, agreeing the scope of assessment required of archaeological material encountered during obstruction clearance and survey work (alongside any appropriate mitigation measure, as required), considering the need for (and details of) any new Archaeological Exclusion Zones (AEZs), agreeing the frequency and timing of monitoring relating to AEZs, agreeing the requirements for archaeological review of geotechnical logs and agreeing the protocol for archaeological discoveries.</p> <p>Hornsea Three will employ the services of a Retained Archaeologist (archaeological contractor) as set out in Section 6, Volume 5, Annex 9.2: Outline Written Scheme of Investigation of the Environmental Statement. This role will be</p>

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			<p>responsible for ensuring the effective implementation of the Written Scheme of Investigation, along with other matters related to archaeology. Amongst the Retained Archaeologist's responsibilities will be support to Hornsea Three with respect to appropriate liaison with the Archaeological Curator. Where approvals by the Archaeological Curator are required, it will be the Retained Archaeologist's responsibility to support Hornsea Three to provide the required information to the Archaeological Curator and liaise with the Curator to reach agreement on all required matters. Hornsea Three will engage with the Archaeological Curator to ensure the WSI is enacted as appropriate.</p> <p>B) The marine archaeology key consultees and contacts are outlined in Section 6, Volume 5, Annex 9.2: Outline Written Scheme of Investigation of the Environmental Statement and it is likely that any additional consultation carried out by the Archaeological Curator may include these organisations (e.g. Norfolk County Council Archaeology, Historic England Inspectors and Science Advisors etc.). However, the Applicant would expect that good lines of communication between key consultees, will mean that further consultation would not be required.</p>
Q1.8.18	Applicant	<p>Table 7.1 of the OWSI [APP-115] indicates that further surveys are expected in 2018.</p> <p>A) Have any further surveys taken place and, if so, what are the results?</p> <p>B) What are the implications of any such results for the assessments in the ES?</p>	<p>A) Further geophysical and geotechnical surveys along the Hornsea Three offshore cable corridor have been undertaken since the submission of the Hornsea Three DCO application, primarily focussed around the Hornsea Three offshore cable corridor re-routes. These have been informed by advice from the Hornsea Three archaeology consultant to ensure the results are appropriate for the purposes of the Written Scheme of Investigation. The data acquired from these surveys are currently being processed and analysed and once available, the data will be provided to the retained archaeologist to be fed into the WSI as detailed below.</p> <p>B) Once available, the results of the surveys will be fed into, and inform, the Written Scheme of Investigation in an iterative process, as outlined in Section 7 of Volume 5, Annex 9.2: Outline Written Scheme of Investigation of the Environmental Statement (APP-115). All required control measures are detailed in the outline Written Scheme of Investigation. The survey results will not alter the impact assessment conclusions in Volume 2, Chapter 9: Marine Archaeology of the Environmental Statement (APP-069), instead they will inform the implementation of the specified control measures.</p>
Q1.8.19	Applicant	The OWSI [APP-115] provides for the potential creation of Archaeological Exclusion Zones.	A) Volume 5, Annex 9.2: Outline Written Scheme of Investigation APP-115) outlines the process for establishing new AEZs. New AEZs would be created as a result of any unexpected discoveries made following completion and interpretation of further pre-construction geophysical and geotechnical surveys (see the Applicant's Response to Ex.A

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		<p>A) Please provide clarification of the process for the establishment of new Archaeological Exclusion Zones (including Temporary Zones).</p> <p>B) How would these be safeguarded through the dDCO when the detailed siting of the offshore infrastructure is finalised?</p>	<p>Question Q1.8.18 above). The purpose of these pre-construction surveys is to ensure all AEZs are established prior to commencement of construction activities, minimising the risk of any new AEZs being established during the construction phase.</p> <p>More specifically, if new finds of archaeological importance are made before or during the construction phase, these will be reported to the Retained Archaeologist, and in turn to the Archaeological Curator. This will comply with the agreed Protocol for Archaeological Discoveries (see section 15 of Volume 5, Annex 9.2: Outline Written Scheme of Investigation of the Environmental Statement). Where such finds are of archaeological importance, they may result in the designation of additional AEZs. When finds are made during construction, activities will cease until archaeological advice is sought. The Archaeological Curator and the Retained Archaeologist will liaise on the need for any new AEZs.</p> <p>It is not anticipated that additional Temporary AEZs (TAEZs) will be established for Hornsea Three. As outlined in section 12 of Volume 5, Annex 9.2: Outline Written Scheme of Investigation of the Environmental Statement, TAEZs have been identified to ensure adequate protection of wrecks and obstructions identified in UKHO desktop records, where site specific survey data within the Hornsea Three array area and offshore cable corridor were not available at the time of the application. As further, high resolution survey data become available, the TAEZs identified during the pre-application phase (which were precautionary in extent) may be adjusted to a less precautionary size, while ensuring robust mitigation for the relevant archaeological feature. The TAEZs will remain in place until alterations have been formally agreed with the Archaeological Curator.</p> <p>B) All control measures to minimise the risks to archaeological features are secured in Schedule 11, Part 2, Condition 11(2) and Schedule 12, Part 2, Condition 12(2) of the draft DCO (APP-027) which specifies that a Written Scheme of Investigation must be submitted to and approved by the MMO, in consultation with the statutory historic body prior to commencement of licensed activities. These conditions include specific reference to identification and modification of AEZs and monitoring of AEZs during and post construction, and details of further site investigations (including geophysical and geotechnical survey and analysis) to allow for any additional features of archaeological importance to be identified and protected as required.</p>



## 1.11 Written Question 1.9 Land use and recreation

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.9.1	Applicant, South Norfolk Council (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.	<p>The Applicant has consulted South Norfolk Council (SNC) on potential housing sites in their administrative boundary. The Applicant understands that SNC's response to WQ 1.9.1 which will be submitted for Deadline 1) will set out development proposals under consideration or granted permission but not yet completed, plus a number of sites put forward as part of the Greater Norwich Local Plan which are potentially affected by the onshore cable corridor.</p> <p>The Greater Norwich Local Plan (GNLP) is presently in the Regulation 18 consultation stage, which runs until 14 December 2018. This consultation follows an earlier consultation (January to March 2018) and includes newly submitted sites, revisions to some sites already consulted on and small sites not previously covered. These sites have no status in planning terms as they have been submitted under the call for sites and the initial regulation 18 stage, which are 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 (HELLA). Sites identified as <i>potentially</i> suitable in the HELLA are still subject to a full site assessment before a draft Regulation 18 is consulted on in autumn 2019.</p> <p>The Applicant's response to the specific sites identified in RR-051, RR-067, and RR-147 is set out below:</p> <ul style="list-style-type: none"> <li>RR-057: the land holding is not identified in the GNLP and there are no South Norfolk Council land allocations for the area where the onshore cable corridor crosses the holding. The Applicant considers that any development plans the landowner currently has are aspirational and, therefore, no mitigation measures are required;</li> <li>RR-067: the Hornsea Three onshore cable passes through two "call for sites" areas identified in the GNLP: these are GNLP0177-A (housing, associated commercial/employment development) and GNLP1023-B (food-led business hub). There are no current planning applications for either GNLP0177-A and GNLP1023-B</li> </ul>



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			<p>and the GNLP currently has no status in planning policy terms. Due to the status of the sites, the Applicant considers that it is not appropriate to assess the impact Hornsea Three could potentially have on any future development and, therefore, the Applicant considers that mitigation is not required.</p> <ul style="list-style-type: none"> <li>RR-147: refers to a reserved matters planning application 2017/0151 that was consented in May 2017. This consent and the original outline planning application (2011/1804/O) are not located within the boundary of the Hornsea Three onshore cable corridor. This development has been included in the cumulative assessment (as reported in Volume 4: Annex 5.2: Cumulative Effects Screening Matrix of the Environmental Statement [APP-097]) and no mitigation is required.</li> </ul> <p>Where possible, Hornsea Three has sought to minimise impacts to landowners including those who have identified potential development proposals through site selection/route refinement. Where it has not been possible to avoid such sites, the Applicant has sought to engage with the relevant landowners to discuss a voluntary agreement. In the event that it is not possible to enter into a voluntary agreement with relevant landowners, compensation will be payable in accordance with the statutory compensation code. Further information is set out in paragraph 11.2 of the Statement of Reasons [APP-032].</p>
Q1.9.2	Applicant	<p>Paragraph 6.11.1.39 of the ES [APP-078] indicates that there may be the possibility of using Horizontal Directional Drilling (HDD) technology for crossing public rights of way.</p> <p>What are the factors that will determine whether or not HDD technology is used in these circumstances?</p>	<p>With reference to Peddars Way/ Norfolk Coast Path at landfall, both HDD and open cut trenching is retained as options for cable installation at landfall. Based on the initial high level investigative works (in the form of preliminary nearshore geotechnical surveys) the Applicant considers that trenchless techniques may be feasible through the intertidal and therefore, has sought to include this option in the consent envelope. The specific approach taken forward (as part of the final scheme design) will be informed by HDD feasibility to be informed by detailed site investigation work undertaken post consent, as well as other construction logistics. In respect to these other construction logistics, open cut remains the Applicant's preferred approach to cable installation at landfall as it is less technically complex approach, utilising simpler construction methods as well as decoupling time critical construction activities, providing greater certainty in construction and installation programmes at reduced costs. Open cut works also reduces the marine interface, with no need for offshore HDD exit pits and associated dredge and backfill operations. Onshore, open cut activities typically entail less onshore traffic (with no HDD drill rigs required for example, or bentonite deliveries to site) and typically entail a smaller associated construction compound than those required to support HDD operations. Finally, open cut works can also be undertaken over a shorter time period when</p>

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			<p>compared with HDD, with typical works per cable taking 1 month (Paragraph 3.6.12.23 of Volume 1, Chapter 3: Project Description of the Environmental Statement, APP-058) over 4 months for each HDD operation (Table 3.51: Maximum design parameters for TJBs and landfall work of APP-058).</p> <p>The assessment of impacts on PRow within Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078) has considered the maximum design scenario (which in this instance comprises the impact on PRow resulting from the use of open cut technology).</p>
Q1.9.3	Applicant	<p>Section 6.8 of the Outline Code of Construction Practice [APP-179] sets out proposed management measures regarding public rights of way.</p> <p>A) Are there any footpaths or other public rights of way that would be temporarily stopped up without diversion?</p>	<p>A) The Applicant does not anticipate temporarily stopping up any footpaths or other public rights of way without diversion. As set out in paragraph 6.8.10 of the Outline Code of Construction Practice [APP-179] the contractor must either seek to maintain pedestrian access or provide a localised diversion.</p>

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		<p>B) Where footpaths and public rights of way would need to be diverted, please explain the procedure for agreeing how this would be done.</p> <p>C) In the case of the Norfolk Coast Path National Trail, please provide details of the diverted route that would be sought in the event that a diversion is required.</p> <p>D) Please provide an update on the progress of discussions with Norfolk County Council (NCC) regarding the implications for the Norfolk Coast Path National Trail and any additional management measures that may be required.</p>	<p>B) As set out in paragraph 6.8.7 of the Outline Code of Construction Practice [APP-179], prior to any stopping up or localised diversion the contractor must agree the management measures with the relevant PRow officer at Norfolk County Council. This will be achieved through the development of a PRow Management Plan post-consent, to form part of the detailed CoCP (Requirement 17 of the DCO). The Applicant has clarified this through amending paragraph 6.8.1.7 of the Outline CoCP, APP-179 as follows (new text shown in underline):</p> <p><i>Paragraph 6.8.1.7 "Several PRow and areas of land with informal public access will potentially be affected by the construction of the onshore elements of the Hornsea Three. Prior to the any stopping up or localised diversion of a PRow, the principal contractor will agree measures, in accordance with the measures established in this Outline CoCP, to manage the interface between the works and PRow with the relevant PRow officer at Norfolk County Council. <u>These measures, along with timeframes for reinstatement, will be set out in a PRow Management Plan to be approved by Norfolk County Council.</u>"</i></p> <p>All Public Rights of Way that are crossed by open-cut methodology will be diverted within the Order limits as the works proceed i.e. they will generally be retained on their existing alignment and only diverted as the works proceed over that alignment. Temporary fencing and signage will also be employed at these crossing points. This proposed procedure has been discussed with Norfolk County Council who have raised no objections although discussions continue in respect to the detailed management of these diversions (see the Norfolk County Council SoCG). Details of the reinstatement of the PRow is clarified in updated paragraph 6.8.1.17 of the Outline CoCP (APP-179) (new text shown in underline):</p> <p><i>"6.8.1.17 Following completion of construction activities <u>for a given phase</u>, all public access within the working area (PRowS) will be <u>returned to their original alignment (if appropriate) and/or reinstated with a standard commensurate to that existing prior to the commencement of construction works unless otherwise agreed with the local planning authority. As noted in paragraph 1.1.1.6 of the Outline CoCP, if construction is to be undertaken in two phases, the works in the first phase will be left in a safe state as agreed with relevant local authorities.</u>"</i></p>

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			<p>C) The proposed diversion from the Norfolk Coast Path runs along existing tracks and is shown as plots 1-005, 1-009, 1-010 and 1-011 on the Land Plan – Onshore [APP-011] within the Muckleburgh Collection. Within the landfall construction area and indicative alignment along existing tracks (as shown in the Annex to Ex. A WQ 1.9.3) has been identified but this may change as landfall works and discussions with the landowner proceed.</p> <p>D) Several meetings have been held with Norfolk County Council (NCC) to discuss impacts from Hornsea Three. A meeting was held with NCC in August 2018 to discuss PRoW matters specifically including the potential impact on the Norfolk Coast Path. At this meeting, NCC noted that the proposed diversion would be acceptable in planning terms subject to reinstatement to at least the same condition as pre-construction. NCC requested further detail regarding the proposed management of the diversion, with specific consideration given to the potential interactions with Path users and night fishermen, and indicated that they would be looking for a commitment to undertake a condition survey of the Norfolk Coast Path prior to the commencement of open cut landfall works.</p> <p>Further details pertaining to the management of a diversion to the Norfolk Coast Path will be provided within a section of the PRoW Management Plan, as set out in the amended paragraph 6.8.1.22 of the Outline Code of Construction Practice [APP-179] (new text shown in underline):</p> <p>Paragraph 6.8.1.22 <i>"The Undertaker recognises the sensitive nature and high usage of the beach and the coastal footpath. In the event that access along the beach is to be restricted or the coastal path needs to be temporarily diverted, the Undertaker or principal contractor for the landfall works will submit <u>a details within the PRoW Management Plan to be approved by North Norfolk District Council and Norfolk County Council as the relevant planning authority authorities, developed in consultation with Norfolk County Council.</u>"</i></p> <p>To help inform ongoing discussions and future development of a PRoW Management Plan, which will ultimately form part of the final CoCP (Requirement 17), the Applicant has also requested feedback from the Norfolk National Trail Partnership, which comprises representatives from North Norfolk District Council, NCC, Environment Agency, Norfolk Coast Partnership, Natural England and various other organisations. Feedback has not yet been received, but will</p>

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			upon receipt be used to help inform the ongoing discussions with NCC and NNDC through the relevant SoCG process.
Q1.9.4	Applicant	<p>"The Outline Code of Construction Practice [APP-179] indicates that public accesses and routes would be reinstated.</p> <p>A) 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?</p> <p>B) How would such measures, including appropriate timescales for completion, be secured in the dDCO?"</p>	<p>A) The Applicant has made a commitment to reinstate all Public Rights of Way (PRoW) affected by the construction of Hornsea Three to a state commensurate with condition prior to the commencement of works (see paragraph 4.1.6.3, 6.8.1.17 and 6.8.1.20 of the Outline CoCP [APP-179]). In response to discussions with NCC, the Applicant has amended paragraph 6.8.1.8 of the Outline CoCP [APP-179] as follows (new text shown in underline):</p> <p><i>Paragraph 6.8.1.8 "Prior to commencement of works at each PRoW or area of land with informal public access, specific measures will be adopted to mitigate the impacts of construction works. <u>A condition survey of all affected routes will be undertaken during the pre-construction period to inform the reinstatement works.</u>"</i></p> <p>The reinstatement of PRoW is secured through Requirement 17 which requires that a CoCP (which must accord with the outline CoCP, APP-179) is submitted to and approved by the relevant planning authority, in consultation with the relevant highway authority and, if applicable, the MMO. Appropriate timescales for reinstatement would be agreed through the PRoW Management Plan which will form part of the final CoCP (as noted in amended paragraph 6.8.1.7 above).</p> <p>B) As stated in the response to Q1.9.4(A), the commitment to reinstate any affected PRoWs is set out in the Outline CoCP [APP-179] which is secured through Requirement 17 of the draft DCO (submitted for Deadline 1). Appropriate timescales for reinstatement would be agreed through the PRoW Management Plan which will form part of the final CoCP (as noted in amended paragraph 6.8.1.7 above).</p>

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Q1.9.5	Applicant	<p>"Table 6.26 of the ES [APP-078] sets out the criteria for defining the magnitude of an impact upon land use receptors and recreational resources.</p> <p>A) Please provide a more detailed explanation of how the magnitude of impacts relating to the loss of the best and most versatile agricultural land has been determined. For example, how has it been determined that the loss of more than 50ha is major and the loss of more than 20ha is moderate?</p> <p>B) Please explain what bearing the size of a particular agricultural holding has on the assessment of the impacts upon agricultural land and operations?"</p>	<p>A) As set out in Table 6.26 of Volume 3 Chapter 6: Land Use and Recreation of the Environmental Statement [APP-078] the thresholds of 20 ha and 50 ha have been used to determine the magnitude of impact. A moderate adverse impact is used for the loss of 20 ha of best and most versatile (BMV) land as this is the threshold for when statutory consultation is required with local authorities and Natural England. The approach behind calculating this threshold is to relate the area of BMV land lost to an equivalent size of farm holding based on the published DEFRA statistical farming dataset (i.e. 20-50 ha are smaller holdings). Whilst there is no clear guidance for assigning a magnitude of impact to the loss of 50 ha of BMV land, the same approach has been applied whereby the area of land lost is equivalent to a moderate size of farm holding (50 -100ha) which is considered to be a major impact.</p> <p>B) The size of the holding is one of the key considerations in assessing the potential impact of land take, both during construction and operation, on the ability of predominantly arable holdings to continue in operation, without threatening the future of the farm business as a whole. Larger arable farms have a greater degree of flexibility in being able to adapt their operations to the changing circumstances and ensure that the continuation of the enterprise is not compromised.</p>
Q1.9.6	Applicant	Paragraph 5.10.8 of the Overarching National Policy Statement for Energy (EN-1) requires that the applicant seeks to minimise the impacts on the best and most versatile agricultural land.	Volume 1, Chapter 4: Site Selection and Consideration of Alternatives of the Environmental Statement (APP-059) provides a description of the site selection and route refinement process undertaken in respect to Hornsea Three. In respect to onshore route refinement, this is supported by Volume 4, Annex 4.3: Refinement of the Onshore Cable Corridor and Associated Infrastructure (Stages 5-7 Scoping to PEIR) (APP-094) and Annex 4.4: Post-PEIR changes (Stages 8-9) (APP-095).

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		Please explain how this has been achieved for Hornsea Project Three in respect of the choice of the onshore cable route and location of onshore infrastructure?	<p>It is important to note that, due to the geographic location of the AFL area and the grid connection location offered to Hornsea Three (Norwich Main National Grid Substation), the onshore cable corridor route was, by necessity, routed through areas utilised for agriculture. Notwithstanding this, impacts on the best and most versatile land have been minimised through design to limit any permanent losses of the best and most versatile agricultural land through permanent land take and a commitment pursuant to Requirements 17 and 20 of the draft DCO (Version 1, Deadline 1) and paragraph 4.1.6.3 of the Outline Code of Construction Practice [APP-179] to restore areas which are required temporarily during the construction phase of Hornsea Three, in accordance with recognised best practice. The location of the onshore cable route and onshore infrastructure has been designed so as to not impact on any Grade 1 land. Table 6.29 and paragraph 6.11.1.4 of the ES [APP-078] sets out the amount of Grade 2 and Grade 3a land that will be permanently lost.</p> <p>Examples of where impacts on the lesser categories of best and most versatile agricultural land (i.e. Grade 2 and 3a) have been minimised are set out below:</p> <ul style="list-style-type: none"> <li>• Avoidance of the best and most versatile agricultural land was a key consideration in the evaluation of potential landfall locations (see paragraph 3.1.2.2 of Annex 4.3: Refinement of the Onshore Cable Corridor and Associated Infrastructure (Stages 5-7 Scoping to PEIR) [APP-094]). As a result, the area chosen for landfall is characterised primarily by Grade 3 and 4 land;</li> <li>• During the onshore cable corridor refinement, a number of conflicting constraints were identified in multiple locations and were evaluated and prioritised in order to identify the optimal onshore cable corridor route. Where possible, the best and most versatile agricultural land has been avoided, with the results of targeted surveys indicating the route to be characterised primarily by Grade 3 land (APP-158);</li> <li>• The permanent and temporary footprint of the onshore HVAC booster station and onshore HVDC converter/HVAC substation was reduced between PEIR and the application as part of design refinement. This minimised the areas of Grade 2 and 3a land which was impacted either permanently or temporarily during the construction phase;</li> </ul>

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			<ul style="list-style-type: none"> <li>One of the key criteria used to identify the location of the main construction compound was the presence of existing hardstanding, which avoided all impacts on the best and most versatile agricultural land (paragraph 4.12.5.2 of APP-059);</li> <li>Although the precise location of some components of Hornsea Three are not yet known i.e. link boxes, joint bays and HDD compounds, these will be determined during detailed design once a contractor is appointed, and where possible, will seek to avoid the best and most versatile agricultural land wherever possible; and</li> <li>After construction has been completed on a length of the Hornsea Three onshore cable corridor, or alternatively at the end of each phase of construction, the associated construction compounds and site accesses will be promptly dismantled and the land restored. As such, the land will be capable of being returned to its former agricultural use, as far as possible.</li> </ul> <p>In addition to the above, the Applicant has committed to preparing a Soil Management Strategy, as part of the final CoCP to minimise impacts during the construction phase on the best and most versatile agricultural land which lies within the Order Limits. Details of the soil management strategy are set out in paragraph 6.8.1.1 of the Outline CoCP (APP-179) with further clarification provided in response to Q.1.9.11.</p> <p>As demonstrated above, Hornsea Three has sought to minimise the impacts on the best and most versatile agricultural land in accordance with paragraph 5.10.8 of the Overarching National Policy Statement for Energy (EN-1).</p>



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Q1.9.7	Applicant	<p>"The ES [APP-078] assesses the impact upon agricultural land and operations in terms of the maximum design scenario.</p> <p>In comparison with the maximum design scenario, please set out the effects on agricultural land and operations that would result from:</p> <p>A) the use of high voltage direct current (HVDC) rather than high voltage alternating current (HVAC);</p> <p>B) the use of ducting for cable installation across agricultural land; and</p> <p>C) the completion of the onshore cable route construction works in a single phase.</p>	<p>A) Please refer to Appendix 22 to the Applicant's response to Deadline 1 which refer to the transmission systems.</p> <p>B) As noted in response to the Applicant's response to Relevant Representation RR-006, since the point of application, the Applicant has committed to installing the cables for Hornsea Three by ducting rather than direct lay secured by means of a newly created paragraph 1.1.1.7 of the Outline CoCP (APP-179) (new text shown in underline):</p> <p><u>Paragraph 1.1.1.7 "Hornsea Three will install all cables by ducting, rather than direct lay, with ducts installed in the trenches which would then be backfilled and at a later date, the cables will be pulled through the ducts from one joint bay to the next. Any works completed during the trenching and ducting works, would be left in a safe state, as agreed with the relevant authorities, to await the cable installation works."</u></p> <p>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 reduces the length of time subsoil is stored in stockpiles and allows the reinstatement of the subsoil and field drainage to begin earlier. The reinstatement of topsoil may also take place in between the joint bays, however the cable pulling activities would still require the use of the haul road. The construction programme is unlikely to change significantly to that used within the maximum design scenario presented within Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement, however, reinstatement of subsoil may be achieved sooner.</p> <p>In the event that Hornsea Three is to be delivered in two phases, the Applicant recognises the potential to further minimise impacts and disruption to the local community through pre-ducting for the second phase during the first phase of works. Therefore, assuming a CFD (or alternative financial mechanism) for both phases is awarded in the same auction round, the Applicant will carry out pre-ducting for the second phase at the same time as installing the</p>

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			<p>ducts for the first phase. It is noted that should pre-ducting for the second phase be carried out during the first phase construction, these works would be left in a safe state, as agreed with the relevant authorities, to await the completion in the second phase (as set out paragraph 3.8.1.3 of Volume 1, Chapter 3: Project Description of the Environmental Statement). As noted in response to Applicant's response to Relevant Representation RR-006, this commitment is secured by means of an amended paragraph 1.1.1.6 the Outline CoCP (APP-179) (new text shown in underline):</p> <p>Paragraph 1.1.1.6 <i>"Construction work is currently planned to commence in 2021, however the surveys and enabling works could start as early as 2020. Hornsea Three could be built in a single phase of construction or two phases, with the potential for an overlap or a gap of up to three years between the completion of construction activities in one phase and the start of the same construction activity in the second phase. It is also possible that some activities may be carried out during an earlier phase for the benefit of a later one. <u>In this regard, should the project be delivered in two phases, Hornsea Three will install ducts for the second phase as part of the first phase of works should both phases be awarded a Contract for Difference in the same auction round.</u> However, any works completed for a later phase(s) would be left in a safe state, as agreed with the relevant authorities, to await the appropriate phase for completion."</i></p> <p>It is emphasised that the project will only commit to pre-ducting for the second phase if a CFD (or alternative financial mechanism) for both phases is secured in the same CfD auction. Without certainty as to the timing or capacity of the second phase, the pre-installation of ducts for this phase could cause greater disruption than is necessary to the communities along the onshore cable corridor and a greater environmental impact should the final design for the second phase be of a different specification and therefore not be suitable for the installed ducts.</p> <p>Should the ducting for the second phase be installed, disturbance to agricultural land across the full width of the onshore cable corridor would only happen on one occasion; subsoil would only have to be excavated and reinstated once, and the reinstatement of field drainage and topsoil across the majority of land between joint bays could begin earlier. Land would still be required in the second phase to facilitate the cable pulling activities at the joint bays and also sections of the haul road would still be required.</p> <p>However, this would be an improvement to the maximum design scenario as assessed in Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement [APP-078].</p>

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			<p>C) A one phase construction programme would require agricultural land being taken out of production on one occasion. This would allow the reinstatement of subsoils, field drainage and topsoils to begin earlier and bring land back into agricultural use within a shorter time frame.</p> <p>This would be an improvement to the maximum design scenario as assessed in Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement [APP-078].</p>
Q1.9.8	Applicant	<p>"Paragraph 3.7.3.13 of the ES [APP-058] states that the concrete link boxes would be likely to be completely buried. Representations from the Land Interest Group [for example RR-147 and RR-148] have referred to the potential effects of link boxes upon agricultural operations.</p> <p>A) Would the need for link boxes be affected by the choice of HVAC or HVDC technology?</p> <p>B) If link boxes were sited completely underground would there be some surface construction such as manhole covers or fencing?</p> <p>C) How would the link boxes affect farming operations (for example</p>	<p>A) Link boxes would be required regardless of the choice of HVAC or HVDC transmission, however the number of link boxes would be affected. Please refer to Appendix 22 of the Applicant's response to Deadline 1 which relates to the transmission systems within the project envelope.</p> <p>B) See response to Q1.7.5 (A).</p> <p>C) As noted in the response to Q1.7.5, manhole covers are required to provide access at all link boxes. During discussion with landowners, it was identified that certain farming operations, for example ploughing, would need to avoid these areas to prevent damage to the link box. As part of these ongoing discussions with landowners, the Applicant has committed to placing marker posts on each corner of the surface feature, if requested by the landowner to do so as part of the Option and Lease agreement. In the event that compulsory acquisition powers are used, the compensation payable will take into account any impact on the value of the land or injurious affection caused as a result of any restrictions on farming operations due to the location of the link boxes.</p> <p>Link box locations will be determined by the specifications of the cables used for Hornsea Three, when a cable contractor is appointed and the detailed design of the cable specifications, including length of cables per cable drum are known. More detailed cable design is wholly reliant on refined understanding of the scale of the generation assets being connected in that phase and the capacity of cables required, transmission technology to be deployed and appointed contractors cable design. Once detailed design for Hornsea Project Three has commenced it may be possible to site and design link boxes in areas which reduce interference with farming operations, noting that the cable corridor has been defined to follow field boundaries etc. where possible in order to minimise any impacts to landowners' use of their land. However, given the number of technological and environmental constraints it is not practicable to confirm the exact link box locations at this stage or to commit to only locating the link boxes in field</p>

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		ploughing)? What would be the criteria for deciding the location and design of link boxes? How would the design and location of link boxes be controlled through the dDCO?"	<p>boundaries. As such there is no provision in the Hornsea Project Three Order restricting their location save that these will be within the Order Limits.</p> <p>The location and design of link boxes are dictated by the location of the associated joint bays at some or all of the joint bay locations dependant on the electrical screen earthing design associated with the overall cable system design. The link boxes are designed to maintain the level of screen earth losses and maintain the voltage appearing on the earth screen to a safe level. Link boxes are also used to allow regular testing of the integrity of the outer cable sheath which protects the cable. Link boxes are required to be no more than 10m from the centre of the associated joint bay, which therefore restricts the location accordingly.</p>
Q1.9.9	Applicant	<p>Paragraph 3.7.3.13 of the ES [APP-058] states that joint bays will be likely to be completely buried.</p> <p>A) Please explain the circumstances in which joint bays would not be completely buried.</p> <p>B) What would the implications be for agricultural operations should the joint bays not be completely buried?</p> <p>C) What would be the criteria for deciding the location and design of joint bays? How would the design and location of joint bays be controlled through the dDCO?"</p>	<p>A) As set out in paragraph 3.7.3.13 of Volume 1, Chapter 3: Project Description (APP-058), joint bays along the onshore cable corridor will be buried, with land above re-instated. There are no circumstances in which joint bays would not be completely buried.</p> <p>B) As joint bays would be completely buried at all locations there would be no implications for agricultural operations at joint bay locations. However, at certain joint bay locations, cable link boxes would be installed within an underground chamber with a surface mounted access lid such as a manhole cover (see response to Q1.9.8).</p> <p>C) Similar to link boxes (see response to Q1.9.8), joint bay locations will be determined by the specifications of the cables used for Hornsea Three, when a cable contractor is appointed and the detailed design of the cable specifications, including length of cables per cable drum are known. More detailed cable design is wholly reliant on refined understanding of the scale of the generation assets being connected in that phase and the capacity of cables required, transmission technology to be deployed and appointed contractors cable design. Once detailed design for Hornsea Project Three has commenced it may be possible to site and design joint bays in areas which reduce interference with farming operations, noting that the cable corridor has been defined to follow field boundaries etc. where possible in order to minimise any impacts to landowners' use of their land. However, given the number of technological and environmental constraints it is not practicable to confirm the joint bay locations at this stage or to commit to only locating the link boxes in field boundaries. As such there is no provision in the Hornsea Project Three Order restricting their location save that these will be within the Order Limits.</p>

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Q1.9.10	Applicant	<p>Paragraph 6.4.1.14 of the Outline Code of Construction Practice [APP-179] briefly outlines field drainage measures (paragraph 6.4.1.14).</p> <p>A) Please provide further details of the measures for reinstating field drainage following the installation of the cables.</p> <p>B) Would any additional measures be required under a two phase scenario?</p> <p>C) What would be the process for approval of such measures?</p>	<p>A) The Applicant refers to paragraphs 3.7.2.10 and 3.7.2.11 of Volume 1, Chapter 3: Project Description of the Environmental Statement [APP-058] which sets out details of drainage management, including impacts on existing field drainage. The drainage strategy would include a pre-construction survey of existing field drainage systems. Any field drainage intercepted during the installation of the onshore cable corridor will either be reinstated following the installation of the cable or diverted to a secondary channel. Any works undertaken will be in agreement with the appropriate stakeholders taking into consideration any representations made by the relevant landowner. This is known as post -construction drainage design and consists of reinstating any existing drainage affected by the installation works and tying into the pre-construction drainage installed prior to the start of construction works to ensure that the existing drainage system is maintained and generally enhanced from before the start of the construction works. This is reflected in updated paragraphs 6.4.1.9 and 6.4.1.14 of the Outline COCP (APP-179) which would be secured through Requirement 17 of the draft DCO (new text shown in underline):</p> <p><i>"6.4.1.9 Where the Hornsea Three onshore cable corridor crosses smaller watercourses and land drainage ditches measures would be discussed and agreed with the relevant stakeholders (e.g. for temporary culvert crossings, appropriately sized flume pipes, equal to or greater than the diameter of the flume upstream and to an agreed length, will be placed on or below the hard bed of the watercourse) <u>taking into consideration any agreements with, or representations made by, the relevant landowner.</u></i></p> <p><i>6.4.1.14 Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel. Any works undertaken will be in agreement with the appropriate stakeholders <u>taking into consideration any agreements with, or representations made by, the relevant landowner.</u>"</i></p> <p>B) In a two phase scenario it is anticipated that field drainage systems would be re-instated following completion of the first phase of construction. No additional mitigation measures are envisaged in a two phase scenario as typically the pre and post construction drainage works would be installed separately in each phase.</p> <p>C) The commitment to implement a drainage strategy is contained within the Outline CoCP [APP-179]. The process for approving the measures to reinstate field drainage will approved through the final CoCP pursuant to Requirement 17. Both Pre and Post Construction drainage design and construction works will take into account representations</p>

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			made by the affected landowners to ensure that the land drainage associated with their land is not adversely affected by the construction works.
Q1.9.11	Applicant	<p>Table 6.28 of the ES [APP-058] sets out brief details of the proposed soil management strategy. Please provide further details of this strategy.</p> <p>What would be the process for the approval of such a strategy?</p>	<p>The Soil Management Strategy will be contained within the final CoCP and will set out the measures proposed to manage the soil resources associated with agricultural land impacted by the temporary and permanent onshore infrastructure of Hornsea Three (landward of Mean High Water Springs (MHWS)). It will be based on recognised best practice guidance provided in the Department for Environment, Food and Rural Affairs (Defra) Code for the Sustainable Use of Soils on Construction Site (Defra, 2011) and the Ministry of Agriculture, Fisheries and Food (MAFF) MAFF Soil Handling Guide (MAFF, 2000). The MAFF guide is currently being updated and the latest guidance will be incorporated into the strategy. The principle objectives of the strategy are to:</p> <ul style="list-style-type: none"> <li>• Conserve soil resources;</li> <li>• Avoid damage to soil structure;</li> <li>• Maintain soil drainage; and</li> <li>• Identify principles for the reinstatement of the soil profile.</li> </ul> <p>In order to achieve the above, the Soil Management Strategy will provide:</p> <ul style="list-style-type: none"> <li>• details of management and supervision of soil handling processes, as well as the interaction with the Agricultural Liaison Officer and Ecological Clerk of Works;</li> <li>• the methodology and protocol for soil stripping (top soil and subsoil);</li> <li>• the protocol for soil storage, including methods of storage which will be accordance with that described for a single tier mound in Sheet 2 (Building Soil Storage Mounds with Excavators and Dump Trucks) of the Good Practice Guide for Handling Soils (MAFF, 2000);</li> <li>• the methodology to be applied in respect of ground preparation (to loosen any compacted soil) and soil replacement; and</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>• aftercare provisions.</li> </ul> <p>The strategy will also provide general housekeeping and soil handling protocols in order to minimise impacts on soil resources as far as practicable.</p> <p>A commitment to prepare a Soil Management Strategy is set out in paragraph 6.8.1.1 of the Outline CoCP [APP-179] and is secured through Requirement 17 of the dDCO. Details of the strategy would be prepared post-consent, once an earthworks contractor has been appointed and detailed earthworks phasing information is available and would be submitted to approval by the Environment Agency.</p>
Q1.9.12	Applicant	<p>Table 6.28 of the ES [APP-058] sets out brief details of a farming framework including matters such as farm accesses, timing of construction works and the spread of diseases.</p> <p>A) Please provide further details for each part of the farming framework, including the criteria that would be taken into account in making a decision for each of the subjects covered and the process for consultation with relevant stakeholders.</p> <p>B) What would be the process for approval of the farming</p>	<p>A) Farming framework refers to the overall potential of Hornsea Three to affect the operation and agricultural productivity of farm holdings in the local or regional area, not only individually. The measures referred to in Table 6.28 of Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement [APP-078] the under the heading "Farming Framework" form part of the Outline CoCP (see paragraphs 6.8.1.2 to 6.8.1.6, Appendix and Appendix D) and would be used to develop the final CoCP. The measures would also be taken into account when working with landowners and their representatives to ensure that the individual plans for each owner are suitable, but do not have a detrimental effect on surrounding holdings.</p> <p>This is captured in updated paragraph 6.8.1.6 of the Outline CoCP (new text shown in underline):</p> <p><u>"6.8.1.6 Existing water supplies and drainage systems will be maintained and reinstated wherever reasonably practicable during the construction process. Details of the irrigation system on each land holding will be gathered during the detailed design stage and irrigation plans will be developed. The Agricultural Liaison Officer will consult with each individual landowner to obtain the relevant information and to be a point of contact to report concerns regarding irrigation systems during construction. The plans will include the following information:</u></p> <ul style="list-style-type: none"> <li>• <u>Location of boreholes and water supplies used by each farmer;</u></li> <li>• <u>Irrigation or impoundment licence granted by the EA; and</u></li> <li>• <u>System of irrigation applied and the location of irrigation network for each field."</u></li> </ul>



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		framework? How should such matters be dealt with in the Outline Code of Construction Practice [APP-179]?	B) As described in the response above, the process would be to agree individual arrangements, covering paragraphs 6.8.1.2 to 6.8.1.6, Appendix A and Appendix D of the Outline CoCP [APP-179] with landowners and their agents but ensuring that arrangements do not have a detrimental effect on surrounding holdings. The Applicant has been involved in ongoing negotiations with relevant landowners, lessees, tenants and occupiers regarding Heads of Terms for voluntary agreements for the necessary rights to construct, use and maintain the onshore cable corridor. The measures within Table 6.28 of Volume 3, Chapter 6: Land Use and Recreation of Environmental Statement [APP-078] form part of these discussions with individual landowners and their representatives (where relevant and appropriate).
Q1.9.13	Applicant	<p>"The farming framework in Table 6.28 of the ES [APP-058] states that accesses across individual fields and between fields within a farm holding would be maintained where reasonably practicable.</p> <p>A) Under what circumstances is it expected that maintaining access would not be practicable and what would the resulting effects be?</p> <p>B) Provide examples of where this is expected to be the case.</p> <p>C) What mitigation is proposed in these cases?"</p>	<p>A) Severed land will be made accessible to landowners, lessees, tenants and occupiers by the installation of access points by the Applicant at practical locations along the onshore cable corridor.</p> <p>In limited circumstances it may not be possible to maintain access where such access would represent a health and safety risk or where in agreement with landowners, farming that section of land would not be practicable predominantly because of its small size or irregular shape. If it is not feasible or safe to maintain access and land is severed and inaccessible, the resulting effects would be temporary, and likely to be for a duration of no more than a few days. As such, no different, or greater magnitude of effects than those assessed in Volume 3, Chapter 6: Land Use and Recreation would occur.</p> <p>Alternatively access may not be provided where it has been agreed with the landowner or occupier that farming the section of severed land would not be practicable predominantly because of its small size or irregular shape.</p> <p>B) Locations where access may be temporarily restricted due to impracticalities of farming (to be confirmed by discussion with landowners) the associated piece of the severed land include:</p> <ul style="list-style-type: none"> <li>Sheet 11 of 35 of the Onshore Land Plan (APP-011), a small triangular plot of land immediately to the north of the proposed storage area (land parcel 11-012), and immediately to the west of the onshore cable corridor at land parcel 11-011;</li> </ul>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>Sheet 18 of 35 of the Onshore Land Plan (APP-011) the long sliver of land between the cable works and Reepham Road immediately to the east of the onshore cable corridor at land parcels 18-004 and 18-005;</li> <li>Sheet 29 of 35 of the Onshore Land Plan (APP-011), a small triangular plot of land immediately to the north-east of the onshore cable corridor at land parcel 29-004 and bound to the north and east by Little Melton Road and Burnthouse Lane.</li> </ul> <p>However, access points can be provided to the above parcels of land if required by the landowner or occupier.</p> <p>C) Should it not be possible to maintain access and land is severed and inaccessible, then compensation is payable for any losses or damage pursuant to Article 25(5) of the draft DCO [APP-027]. Advance notice would be given of any construction works in the vicinity of works which could restrict access. This is captured in the updated paragraph A1.1.3 of the Communications Framework provided as Appendix A the Outline CoCP (APP-179):</p> <p>Paragraph A1.1.3 “ <i>Advance notice would be given of any construction works in the vicinity of works which could restrict access and if required an alternative crossing location, if available, would be established prior to works commencing.</i>”</p>
Q1.9.14	Applicant	<p>The ES [APP-078] provides a brief assessment of the cumulative impacts of the proposal in combination with the proposed Norfolk Vanguard scheme which may be constructed concurrently with Hornsea Project Three.</p> <p>Please provide a more detailed cumulative assessment of the impacts of the proposal on agricultural land and operations in combination with the Norfolk Vanguard scheme.</p>	<p>The Norfolk Vanguard Scheme intersects with Hornsea Three within a substantial sized estate. During the construction period, this would lead to the additional loss of approximately 13 ha of land from this holding that comprises a farmed area of approximately 1,700 ha.</p> <p>The loss of additional land would have two effects:</p> <ol style="list-style-type: none"> <li>1) there would be an additional temporary loss of agricultural land quality arising from both schemes, during the construction period, but following restoration, applying best practice measures, the agricultural land would be returned to its former productive use.</li> <li>2) There could be additional effects on the single arable field where the two schemes cross, including effects from severance and potential disruption of drainage facilities (if installed). These would have a temporary additional effect on this substantial estate within this limited area, which would be restored following the construction period. The Applicant would direct the Examining Authority to Appendix 16 to the Applicant's response to Deadline 1, which provides a detailed response. This includes an explanation of the effect of the recent changes in status of the Norfolk</li> </ol>

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			Vanguard and Thanet Extension projects on the Hornsea Three Cumulative Effects Assessment (CEA). This also includes an explanation of the effect of the recent changes in status of the Norfolk Vanguard and provides an updated CEA Screening Matrix for the identified projects to show which of the onshore and offshore topics had the potential to be affected by these updates and changes.

## 1.13 Written Question 1.10 Socio-economic

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.10.1	Applicant	<p>The ES [APP-082] explains that the selection of ports for use during construction and operation/maintenance has yet to be determined [APP-082].</p> <p>A) Please provide an update on the progress made towards the selection of a port or ports for construction and operation/maintenance.</p> <p>B) What are the factors that would be taken into account in determining where the construction base port(s) and the operation and maintenance base port(s) would be?"</p>	<p>(A&amp;B) The Applicant has not selected the ports that it will use for construction, operation and maintenance (O&amp;M) and decommissioning of Hornsea Three and does not intend to make a decision during the Examination period. The selection of ports for construction and operation/maintenance of the project will occur in parallel with the detailed design process, undertaken post award of consent.</p> <p>Ports used for construction activities are highly dependent on the appointment of construction contractors, appointment of suppliers and their supply chains, in particular in relation to the large components such as foundations, turbines, cables and substations. Further, a port's availability also varies over time and whether or not they have capacity depends on other contracts they have at that time of demand. As the precise construction period is not known it is not possible to confirm a preferred port which may or may not have capacity in the future.</p> <p>O&amp;M strategy is highly dependent on the final design, known phasing of the project and the makeup of O&amp;M strategies deployed for the wider portfolio of projects operated by Ørsted. When these are known (post consent), the Applicant will then need to reach commercial arrangements with the operator of the selected port(s) for any O&amp;M facilities and port use. If new O&amp;M facilities are required these will be consented separately by grant of planning permission under the Town and Country Planning Act 1990 (or other statutory consents such as a harbour revision order), with the assessment of the impacts of the port use taking place at that stage.</p> <p>The selection of ports for construction, O&amp;M and decommissioning activities will be undertaken based on a number of objectives, which can be categorised as technical and commercial respectively. These include:</p> <ul style="list-style-type: none"> <li>- distance to windfarm site (including vessel routing);</li> <li>- location of component delivery ports (including vessel routing), with turbine, turbine foundations, offshore substation, cables etc potentially each making use different port facilities for construction;</li> <li>- Port facilities and capabilities, including:- water depths (relating to vessel draft), length of quay (number of vessels that can berth simultaneously), size of area accessible for storing and assembling components, port</li> </ul>

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			<p>area characteristics, including load bearing capacity, seabed conditions and suitability for jacking up crane vessels at the quayside.</p> <ul style="list-style-type: none"> <li>- Port vessel access restrictions including locks, and any tidal restrictions (both within the port and along the route to the open sea).</li> </ul> <p>In addition, there will be commercial considerations including:</p> <ul style="list-style-type: none"> <li>- enthusiasm from the port to attract offshore wind energy work and Ørsted's experience from other projects within its portfolio of working with that port; and</li> <li>- willingness to negotiate balanced commercial terms (balanced against installation vessels costs and port efficiency (minimising delay in port usage, imposition of time usage restrictions).</li> </ul> <p>For O&amp;M facilities, factors include:</p> <ul style="list-style-type: none"> <li>- existing Ørsted O&amp;M facilities (and their capacity to include additional operations requirements);</li> <li>- travel time between port and the array; and</li> </ul> <p>space requirements for spare parts and maintenance workshop only.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.10.2	Applicant	<p>Different impact scenarios are set out in table 10.37 of the ES [APP-082].</p> <p>Using a ranked order, which of the construction and operation/maintenance impact scenarios are the most likely to occur and why?</p>	<p>The scale of impacts which could occur in the local economic development study areas is presently unknown. However, given Ørsted's track record of delivering offshore wind projects in the UK and commitment to developing and deepening the UK's supply chain offer, it is considered unlikely that either the Low Impact Construction or Low Impact O&amp;M UK scenarios would occur.</p> <p>The Medium and High Construction Scenarios could both be realised, however this is highly dependent on the selection of the supplier and where they are located. For example, the Medium Construction Scenario for the Humber LEP assumes that turbine blades are sourced from within the local economic development area. Ørsted is committed to working closely with the relevant Local Enterprise Partnerships (LEPs) and business networks in the local economic development areas to understand what can be supplied locally and to maximise any opportunities.</p> <p>The Applicant has not selected the port from which it will operate and maintain Hornsea Three and will not make a decision on which port to use until detailed studies and commercial negotiations with the port owner are undertaken (i.e. post consent). The High Impact O&amp;M Scenario is most likely to occur; however, it should be noted that High Impact O&amp;M Scenario for the Humber LEP and New Anglia LEP are mutually exclusive. It is not envisaged that the Applicant would operate Hornsea Three from an overseas base or one outside of either the Humber LEP or New Anglia LEP.</p>

		<p>Notwithstanding these scenarios, what weight can be given to the socio-economic benefits that might arise from the proposal, having regard to current uncertainties regarding the location of the port(s) to be used for construction and operation/maintenance and the sourcing of goods and services?"</p>	<p>The most tangible measure of the potential local economic benefits is the employment which will be supported, the nature and earnings associated with them, as well as the scope for residents, both currently employed and unemployed, to access these jobs.</p> <p>Volume 3 Chapter 10: Socio-economics of the Environmental Statement (APP-082) estimated the employment which could be supported by the construction and operation of Hornsea Three under a range of scenarios. If construction ports local to the two local study areas were selected then an estimated 880 direct and indirect jobs would be supported in the New Anglia area on average throughout the construction phase, whilst between 2,140 and 4,060 direct and indirect jobs could be supported in the Humber study area. However, it should be borne in mind these scenarios are mutually exclusive between the two local study areas.</p> <p>Although mostly not significant in EIA terms (with the exception of the high impact scenario in the Humber LEP study area), this employment nevertheless is an important benefit for the local economies. Whilst it is not appropriate to quantitatively forecast the extent to which local residents might be able to access these jobs, the qualitative analysis of the type of employment opportunities supported and the match with the local labour market suggests that this will provide good opportunities for these residents (with the exception of the scenarios in both local study areas in which a local port is not used). In practical terms, this will include opportunities for both the unemployed to enter jobs mainly with training opportunities and the currently employed to progress into higher skilled and better paying jobs (enabling others to access the freed-up jobs).</p> <p>Similar conclusions apply to the O&amp;M period for Hornsea Three. Although the injection of additional expenditure and the employment this supports in the two local economies is lower compared to the construction phase, it would be sustained over a much longer period and provide more solid foundations for the growth of the sector locally.</p> <p>It is worth noting the assessment of the employment and GVA benefits set out in Volume 3 Chapter 10 [Socio-economics] of the Environmental Statement (APP-082) only includes direct and indirect benefits (that is, the benefits associated with the main construction and O&amp;M contracts and the associated supply chains). It does not quantify the personal expenditure effects (also known as induced effects) associated with the expenditure of employment incomes by the workforce those jobs are supported directly or indirectly by Hornsea Three. This will support further large-scale employment locally across a range of mainly service sectors including hospitality, restaurants, and the retail sector.</p>
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			<p>In addition to seeing Hornsea Three as a major investment into the local economies which supports a large number of jobs, it also provides wider benefits in terms of stimulating the growth of the renewables sector, the growth and diversification of the associated supply chains and the development of the skills which these businesses need to flourish. The Local Enterprise Partnerships (LEPs) in both local study areas have prioritised the renewables energy sector and the associated supply chains and have put in place a range of economic development measures to support their growth. The LEPs are committed to working with offshore developers and a range of other partners to deliver these benefits. The Applicant will support this through the Skills and Employment Plan for Hornsea Three which is secured by Requirement 22 of the draft DCO (submitted for Deadline 1) and must be approved by the relevant planning authority in consultation with New Anglia LEP and the Humber LEP.</p> <p>In 2015, Ørsted commissioned a socioeconomic study of the impact of its offshore wind farm projects in the Humber over the period 2013 to 2019. The report showed that over the period of 2010 to 2030, £1.2 billion of Potential Gross Value Added (GVA) could be secured by the Humber as a result of Ørsted's investments. This study did not include Hornsea Project Two, which is currently under construction and expected to be commissioned in 2022 or Hornsea Project Three, so the potential for further economic benefits is vast. This report, documented at Appendix Z to the Response, was submitted for Deadline V to Hornsea Two examination (Application Reference: EN010053).</p> <p>The Applicant is committed to helping to develop and grow a competitive UK supply chain by supporting the development of existing suppliers and helping to attract high-value business into the offshore wind supply chain. Whilst the Applicant cannot guarantee that suppliers from the local economic development areas will be successful in future tenders for Hornsea Three, the Applicant will work with the LEPs and local business groups to ensure that the local supply chain has good visibility of potential opportunities and this will form part of the Skills and Employment Plan.</p> <p>Ørsted already has a strong track record of working with suppliers in the two local economic development areas on its existing projects. For example, in the New Anglia LEP Ørsted has awarded multi-million-pound contracts to several local suppliers, including CWind, Gardline and Seajacks. In the Humber LEP, Ørsted was instrumental in working with Siemens Gamesa to bring forward the Siemens facility in Hull to supply blades and electrical equipment for Race Bank and Hornsea Project One Offshore Wind Farms. This was significant for creating a new UK manufacturing facility and creating major new employment opportunities.</p>
Q1.10.3	The Applicant	"The ES [APP-082] sets out details of the economic characteristics for the New Anglia	Whilst there is reasonable data on the employed and unemployed workforces, there is limited detailed information on the occupations, skills and intentions of the labour markets groups within the study areas. Additionally, there is

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		<p>and Humber local economic development study areas.</p> <p>Please provide further details of how the labour market and skills in the study areas would match the construction and the operation/maintenance needs of the project.</p>	<p>uncertainty about both the scale of local employment and the types of jobs, which will be dependent on the type of contracts which are secured by local and non-local companies (and how they source their workers).</p> <p>The socio-economic baseline analysis describes the labour markets in each Local Study Area. They are both large labour markets. New Anglia has around 728,000 people in employment and 33,000 unemployed people, whilst the Humber has 414,000 people in employment and 24,000 unemployed. Both areas have a strong presence in sectors which could supply goods and services, as well as helping to ensure a good stock of the types of skills amongst jobs seekers which may be needed by contractors supporting the construction and operation of Hornsea Three. This includes manufacturing, engineering, construction land and marine transport, business and professional services, and hospitality related sectors.</p> <p>The ability to match the skills needed for the construction and operation of Hornsea Three to the available local labour skills will be a consideration for the Skills and Employment Plan for Hornsea Three which is secured by Requirement 22 of the draft DCO (submitted for Deadline 1) and must be approved by the relevant planning authority in consultation with New Anglia LEP and the Humber LEP.</p>
		<p>Based upon the existing labour market and availability of skills in the study areas, would any specific training be required and how could this be implemented?"</p>	<p>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.</p> <p>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) and must be approved by the relevant planning authority in consultation with New Anglia LEP and the Humber LEP. The Skills and Employment Plan must identify opportunities for individuals and businesses based in the regions of East Anglia and the Humber to access employment and training opportunities.</p> <p>On other projects, in recognition of the importance of skills and training and following consultation with local communities, Ørsted has supported skills initiatives by assigning funds from Ørsted's Community Benefit Funds</p>



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			<p>(CBFs). CBFs are voluntary initiatives designed to provide funding to communities located close to the wind farms and other infrastructure.</p> <p>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. But by way of example, Ørsted's Walney Extension CBF and East Coast Fund have ring-fenced £100,000 and £75,000 per annum respectively for exclusive use on skills and training initiatives. The Skills Funds are divided up into different strands, providing hardship loans, financing for STEM Engineering Courses and supporting the development and delivery of a STEM training and/or education courses. The Applicant could seek to support skills initiatives through a similar mechanism for Hornsea Three.</p>
Q1.10.4	The Applicant	<p>"The ES [APP-082] sets out an assessment of the socio-economic impacts of the proposed development upon the Humber Local Enterprise Partnership (LEP) area. The Humber LEP is not registered as an Interested Party in this examination. However, the Examining Authority would like to receive Humber LEP's views on this assessment.</p> <p>As such, the applicant is requested to seek the views of the Humber LEP and submit them in response to this question."</p>	<p>The Applicant has sought the views of the Humber LEP on the socioeconomic assessment for Hornsea Three and presented these below:</p> <ul style="list-style-type: none"> <li>• Humber LEP supports Hornsea Project Three and recognises the potential benefits this will have for the area and wish to see the project proceed.</li> <li>• P12 of the document [APP-082] cites documentation which has since been superseded (e.g. by the Humber LEP's Strategic Economic Plan 2014-2020, the final/updated European Structural Investment Fund (ESIF) strategy). While it would be better to reference these, it's not really a material issue as our focus has remained the same.</li> <li>• The Humber LEP is preparing its Local Industrial Strategy and recently published its initial Blueprint for this in June 2018, which recognises clean energy as one of the Humber LEP's priority areas.</li> <li>• The general analysis of the Humber economy looks to correspond with ours.</li> <li>• Obviously, the Humber LEP would be very supportive of the high impact scenarios for the Humber, and keen to assist if required.</li> <li>• On the measures adopted, the Humber LEP confirms it would welcome the opportunity to work with Ørsted on these. This would be a continuation of our existing good relationship and previous work together.</li> <li>• The Humber LEP is unable to comment on the detail of the impact arising from the different scenarios, but a key priority for the Humber LEP is pursuing the development of its cluster – currently the largest in the UK – to ensure it is internationally significant and competitive. This in turn is important for the UK and fits with the</li> </ul>

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			<p>national industrial strategy. Each investment like this supports that aim and has a cumulative impact on the growth of our economy.</p> <ul style="list-style-type: none"> <li>The local economy is certainly seeing the benefits of Ørsted's existing investments in the East Coast Hub, so anything that adds to this would be welcome. Involvement in initiatives like the Ron Dearing UTC and the British Science Festival, held in Hull &amp; Humber this year, have helped to extend and embed this impact.</li> </ul> <p>Finally, the Humber LEP welcomes the work done to understand the potential impact on our area and look forward to continuing to work together to bring this to fruition.</p>
Q1.10.5	Applicant, North Norfolk District Council (NNDC)	<p>"NNDC [RR-133] refers to potential community benefits being put forward by the applicant.</p> <p>What community benefits are envisaged?</p> <p>How would they be secured?"</p>	<p>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. These funds can make a valuable contribution to the local area by supporting projects such as community building improvements and recreation facilities, to conservation and wildlife projects. 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.</p> <p>The Applicant will continue to develop its local engagement strategy for Hornsea Three and will consider an appropriate way to feed benefits back into the local community. The Applicant recognises the importance of community involvement in shaping any funds to ensure that they are appropriate for the local areas.</p> <p>Prior to allocating funds from Ørsted's existing CBFs, a comprehensive local consultation was undertaken to seek local views from all stakeholders on how the fund should be set up. This ensures that local communities are able to influence the fund; including the funding area, the types of initiatives that would be eligible for support and the size of the grants. The funds are managed by an independent not-for-profit organisation, Grantscape and are reviewed on an annual basis.</p> <p>The Applicant does not consider a need to secure these community benefits in the DCO as they are voluntary. As mentioned above, such benefits are typically put in place after receipt of consent and once FID has been made.</p>

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Q1.10.6	Applicant	<p>The ES [APP-078] assesses the implications for farm holdings from the construction and operation/maintenance of the development.</p> <p>A) In economic terms, what short and long term impacts would be likely to arise for farm holdings, including but not limited to impacts from crop loss, during construction, operation, maintenance and decommissioning?</p> <p>B) What would the likely aggregate economic impact be for agriculture in Norfolk, taking account of the combined effects upon all affected farm holdings?</p>	<p>A&amp;B) Losses suffered by farm holdings directly as a result of the construction, operation, maintenance or decommissioning of Hornsea Three will be compensated. Losses associated with construction and maintenance are likely to include crop loss, loss of shooting income, costs incurred in relocating livestock and loss of subsidies. Compensation for any short term losses will be agreed either through voluntary agreement or, if compulsory acquisition powers have been exercised, determined pursuant to the compensation code. The measures set out in paragraph 6.11.1.20 and Table 6.28 of Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078), the agricultural land temporarily affected by the construction of Hornsea Three would be reinstated to its former use. As such, the Applicant considers that there are no short or long term economic impacts likely to arise for farm holdings, nor aggregate economic impact for agriculture in Norfolk.</p> <p>C) The Applicant has incorporated a number of different measures to minimise economic impacts upon agriculture, these are set out in Table 6.38 of the Environmental Statement [APP-077] and the Outline CoCP [APP-179] and include:</p> <ul style="list-style-type: none"> <li>• Timing of construction works, where feasible to minimise disruption to landowners/farming practice, through agreement with landowner;</li> <li>• Implementation of a soil management strategy to minimise impacts on the soil and agricultural land quality;</li> <li>• Maintenance of farm accesses wherever reasonably practicable between fields within a farm holding; and</li> <li>• Maintenance and reinstatement, where reasonably practicable, of existing water supplies, irrigation facilities and drainage systems.</li> </ul> <p>Furthermore, following discussions with the Land Interest Group, the Applicant has now committed to additional measures to mitigate potential effects on agriculture:</p> <ul style="list-style-type: none"> <li>• installing the onshore cables using ducting as opposed to direct lay (see Applicant's response to Relevant Representation RR-006 which sets out how this is secured), which reduces the time soil would be stored on the side of the trenches and allows additional flexibility such that works would seek to be undertaken in periods of drier weather; and</li> </ul>

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		<p>C) How could measures such as the timing of works, phasing, the use of ducting and the choice of HVAC/HVDC technology mitigate any economic impacts upon agriculture?</p> <p>D) What other measures could be proposed to mitigate any economic impacts?</p>	<ul style="list-style-type: none"> <li>in the event the project is to be delivered in phases, installing the onshore cables for the second phase at the same time as the first phase (assuming a CFD (or alternative financial mechanism) for both phases is awarded in the same auction round) (see Applicant's response to Relevant Representation RR-006 which sets out how this is secured). This would result in sections of affected agricultural land only being disturbed once, although access to junction bays for the cable installation phase of phase two would still be required.</li> </ul> <p>In view of the above, the Applicant considers that reasonable measures to mitigate economic impacts upon agriculture have fed into the design of the authorised development. Furthermore, compensation will be issued to all landowners directly affected by Hornsea Three. This will be agreed either through voluntary agreement or compulsory acquisition powers. An update on the status of discussions with landowners is provided in the Applicant's Compulsory Acquisition (CA) Schedule which provides an updated to Appendix B of the Statement of Reasons (APP-032) (submitted for Deadline 1).</p> <p>Commentary on the potential effects of HVDC compared to HVAC is provided in Appendix 22 of the Applicant's response to Deadline 1. Although this notes that HVDC technology would result in less land take, as there would be a narrower onshore cable corridor, and no long-term loss of agricultural land at the onshore HVAC booster station, the Applicant would note that, as stated above, compensation will be paid to the landowners directly affected by Hornsea Three so there would be no difference in terms of economic impact upon agriculture dependent upon choice of technology.</p> <p>D) In view of (C) above, the Applicant considers that reasonable measures to mitigate economic impacts upon agriculture have fed into the design of the authorised development. Furthermore, compensation will be paid to all landowners directly affected by Hornsea Three.</p>
Q1.10.7	Applicant, Broadland District Council, North	The ES [APP-082] concludes that there would be a minor adverse effect on tourism.	<p>A) The assessment of the significance of the effects of construction and O&amp;M activity on the tourism sector considers two receptors:</p> <ul style="list-style-type: none"> <li>The impact on (access and amenity of) local tourism and recreational resources, including public rights of way; and</li> <li>The impact on offshore and coastal tourism and recreation activity, and associated economic value.</li> </ul>

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	Norfolk District Council, South Norfolk Council	<p>A) Please provide further details of the economic effects on the tourist industry in Norfolk, including from:</p> <ul style="list-style-type: none"> <li>i) seasonal traffic impacts;</li> <li>ii) impacts on public rights of way (including the Norfolk Coast Path National Trail);</li> <li>iii) the demand for accommodation; and</li> <li>iv) the implications of the proposed phasing options.</li> </ul> <p>B) Are there any local areas where economic effects would be concentrated?</p> <p>C) What measures could be proposed to mitigate any such impacts?</p>	<p>Volume 3 Chapter 10: [Socio-economics] of the Environmental Statement [APP-082] considers the range of potential effects on the access to and amenity of tourism and recreational resources and hence the value of the tourism sector through considering the following factors where relevant:</p> <ul style="list-style-type: none"> <li>• Visual impacts associated with the construction and operation of onshore and offshore infrastructure;</li> <li>• Noise and vibration impacts associated with the construction and operation of the onshore and offshore infrastructure;</li> <li>• The obstructions and disruptions to the access to onshore and offshore recreational resources occurring as a result of construction or operational activities; and</li> <li>• Disruptions to transport routes affecting accessibility for visitors and other users of local recreational resources.</li> </ul> <p>In assessing these effects, the Applicant drew on the results of assessment from Volume 3 Chapter 4: Landscape and Visual Resources [APP-076], Chapter 6: Land Use and Recreation [APP-078], Chapter 7: Traffic and Transport [APP-079] and Chapter 8: Noise and Vibration [APP-080] of the Environmental Statement. The results therefore reflect the post-mitigation effects, taking account of the Outline Code of Construction Practice [APP-179], Outline Landscape Management Plan [APP-181], and the Outline Construction Traffic Management Plan [APP-176] which have been adopted as part of Hornsea Three.</p> <p>Volume 3, Chapter 7: Traffic and Transport Assessment of the Environmental Statement [APP-079] considers the potential effect of the construction of onshore infrastructure on traffic volumes and flows, including the consideration of visitor traffic (paragraphs 7.7.3.8, 7.7.4.1 and 7.8.3.33). The assessment, drawing on the available data, takes account of the main locations, routes and nature (including seasonality) of the visitor traffic. It concludes that the significance of the effects, when considering the built-in mitigation (such as avoidance of key tourist routes by HGVs where possible during peak holiday season), will be negligible in terms of driver delays and severance of routes, and negligible to minor adverse for pedestrian amenity. Whilst the minor adverse effects are most likely to occur in the more populated settlements, some of which could attract larger numbers of visitors due to their urban nature, the</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>effects are temporary. On this basis, the socio-economic assessment concluded the potential disruption and discouragement of tourism visitors, and the associate economic value, would be negligible.</p> <p>Volume 3 Chapter 6: Land Use and Recreation of the Environmental Statement [APP-078] considers the potential effect of the construction and operation of onshore infrastructure on access to and the amenity of recreational and visitor resources, including Public Rights of Way (Paragraphs 6.11.1.37 and 6.11.1.44). The assessment concluded that construction activity could have minor adverse effects on a number of PRoWs and some other recreational resources which may have relatively higher use amongst visitors. However, the concentration of visitor activity in particular locations and its seasonal character, the temporary nature of the construction activity and the measures to minimise disruption at key locations is expected to result in the impacts on recreational resources having only minor adverse effects (and not significant in EIA terms).</p> <p>In respect of Peddars Way/Norfolk Coast Path, a PRoW of national significance, the provision and length of a temporary diversion should open cut techniques be utilised at landfall would result in a moderate adverse effect. Impacts on recreational use of this PRoW would be minimised through the implementation of a Communication Plan in accordance with the framework provided in Appendix A of the Outline CoCP (APP-179). This commits the Applicant to erecting notices in public areas and on PRoW crossed by Hornsea Three and regularly updating them with information where a workforce is active in the locality and therefore disruption anticipated.</p> <p>Additional demand for accommodation could arise, primarily, from both the offshore and onshore development construction workforces. The extent of this additional demand is subject to various sources of uncertainty and hence the socio-economic assessment concluded it is challenging to robustly quantify the scale of this demand at this stage (as set out in paragraphs 10.11.1.81 – 10.11.1.88):</p> <ul style="list-style-type: none"> <li>The choice of a local construction port to support offshore activity is not yet known – this will have a bearing on the location in which extra demand for accommodation could be focused; and</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>The geographical origin of key contractors for offshore and onshore works, and the extent to which contractors from outside the local area will be able to recruit locally, is not yet known - this has implications for the scale of demand for accommodation.</li> </ul> <p>The socio-economic assessment went on to conclude that this additional demand, subject to its broad location and scale, could probably be easily accommodated in all circumstances. The location of the onshore infrastructure means that construction workers would be in reasonable travel times of Cromer, Fakenham and Norwich, with Norwich in particular having a large supply of serviced and non-serviced accommodation. The ports of Great Yarmouth and Lowestoft, potential construction port locations, have a reasonable supply of accommodation in their own right, but also have good accessibility to Norwich with its wider range of accommodation.</p> <p>Besides the available capacity of the local hospitality sector to meet the additional demand for accommodation from the on and offshore construction workforces (and hence the potential for displacement of other visitors), it is also important to bear in mind the benefits from this additional expenditure in local businesses associated with this demand.</p> <p>The longer, two phase, sequential phasing option will result in the effects on the tourism sector being spread over a longer period of time, as such this is considered the maximum design scenario in respect to impacts on tourism and recreational resources (as set out in Volume 3, Chapter 4: Landscape and Visual Resources, Volume 3, Chapter 6: Land Use and Recreation and Volume 3, Chapter 7: Traffic and Transport). The assessment presented within Volume 3, Chapter 10: Socio-Economics of the Environmental Statement (APP-082) concludes that the potential for adverse effects on recreational resources and the tourism sector as a whole is considered to be minor adverse (and not significant in EIA terms). Thus, delivery of the project in a single phase would also result in effects which were not significant.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>B) Day and holiday tourism activity in the local tourism related study area (incorporating North Norfolk, Broadlands and South Norfolk) is concentrated on the northern coastal area around and to the west of Cromer, including a mix of informal recreation resources (such as nature reserves) and holiday parks. Outside of this area it is much lower and dispersed, typically focused on historic properties, walking or cycling routes of local significance, and rural accommodation. However, the assessment presented within Volume 3, Chapter 10: Socio-Economics of the Environmental Statement (APP-082) concludes that the potential for adverse effects on recreational resources and the tourism sector as a whole is considered to be minor adverse (and not significant in EIA terms).</p> <p>As noted in response to Q1.10.7(A) above, the increase in demand for serviced and potentially non-serviced accommodation is also likely to be concentrated in the area around the northern sections of the onshore cable corridor, as well as the city of Norwich (i.e. the main locations of accommodation). In addition, if a Norfolk port is selected either for construction or on-going O&amp;M activity, this will provide an increase in demand for the hospitality (i.e. accommodation providers, bars and restaurants) and retail sectors in the local area.</p> <p>C) Given the conclusions of the assessment of the effects on the tourism sector in the local tourism and recreation study area, no specific mitigation measures are proposed. However, specific built-in measures are proposed for PProWs, other recreational resources and transport routes as set out in paragraphs 4.1.10, 4.2.5.1, 6.1.1.4, 6.1.1.25, 6.8 and Appendix A of the Outline CoCP [APP-179] and paragraph 2.1.4.4 of the Outline Construction Traffic Management Plan [APP-176]. These measures will minimise the effects on these recreational resources during construction and reinstatement where appropriate.</p>



## 1.14 Written Question 1.11 Transport and highway safety

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.11.2	Applicant	Table 7.12 of the ES [APP-079] sets out daily construction vehicle movements for different links.	A) The Applicant is undertaking the profiling of traffic flows through the construction period and will present this at Deadline 3.
		A) For each of the links in the table, please provide an estimate of how vehicle movements would be spread throughout the day.	B) The Applicant is undertaking the profiling of traffic flows through the construction period and will present this at Deadline 3.
		B) For each of the links in the table, please comment on any fluctuations that would occur throughout the period(s) of construction works.	C) Table 7.12 of Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079] shows all links for which traffic data is available within the initial study area. The initial study area is the area which is considered before the screening assessments are undertaken, as described in paragraphs 7.9.1.7 to 7.9.1.9 of Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079]. Some of these links do not have any construction traffic flows generated along them and these links are retained within the table to illustrate this.
		C) Why are links which have no construction traffic flows included?  D) How have the average vehicle movements in paragraph 7.8.3.43 of the ES [APP-079] been calculated?  E) What measures (for example, relating to the timing of works and routing) could be introduced to minimise impacts from heavy goods vehicle (HGV) movements during the peak tourist season?	D) Paragraph 7.8.3.42 of Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079] introduces Table 7.12 which presents the culmination of the trip generation, distribution and assignment process and shows the daily number of HGV movements on each of the highway links. Paragraph 7.8.3.43 then makes a statement that relates to the maximum number of HGV movements generated by the construction of each of the cable sections (the derivation of cable sections is described in paragraphs 7.8.3.3 to 7.8.3.15 of Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079]).  The value was calculated from the distribution and assignment of construction HGV movements as described in Appendix B of Volume 6, Annex 6.1: Transport Assessment [APP-159] (cable section 21) generates a maximum of 140 HGV movements per day, approximately 13 per hour, whilst the other cable sections all generate less than this). As the numbers in paragraph 7.8.3.43 relate to each cable section, they only represent a proportion of the total traffic flows associated with Hornsea Three and therefore they are not directly comparable to the contents of Table 7.12 or the traffic flows on the highway links.

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			<p>The assessment presented within Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079] have been undertaken on the basis of the maximum traffic flows contained within Table 7.12.</p> <p>E) As noted in paragraph 7.7.4.1, the Norfolk County Council Route Hierarchy map outlines several roads which are listed as tourist routes.</p> <p>The likely HGV routes are identified in Figure 1.2 of Annex 7.8: Traffic and Transport Figures of the Environmental Statement (APP-166). The tourist routes within the traffic and transport study area are located on Blickling Road north-west of Aylsham, and The Street and Wall Road northwest of Ingworth. Neither of these tourist routes will carry any HGV construction traffic and they have not been assessed as part of Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement (APP-079). One of the special routes within the Hornsea Three traffic and transport study area is the A149, commonly known as 'The Coastal Road'. The follows the North Norfolk coast between King's Lynn and Cromer and then routes southeast to Great Yarmouth.</p> <p>The Outline CTMP (APP-176), paragraph 2.1.4.4, notes that during peak holiday seasons (considered to be mid-July to September) the approved routing of HGVs documented in final CTMPs, if practical, may need to avoid routes marked on the Norfolk County Council Route Hierarchy Map. However, it is considered premature to establish site specific mitigation measures along these routes until further certainty as to the construction programme, and ultimately the likely traffic flows along potential tourist routes during the peak tourist season have been determined. This will be determined during detailed design and therefore the need for and nature of measures to mitigate impacts from HGVs during the peak tourist seasons would be developed as part of the final CTMP.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.11.3	Applicant	<p>Table 1.8 of the ES [APP-159] sets out the impact of construction traffic during peak hours. This table does not include HGV movements which would be permitted between 0700 and 0800 under the terms of the Outline Code of Construction Practice [APP-179].</p> <p>A) Why are HGV movements not included?</p> <p>B) Please provide an updated table including HGV movements.</p>	<p>Table 1.8 of the Volume 6, Annex 7.1: Transport Assessment of the Environmental Statement [APP-159] sets out the peak hourly impacts of the construction traffic flows from a highway capacity perspective. Highway capacity is based upon total volumes of vehicle movements and the peak hourly construction traffic flows occur during the periods when construction staff arrive (07:00 to 08:00) and then depart (18:00 to 19:00), as explained in paragraph 1.6.4.13. Volume 6, Annex 6.1: Transport Assessment of the Environmental Statement focuses on highway capacity and therefore focusses on total traffic volumes, as set out in Table 1.8. The construction staff column of Table 1.8 refers to total construction traffic flows (i.e. staff traffic plus HGV construction traffic), where construction HGV movements form only a part of the total construction traffic flows. On this basis HGV movements are included within the figures shown at Table 1.8 and the table wording should state total construction traffic.</p> <p>However, from a traffic impact perspective, the assessment must consider the total construction traffic volumes as shown. Hence, separate construction HGV movements have not identified separately.</p> <p>Notwithstanding this, the Applicant continues to develop CTMP measures which may be necessary to limit HGV activity on critical links during the commuter peak periods. The baseline traffic data used to assess the percentage effects will be expanded to allow the Applicant to present HGV fluctuation levels to define the peak and average flows and percentage impacts over the construction period per link. This information will be presented at Deadline 3.</p> <p>B) Please see response to Q1.11.3 (A). The figures listed in Table 1.8 include HGV movements, although the impact assessment utilizes total construction traffic volumes.</p>
Q1.11.4	Applicant	<p>The use of haul roads, which are intended to reduce the impact of construction traffic on the public highway, is proposed in section 4.3 of the ES [APP-176]. However, it is not clear how they would be secured.</p>	<p>A) The use of the haul road, within the onshore cable corridor, is secured in section 1.2.3 and section 4.3 of the Outline CTMP [APP-176].</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>Paragraph 1.4.1.44 of the ES [APP-159] indicates the possible use of a construction access corridor as an alternative to a haul road.</p> <p>A) How would the use of haul roads be secured by the dDCO?</p> <p>B) Please provide further details of what a construction access corridor would be.</p> <p>C) How would the effects assessed in the ES be altered by use of a construction access corridor?</p>	<p>B) A construction access corridor refers to sections of access road (Work No. 14) which are proposed adjacent to the onshore cable corridor to provide access around a proposed HDD location. The corridors are designed to provide, as far as is possible, a continuation of access along the onshore cable corridor, without the need for vehicles to utilise the wider local road network. An example can be seen on Sheet 19 of 35 of the Works Plan – Onshore (APP-013), crossing Church Farm Lane.</p> <p>C) The assessment presented in Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement takes into consideration the use of the construction access corridor, as described above. As such there would no such alteration to the effects as reported within the Environmental Statement.</p>
Q1.11.5	Applicant	<p>Figure 1.2 of the ES [APP-166] shows the proposed access roads for the onshore cable construction.</p> <p>A) Please explain the factors that have determined the choice of construction access points.</p> <p>B) What scope is there to reduce the number of construction access points in order to ensure the fuller use of the haul roads and to reduce local impacts?</p>	<p>A) The Applicant would refer the Examining Authority to the Access to Works Plan (APP-013) which shows all proposed accesses to the works. The construction access points shown on Figure 1.2 of Volume 6, Annex 7.8: Traffic and Transport Figures show the locations where existing road networks intersect with the onshore cable corridor and construction traffic would take access directly from the road network onto the haul road (i.e. without the need for an access road (work No. 14)). This allows greater flexibility in accessing the cable corridor close to where access is required, provides additional access to areas where the haul road may not be continuous, and reduces the number of access roads required.</p> <p>Factors which have determined the choice of construction access points include:</p> <ul style="list-style-type: none"> <li>• presence of local roads which cross the onshore cable corridor;</li> <li>• proximity to other access roads proposed as part of Hornsea three;</li> <li>• location of HDDs along the onshore cable corridor, which determines where there is a non-continuous section of haul road which requires an access point;</li> <li>• avoidance of access points which would interfere with access to existing residential properties;</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>• preference for utilising existing field entrances or access points at a given location;</li> <li>• presence of other obstructions (e.g. construction access points have sought to avoid utilities and trees as well as maximise the use of natural breaks in hedgerows); and</li> </ul> <p>highways safety (e.g. avoiding points which would be close to existing junctions).</p>
			<p>B) It is considered that the construction access points identified in Figure 1.2 of Volume 6 (APP-166) as well as in Access to Works Plan (APP-014) are required for the construction of Hornsea Three. A reduction in the number of construction access points would have the potential reduce the use of the haul road in locations where it is discontinuous, as construction vehicles would not have an access point. It is noted however that following completion of the works being served by that access point, the access and haul road will be removed and the land reinstated, unless otherwise agreed with the local planning authority. This is secured through updated paragraph 1.2.3.1 of the Outline CTMP (APP-176) which states (new text shown in underline):</p> <p><i>1.2.3.1 "...The haul road, 6 m wide, and extending up to the full length of the onshore cable corridor (less sections where a HDD only passes through) provides vehicular access along the cable easement off the public highway. Following completion of the works being served by that access point, the haul road will be removed and the land reinstated, unless otherwise agreed with the local planning authority. The access point would also be removed and/or no longer utilised unless otherwise agreed with the local planning authority...."</i></p>
Q1.11.6	Applicant	<p>NCC [RR-035] has expressed concern regarding the safety of the permanent vehicular access points to the onshore high voltage alternating current (HVAC) booster station and high voltage direct current (HVDC) convertor/HVAC substation.</p> <p>Please provide an indicative layout demonstrating the feasibility of these</p>	<p>The Applicant has provided drawings of the permanent access to the onshore HVAC Booster station and HVDC converter/HVAC substation as Appendix 29 Permanent Access note for the HVDC converter/HVAC substation and 30 Permanent Access Notes for the onshore HVAC booster station to the Applicant's response to Deadline I.</p> <p>Revision A of drawing 03_202 to the Applicant's response to Deadline I, was considered acceptable by NCC in principle (See NCC SoCG), although this was prior to the conclusions of the Stage 1 Road Safety Audit which have fed into the development of Revision B as shown in Appendix 29 to the Applicant's response to Deadline I.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		permanent access points, including a Stage 1 Safety Audit.	<p>The Applicant received comments from NCC on revision A to drawing JNY8772-81 and has submitted Revision B as Appendix 30 to the Applicant's response to Deadline I in response, which also takes into consideration the conclusions of the Stage 1 Road Safety Audit.</p> <p>Given the school holiday period the traffic / speed surveys associated with the Stage 1 Road Audit will be submitted at Deadline 2.</p>
Q1.11.7	Applicant	<p>Paragraph 2.1.4.4 of the Outline Construction Traffic Management Plan [APP-176] states that during peak holiday seasons the routing of HGVs may need to avoid routes marked on the Norfolk County Council Route Hierarchy Map.</p> <p>A) Under what particular circumstances and at what times would such re-routing of HGVs take place?</p> <p>B) Which are the routes which would be likely to be avoided and what alternative routes would be used?</p> <p>C) Could this result in impacts arising from the use of alternative routes which have not been reported in the ES?</p>	<p>A) Please see the Applicant's response Q1.11.1(E).</p> <p>B) Although consideration will be given to avoidance of tourist routes (as marked on the Norfolk County Council Route Hierarchy Map) during the preparation of the final CTMP, to transfer construction traffic away from such "A" roads would result in increased use of less suitable local roads. As such, it is considered premature to identify particular circumstances and timings for such re-routes until further certainty as to the construction programme, and ultimately the likely traffic flows along potential alternative routes has been determined. This will be determined during detailed design and therefore the need for and nature of measures to mitigate impacts from HGVs during the peak tourist seasons would be developed as part of the final CTMP.</p> <p>C) It is considered premature to assess site specific impacts along these routes until further certainty as to the construction programme, and ultimately the likely traffic flows along potential alternative routes. This will be determined during detailed design and therefore the need for and nature of measures to mitigate impacts from HGVs during the peak tourist seasons would be developed as part of the final CTMP.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.11.8	Applicant	Paragraph 7.8.3.44 of the ES [APP-079] provides an estimate of the potential vehicle movements at the main construction compound at Oulton Street.	A) Details of the proposed use of the main construction compound, as far as is possible to identify at this stage of the project, is provided within Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1.
		A) Please provide further details of the proposed use of the main construction compound at Oulton Street including: the types, quantities and intended use of materials to be stored;	B) Details of the peak traffic generation associated with the use of the main construction compound is provided within Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1. The Applicant is undertaking the profiling of traffic flows through the construction period and will present this at Deadline 3.
		B) the calculations of the potential traffic movements in connection with the use of the compound; and  C) the hours of operation and the expected times/frequency of particular traffic movements.	C) Details of the hours of operation and the expected times/frequency associated with the use of the main construction compound is provided within Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1.
Q1.11.9	Applicant, 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 projects	There may be cumulative impacts on a small number of shared road links during construction of the two projects and relevant discussions between Hornsea Three and Norfolk Vanguard are ongoing. Both parties continue to work together to ensure alignment of highway threshold levels applied by each project, i.e. traffic capacity of each road link before significant impacts are expected, and alignment as to the scope of appropriate traffic management measures that may be required as thresholds are reached – i.e. confirming:- <ul style="list-style-type: none"> <li>• Thresholds on each street (or part of street) where no or limited ("soft") traffic management measures would be required, such as controls on daily traffic demand, driver induction, community liaison;</li> <li>• Thresholds on each street (or part of street) which would trigger further "soft" traffic management measures, such as timing of deliveries, hazard signage, restricted periods, and temporary speed restrictions; and</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		and proposed measures to minimise any impacts.	<ul style="list-style-type: none"> <li>• Thresholds on each street (or part of street) which would trigger further "harder" traffic management measures -such as flow control, pedestrian crossing points, parking restrictions and other traffic management measures, in some instances physical interventions such as localised widening or passing places.</li> </ul> <p>Any mitigation measures identified for these shared links would be secured through each project's final Construction Traffic Management Plans to be developed post-consent. These would be developed with, and approved by, Norfolk County Council as Highways Authority.</p> <p>Whilst these workstreams are ongoing, the locations which require further consideration due to the potential cumulative impact of both projects is limited to:-</p> <ul style="list-style-type: none"> <li>• The Street (linking B1149 with Oulton Street);</li> <li>• Along B1149, in particular through the settlement of Horsford; and</li> <li>• Along B1145, in particular through the settlement of Cawston.</li> </ul> <p>If CTMP measures are required along these stretches of road, these measures will be captured in a revised Outline CTMP to be submitted in due course into the Hornsea Three examination.</p> <p>Hornsea Three and Norfolk Vanguard will be looking to reach an agreement on these matters and engage with Norfolk County Council as the highways authority to reach a shared common point of agreement. This workstream is ongoing and for the purposes of this SoCG submitted at Deadline 1, the cumulative impact on traffic and transport therefore remains not agreed, but material headway has been made and both projects are confident that agreement can be reached in the short term. To date Hornsea Three and Norfolk Vanguard have held a number of meetings on these matters:-</p> <ul style="list-style-type: none"> <li>• 09/08/2018 Meeting with Norfolk Vanguard to discuss traffic and transport assessment.</li> <li>• 11/09/2018 Meeting with Norfolk Vanguard to discuss traffic and transport assessments.</li> <li>• 26/09/2018 Email correspondence from Hornsea Three to Norfolk Vanguard to advise of the updated TA, TA Clarification Note and Main construction compound traffic survey results.</li> </ul>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			16/10/2018 Meeting with Norfolk Vanguard to discuss traffic and transport assessments. 16/10/2018 Email correspondence from Hornsea Three to Norfolk Vanguard issuing the Main Construction Compound Access Strategy.
Q1.11.10	Applicant	Paragraph 1.5.3.6 of the ES [APP-159] states that traffic management measures are to be designed post-submission which might include a diversion route for the main compound at Oulton Street.	A) Details of the proposed use of the main construction compound, as far as is possible to identify at this stage of the project, is provided within Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1. Annex A and B of Appendix 20 addresses the measures which are to be included to manage HGV movements.
		A) Please provide details of what such measures might be, including any measures to manage HGV movements.  B) How they would be secured in the dDCO?	B) The final agreed access strategy to the main construction compound will ultimately feed into the Outline CTMP (APP-176) and as such will be secured through the CTMP (Requirement 18) of the dDCO.
Q1.11.11	Applicant	Oulton Parish Council [RR-034] raises a concern that the traffic surveys that have been carried are not representative of agricultural activity.  What account has been made in the ES [APP-159] of the variations in agricultural vehicle movements throughout the year?	It is not practical to undertake multiple surveys throughout the course of the year to fully capture each seasonal event and variation on the road network due to, e.g. Easter and Summer holiday season traffic, summer agricultural conditions (e.g. grain harvest), autumn agricultural conditions (e.g. potato and beat harvest) and traffic surveys are typically undertaken in what are termed as "neutral" conditions. The traffic counts undertaken are considered to account for typical conditions on the road network.  In respect to the concern raised in RR-034 in particular, the upgrades proposed along The Street and at the junction with the B1149 (see Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1) have been designed to provide ample geometry for use by agricultural vehicles alongside the construction traffic. A

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			VISSIM model is currently being prepared which will assess the agricultural fluctuations of traffic with the peak construction traffic activities, the Applicant will submit this at Deadline 3.
Q1.11.12	Applicant, Norfolk Vanguard	The on-shore cable route would cross with the proposed Norfolk Vanguard/Norfolk Boreas cable route to the north of Reephham. 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 to Q1.11.9
Q1.11.13	Applicant	Paragraph 3.5.1.7 of the ES [APP-058] states that a construction base (port facility) may be used to stockpile some components.  A) Please provide an update on the likely necessity for this facility, the likely location and an assessment of any potential traffic and highway impacts.  B) Given that the location of the facility would not be within the Order limits, what mechanisms would be available to secure	The Applicants response to Question 1.10.1 details the status of the selection of ports for use during construction, operation and maintenance and decommissioning activities, noting that the Applicant has not selected the ports that it will use and does not intend to make a decision during the Examination period.  This includes the likely necessity for a construction facility to support the construction of the offshore works. Unlike the onshore works where it has been identified that a main construction compound should be used for the onshore export cable (and separate construction compounds at landfall and at each substation site), the need for and use of an offshore construction base has not been determined at this time and is reliant upon a number of factors (detailed further in response to Question 1.10.1). This includes the location of component delivery ports (including vessel routing), with turbine, turbine foundations, offshore substation, cables etc. potentially each making use different port facilities for construction.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		any mitigation measures that may be required?	<p>It is noted that many key suppliers have established manufacturing and assembly facilities with direct, or limited distance to port facilities, and therefore significant component parts do not necessarily need to rely upon the highway network to get from their point of manufacture.</p> <p>B) If a new offshore construction base is required then this will either utilise existing consents secured by the Port operator, or if necessary consented separately by grant of planning permission under the Town and Country Planning Act 1990 (or other statutory consents such as a harbour revision order). With the assessment of the impacts of the port use taking place at that stage. Mitigation would be secured through the same mechanism.</p>
Q1.11.14	Applicant, NCC	<p>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.</p> <p>A) How will the performance of this junction be monitored and what traffic management measures are likely to be appropriate?</p> <p>B) How would such measures be secured?</p>	<p>A) Please refer to Appendix 33 A140/B1113 Junction Technical Note of the Applicant's response to Deadline 1. This confirms that no traffic management measures are necessary, and the construction traffic flow will be monitored and managed as set out in the Outline CTMP [APP-176].</p> <p>B) As noted above, the construction traffic flow will be monitored and managed as set out in the Outline CTMP [APP-176]. Thus will be further secured through Requirement 18 of the dDCO which requires a Construction Traffic Management Plan to be submitted and agreed prior to commencement.</p>
Q1.11.15	Applicant	The ES [APP-079] assesses the potential impacts on traffic and transport on the basis of the maximum design scenario which includes the use of HVAC technology. What would be the main differences for traffic generation during construction between the use of HVAC and HVDC technology?	The likely effects on traffic and transport receptors during the construction phase under the HVDC scenario are provided within Appendix 22 Transmission System (HVAC/HVDC) Briefing Note to the Applicant's response to Deadline 1.

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Q1.11.16	Applicant	The ES [APP-079] states that in certain circumstances onshore works may have to be undertaken on a continuous basis.	A) Please see Applicants response to Q1.12.7.
		A) Please provide further details on the need for and the likely frequency of continuous working hours, together with the locations where it is likely to occur.	B) Please see Applicants response to Q1.12.7.
		B) What would be the process for the prior approval of works outside of the core working hours (including consultation with stakeholders) and does this process need to be set out more clearly in the Outline Code of Construction Practice [APP-179]?  C) What would be the implications of continuous working for HGV movements?	C) Continuous working would increase the number of working hours (for HGV movement) within the day and spread the HGV movements over the course of a day. This would result in fewer hourly HGV movements to those that are reported in Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079] and Volume 6, Annex 7.1: Transport Assessment of the Environmental Statement [APP-159]. This would therefore reduce the impacts that are reported in APP-079 and APP-159 and reduce the effects that are reported in APP-079. In particular, construction HGV movements would be reduced during the AM and PM network peaks, which are the periods most sensitive to changes in traffic flows from a highway capacity perspective. The implications of continuous working for HGV movements would result in reduced impacts and effects to those reported in Volume 3, Chapter 7: Traffic and Transport of the Environmental Statement [APP-079] and Volume 6, Annex 7.1: Transport Assessment of the Environmental Statement [APP-159].
Q1.11.17	Applicant	Paragraph 7.8.3.19 of the ES [APP-079] sets out an estimated distribution of HGVs. Please provide further justification for the estimated distribution of HGVs.	Para 7.8.3.16 onwards recognises that distribution is difficult to estimate and 7.8.3.19 assigns a majority to the key routes into the study area of the A47W and A11 with a broadly similar split to the other routes into the study area. This was using judgement only. 7.8.3.24 recognises this further and seeks to allow for day-to-day variances in the supply chain by increasing the proportions from each entry to the study area.  An estimate of distribution using judgement and professional experience gained working on similar schemes has been applied, as well as utilising the experience Orsted have gained through delivering comparable projects. However, to

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			produce a robust maximum design scenario assessment the distribution figures have been increased at every entry point to the study area.
Q1.11.18	Applicant	<p>Paragraph 2.1.4.3 of the Outline Construction Traffic Management Plan [APP-176] states that some limited further restrictions may be placed on the timing of HGV movements though locations with sensitive receptors, such as during school opening and closing hours.</p> <p>A) Please provide a list of these locations.</p> <p>B) What are the further restrictions that would be placed on the timing of HGV movements and how would they be secured?</p>	<p>A) The Applicant is undertaking the profiling of traffic flows through the construction period (to be provided at Deadline 3) which will influence the measures to be adopted at locations with sensitive receptors. As such the locations considered to require limited further restrictions will be presented in an updated CTMP as part of a future deadline.</p>
			<p>B) See Applicant's response to (A)</p>
Q1.11.19	Applicant	<p>Paragraph 4.1.1.1 of the Outline Construction Traffic Management Plan [APP-176] states that it is envisaged that all cable crossings of the public highway will be undertaken by horizontal directional drilling (HDD).</p> <p>A) Are there any public highway cable crossings that would not utilise HDD?</p>	<p>A) The Applicant has committed to crossing all public highways utilizing HDD techniques. The full list of onshore crossings is included in Volume 4, Annex 3.5: Onshore Crossing Schedule (APP-089) and secured through the newly created Annex E to the Outline CoCP which identifies locations where HDD is committed (APP-179).</p>
			<p>B) It is anticipated that HDD techniques would be used at all public highway locations, however, in the event that HDD is deemed unsuitable at any location, it would be expected that the road crossing would be undertaken by open cut methods. Should this be required, suitable measures to manage impacts would be identified in the final CTMP and agreed with the local highway authority.</p>

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		<p>B) If there are, which are these and why would HDD not be used?</p> <p>C) What would the implications for the ES be should HDD not be used for public highway crossings?</p>	<p>B) If HDD methods were not to be used at public highway crossings, it would be expected that any road crossing would be undertaken utilizing suitable traffic management arrangements to ensure that the highway would, where practicable, remain open to traffic. These measures would be developed in the final CTMP (secured by means of Requirement 18 of the dDCO, APP-027). In the event that such traffic management methods (such as lane closures with temporary traffic lights and one way working) were not suitable at any specific location, temporary road closures would be utilised. In the event road closures are required the final CTMP will set out specific guidelines as to where the traffic would be diverted and the temporary impact of diverting this traffic onto the surrounding road network. The final CTMP will also outline any mitigation measurements which may be required to enable the temporary diversion of traffic during required road closures. On the basis of these measures, the Applicant considers that the conclusions as reported within the Volume 3, Chapter 7: Traffic and Transport (APP-079) is considered to remain accurate.</p>
Q1.11.20	Applicant	<p>Article 10 of the dDCO provides for the temporary stopping up of streets, including use as temporary work sites. Paragraph 1.8.1.1 of the Transport Assessment [APP-150] states that the dDCO would secure temporary road closures and stopping up of highways at road crossings.</p> <p>A) Please set out the reasons why temporary road closures and the stopping up of highways would be required, given the expectation that all cable crossings of the public highway would be undertaken by HDD.</p> <p>B) Please explain the need for temporary work sites on highways.</p>	<p>A) Temporary road closures may be required at certain locations for the installation and removal of access points to the onshore cable corridor from the highway where normal traffic management arrangements are deemed insufficient to ensure the safety of site personnel and road users. These potential locations are shown on the Access to Works Plan (Onshore) (APP-014). Measures which seek to avoid stopping up highways will be developed as part of the final CTMP (secured by means of Requirement 18 of the dDCO, APP-027). However, the principle has been established in paragraph 3.2.1.7 of the Outline CTMP (APP-176) which states that <i>"Whilst the project provides for HDD under all public highways, if works are required on the public highway (such as to identify local utilities) the project will make use of shuttle working arrangements. Shuttle working is where one direction of travel receives priority over the other. This could be via traffic signals or via give way signs."</i></p> <p>Temporary road closures may also be required at HDD locations in the event of an unexpected bentonite breakout or should there be a need for repair works if any underground utilities are damaged by the HDD works, or for repairs to the highways associated with the HDD works.</p> <p>B) Temporary work sites on highways may be required to allow access to, or facilitate the activities identified in (A). The Applicant would seek to minimise the use of highways as temporary work sites, such that they can remain open where possible.</p>

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		<p>C) Would there be any other circumstances where the temporary stopping up of any highway would be required?</p> <p>D) For what periods of time would temporary stopping up of highways occur?</p> <p>E) Please explain the procedures that would be required to secure the temporary stopping up of highways.</p>	<p>C) There should be no other circumstances for stopping up of the highways other than for the possible construction and removal of access points and any possible emergency repair works to utilities or the roadway and HDD road crossing locations</p> <p>D) Any road closures associated with the formation or removal of construction accesses to the cable corridor from the highway would be expected to take up to a maximum of one week at each location and would require approval from the local highways authority. Any temporary closures associated with emergency repairs would be dependent of the extent and nature of the repair works to be undertaken but would be minimised as far as possible.</p> <p>E) Article 10 of the dDCO makes provision for the power to temporarily stop up streets (which includes highways). Article 10 (5)(a) would require the Undertaker to consult the street authority before closing the streets in Schedule 4, and in respect of the closure of any other street (5)(b) requires the Undertaker to obtain the street authority's consent to such closure, which may be granted subject to conditions.</p> <p>Furthermore, the details of proposed highway accesses (which may necessitate a temporary street closure) would require the approval of the relevant planning authority, following consultation with the highway authority (Requirement 11 of the dDCO).</p>
Q1.11.21	Applicant	<p>Section 1.6.11 of the ES [APP-159] describes the use of abnormal indivisible loads. Paragraph 1.6.11.3 refers to the use of the existing Norwich Main Substation access junction to accommodate abnormal loads.</p> <p>A) Which parts of the works are likely to require abnormal indivisible loads?</p>	<p>A) Abnormal indivisible loads would be expected to be required for parts of the onshore cable installation works, in particular the delivery of cable drums to the main compound storage area and the subsequent delivery to the cable installation locations and for the delivery to site of excavation machinery associated with the main trench excavation works. If HDD is installed at the landfall, the delivery and removal of the HDD drill rig and associated equipment may require abnormal indivisible loads, depending on the type and nature of the HDD equipment required.</p> <p>Dividable Abnormal loads would also be required along the B1149 to gain access to the proposed HVAC Booster Station and the B1113 for access to the proposed HVDC converter/ HVAC Substation.</p>

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		B) For what purposes would abnormal loads be required to use the existing Norwich Main Substation access?	(B) Dividable abnormal loads would not require use of the existing Norwich Main Substation access and instead would make use of the proposed access off the B1113 or Mangreen Lane (as shown on shown on Access to Works Plan (Onshore) (APP-014). Access will be taken from Mangreen Hall Lane, using the existing Norwich Main Substation access, by construction vehicles to facilitate the delivery of the grid connection work (Work No. 12).
Q1.11.22	Applicant, NCC	<p>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).</p> <p>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.</p>	<p>Both the Muckleburgh Collection Museum and Foxhills Campsite are established and operational sites, and attract large numbers of visitors particularly in the summer holiday season. The Applicant has reviewed this location and notes that while visibility at this junction arrangement is indeed limited to/from the east, Crashmap indicates there to be no recorded incidents at this location for the five year period to end of 2017, suggesting there to be in practical terms no particular safety issue at this location.</p> <p>Notwithstanding this, the Applicant agrees that this location would benefit from a number of traffic management measures. These measures have been captured in newly added paragraph 2.1.3.7 of the Outline CTMP (APP-176) (new text shown in underline):</p> <p>Paragraph <u>"2.1.3.7 Given the limited visibility at the existing access onto the A149, specific traffic management measures will be required. These have been identified as follows, and would be developed in further detail within the detailed CTMP (under Requirement 18 of the dDCO):</u></p> <ul style="list-style-type: none"> <li><u>• Signage would be provided on the A149 approaches to this access to forewarn drivers of slow moving, turning HGVs;</u></li> <li><u>• The existing hedge line to the east of this access (on the north side of the A149) would be maintained, to trim back as far as is achievable within the highway verge, with a view to improving visibility to/from the east."</u></li> </ul>
Q1.11.23	Applicant	Representations have been made [such as RR-033] regarding pedestrian safety on the A149 between Foxhills and Weybourne.	Please see Applicant's response to Relevant Representation RR-033.



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		Please outline any mitigation measures that may be required.	
Q1.11.24	Applicant	A representation has been made [RR-061] objecting to the proposed location of a construction storage compound at Marl Hill. Please comment on the concerns raised. What mitigation measures may be required at this location?	Please see Applicant's response to Relevant Representation RR-061.

## 1.15 Written Question 1.12 Living conditions for local residents

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.12.1	Applicant	<p>Tables 8.7 and 8.8 of the ES [APP-080] set out baseline sound levels for the onshore high voltage direct current (HVDC) convertor/high voltage alternating current (HVAC) substation and HVAC booster station.</p> <p>A) Please provide further justification for the choice of baseline noise survey locations.</p> <p>B) Why was only one survey location chosen in relation to the HVDC convertor/HVAC substation?</p> <p>C) Are there likely to be any variations in baseline sound levels at other locations, such as the residential properties located to the south east of the proposed HVDC convertor/HVAC substation?</p>	<p>A) Details of the baseline noise surveys undertaken are provided in Volume 3, Chapter 8 – Noise and Vibration of the ES in Section 8.6.2 [APP-080] with further details including locations provided in Volume 6, Annex 8.1: Baseline Noise Survey of the Environmental Statement [APP-167]. Paragraph 8.6.2.2 describes that the surveys were undertaken at locations representative of the noise sensitive receptors (NSRs) with the greatest potential to be affected by the proposed onshore HVAC booster station and the HVDC convertor/HVAC substation. Three survey locations were selected with two for the onshore HVAC booster station and one for the onshore HVDC convertor/HVAC substation these locations are shown in Figures A.1 and A.2 of Volume 6, Annex 8.1 Baseline Noise Survey of the Environmental Statement [APP-167]. These locations were agreed with North Norfolk District Council and South Norfolk Council prior to deployment.</p> <p>When survey locations are selected, there are two primary objectives: 1) select locations where NSRs are likely to be most affected – these are usually the closest, in the quietest environment or downwind of the development – this is on the basis that if effects are acceptable at these NSRs, then they will be acceptable at others; 2) select locations which are representative of groups of dwellings – this is normal practice as it is not usual or necessary to carry out surveys at all NSRs potentially affected – as the levels gained from the surveys at representative NSRs can be used for others.</p> <p>Based upon the above process, the three survey locations were selected.</p> <p>B) Baseline noise data from one survey location at the onshore HVDC converter/HVAC substation was used in the operational noise model input as reported in Volume 6, Annex 8.3: Operational Noise Model Input of the Environmental Statement [APP-169]. An additional monitoring location had been proposed at Mangreen Hall Farm Cottages, however land access could not be agreed. As this proposed location was located at a similar distance from the A47 as the survey location used in the noise modelling, it is considered that baseline noise levels were adequately captured. Therefore, it is considered that the data collected at the one survey location is sufficient to allow a robust characterisation of the prevailing noise environment.</p>

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			C) Baseline noise levels vary at any location and between locations. The general approach to this is to undertake baseline surveys, as described above, at the potentially most affected NSRs which may be those closest, or with the lowest baseline levels or both. On this basis, the NSRs with the most potentially significant adverse effects would have been assessed and baseline level variations at other locations would not result in more significant effects.
Q1.12.3	Applicant	<p>Paragraph 8.12.2.5 of the ES [APP-080] sets an acceptable operational noise level of 34dB L<sub>Ar,Tr</sub>.</p> <p>Please explain the justification for the use of the unit of measurement L<sub>Ar,Tr</sub> for the setting of the noise level, including in comparison with other commonly used units of measurement."</p>	<p>The noise metric L<sub>Ar,Tr</sub> is the rating level as defined in BS 4142:2014 "Methods for rating and assessing industrial and commercial sound", defined as "specific sound level plus any adjustment for the characteristic features of the sound". The specific sound is the L<sub>Aeq,t</sub> arising from the operational plant under consideration, with the adjustment allowing for tonal or impulsive character.</p> <p>BS4142:2014 and consequently the L<sub>Ar,Tr</sub> is considered the most appropriate method for assessing industrial noise, such as that arising from the operation of the onshore HVDC converter/HVAC substation.</p> <p>Other metrics considered include: the L<sub>A10,t</sub> which would be used to assess absolute construction or operational traffic levels, but would not be appropriate for fixed plant; and the L<sub>Aeq,t</sub>, which would be appropriate for construction noise (following BS 5228) but does not include any allowance for the characteristics of the noise (which might affect community response) above that solely associated with the magnitude of the noise.</p> <p>Assessments based on the guidance in NANR45* or based on the BS 8233* "Noise Rating" (different from the BS 4142 'rating level') would be appropriate for assessment of noise levels within a particular residential property, where the performance of that particular property was a consideration in determining effect. These, however, would not generally be appropriate for a wider environmental assessment as undertaken in the Environmental Statement.</p> <p>* Defra. Contract NANR 45: Procedure for the assessment of low frequency noise complaints, Revision 1. December 2011.</p>

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			*British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings
Q1.12.4	Applicant	<p>"Paragraph 8.12.2.6 of the ES [APP-080] states that an overall noise level design reduction of at least 12dB is necessary to achieve the noise rating limit of 34dB L<sub>A,r,Tr</sub> for the operation of the HVDC converter/HVAC substation.</p> <p>A) Please provide further details of the noise mitigation measures that are envisaged to achieve this level of reduction.</p> <p>B) If a range of measures were to be employed, what would be the</p>	<p>A) As stated in Volume 6, Annex 8.4: Operational Noise Model Output of the Environmental Statement [APP-170] the type of mitigation that will be implemented to achieve the maximum of 34 dB L<sub>A,r,Tr</sub> at the nearest NSRs will be agreed during detailed design when the transmission technology and layout of the onshore HVDC converter/HVAC substation have been confirmed. Without confirmation of the final transmission option and layout, details of specific plant and therefore, final noise immissions and the specific mitigation measures cannot be defined. Notwithstanding this, mitigation measures are likely to include: the use of acoustic enclosures; placing equipment inside buildings; or other potential measures to be agreed prior to the commencement of works. The mitigation measures will be contained within a noise management plan that will be submitted to the relevant planning authority (Requirement 21 of the draft DCO [APP-027]).</p> <p>B) As stated in paragraph 1.3.2.1 of Volume 6, Annex 8.4: Operational Noise Model Output of the Environmental Statement [APP-170] mitigation would be provided to achieve a reduction in the region of -12 dB or a reduction determined as being necessary based on the likely noise immissions based on the final option and layout, such that the overall noise would not exceed 34 dB L<sub>A,r,Tr</sub>. The specific reduction to be achieved by each measure cannot be determined at this stage as it would depend on the transmission system used, plant configuration and layout. However, the Applicant has committed that measures that would be implemented to result in a situation where noise immissions at any NSR would not exceed a noise level 34 dB L<sub>A,r,Tr</sub> would be confirmed once the transmission option and plant configuration had been finalised.</p>

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		<p>level of reduction secured by each individual measure?</p> <p>C) How could the layout of buildings and structures on the site influence the need for the particular noise mitigation measures required?"</p>	<p>C) The operational noise model (as set out in Volume 6, Annex 8.3: Operational Noise Model Input of the Environmental Statement [APP-169]) is based on an indicative layout of the HVDC converter/HVAC substation which includes a mixture of transformers, reactive plant coolers, Gas Insulated Switchgear (GIS) and filters. For the purpose of creating a maximum design scenario noise model, it has been assumed that most of the noisiest plant will be installed externally, with only the GIS proposed to be installed within a building hall. However, the commitment made by the Applicant is to not exceed the noise level of 34 dB L<sub>Ar,Tr</sub> at the nearest NSR. On this basis, any layout or mix of internal and external plant, could be acceptable providing that this noise level from the plant is not exceeded at the nearest NSR.</p> <p>It is likely that optimising the layout of the buildings could achieve part but not all of the -12dB reduction required. With all the noisier plant appropriately enclosed within buildings (where this is practicable, with consideration to landscape and other non-acoustic constraints), the committed target of 34 dB L<sub>Ar,Tr</sub> would likely be achieved without further mitigation measures.</p>
Q1.12.5	Applicant	<p>The ES [APP-080] states that no noise and vibration monitoring is considered necessary for either the construction or the operation phases. However, Requirement 21 of the dDCO [APP-027] includes the need for a scheme for monitoring attenuation and mitigation measures within the noise management plan. Why does the ES not include future monitoring?</p> <p>Please provide details of any monitoring that is likely to be required, including any measures to ensure that stated noise levels are not breached.</p>	<p>Monitoring of noise and vibration by itself is not considered to be a mitigation method as it does not achieve a reduction in noise and vibration levels. However, monitoring is a useful means of determining compliance with noise limits set by the Applicant (34dB L<sub>Ar,Tr</sub>) and ensuring that noise mitigation measures and Best Practicable Means are effective in reducing noise levels. The mitigation measures for noise during construction are set out in paragraph 6.2 of the Outline CoCP [APP-179].</p> <p>During construction, noise monitoring would be implemented in accordance with any agreement with the relevant local authority EHO officer in consultation with relevant planning authority (and the final CoCP approved for those works).</p> <p>Monitoring requirements for operational noise emissions would be agreed as part of the noise management plan and would be undertaken as part of the site commissioning tests or as adaptive management should feedback be received from the local community through the established communication framework (see paragraph A1.1.3 of Appendix A of the Outline CoCP (APP-179). A complaints procedure will also be incorporated into the Noise Management Plan (secured by Requirement 21 of the dDCO). It is not always possible or practicable to monitor noise emissions from</p>

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			specific plant at the NSRs as levels may be below existing ambient levels or not sufficiently above them to be able to differentiate. When this situation occurs, an alternative location, usually closer to the plant or on the site boundary, is normally agreed with the relevant planning authority. The maximum noise level at the agreed monitoring location, to not exceed 34 dB $L_{A,T,r}$ at the nearest NSR, can be determined from the operational noise model.
Q1.12.6	Applicant, BDC, NNDC, SNC	<p>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.</p> <p>A) Bearing in mind the proximity of some work sites to residential properties (and the period of construction of the HVDC converter/HVAC substation), what is the justification for these working hours?</p> <p>Should provision be made for reduced hours or no working on Bank Holidays?</p>	<p>A) The purpose of the mobilisation period of one hour either side of the core working hours (i.e. from 06:00 to 07:00 and 18.00 to 19.00) is to permit limited activities that are not noise generating activities and would not cause any disturbance to residential properties. These activities are primarily focused around good site management – such as site inspections, safety checks (briefings and quiet inspections/walkovers), site clean-up that does not require the use of plant. To clarify this approach the Applicant has amended paragraphs 4.1.1.1 and 4.1.1.3 to Outline CoCP (Revision 1, submitted for Deadline 1).</p> <p>The mobilization period could also provide a mechanism for some of the workforce to travel outside the standard peak AM traffic movements, minimising impacts on the wider road network.</p> <p><i>“4.1.1.1 Working hours for the construction of the onshore elements of Hornsea Three are as follows:</i></p> <ul style="list-style-type: none"> <li>• Core working hours: Monday to Friday: 07:00 - 18:00 hours (Excluding Bank Holidays) and</li> <li>• Saturday: 07:00 - 13:00 hours;</li> <li>• Up to one hour before and after core working hours for mobilisation (“mobilisation period”), i.e. 06:00 to 19:00 weekdays and 06:00 to 14:00 Saturdays; and</li> <li>• Maintenance period 13:00 to 17:00 Saturdays.</li> </ul> <p><i>4.1.1.3 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)</i></p>

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			<p><i>but suppliers can make use of the wider highway network outside these hours to travel. <u>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.</u></i></p> <p>B) The Applicant has amended the Outline CoCP (Revision 1, submitted at Deadline 1), see (A), to make it clear that the core working hours do not apply on Bank Holidays. As stated in paragraph 4.1.1.4 certain activities may require continuous working that could include Sundays and Bank Holidays. Except for the activities listed in paragraph 4.1.1.5, consent is required from the relevant authority EHO officer in consultation with relevant planning authority (see paragraph 4.1.16 of the Outline CoCP [APP-179].</p>
Q1.12.7	Applicant, BDC, NNDC, SNC	<p>The Outline Code of Construction Practice [APP-179] allows for continuous working hours in certain circumstances.</p> <p>A) Under a maximum design scenario for continuous working hours, what would be the effects on the living conditions of local residents?</p> <p>B) Are further mitigation measures required in the Outline Code of Construction Practice to manage and mitigate the effects of continuous working hours?"</p>	<p>A) Noise and Vibration Chapter of the ES [APP-080] recognises that whilst evening and night-time works would typically be of a lesser magnitude than during the day, the assessment criteria used are more stringent. Control of noise emissions to an acceptable level will be agreed with the with EHO in consultation with relevant planning authority and relevant stakeholders (e.g. third party asset owner) as required.</p> <p>Where possible night-time working / continuous working hours will be kept to a minimum – both in duration or frequency, but also geographically. All continuous works will be agreed with the relevant EHO officer.</p> <p>As noted at Section 8.9 of Noise and Vibration ES Chapter [APP-080] the magnitude of construction noise impacts has been determined in accordance with Annex E of BS 5228-1:2009+A1:2014. The criteria for assessing noise impact from construction works have been based on Example Method 2 contained within Annex E.3.3 of BS 5228-1:2009+A1:2014; this indicates that:</p> <p><i>"Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB LAeq, Period, from site noise alone, for the daytime, evening and night-time periods,</i></p>

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			<p><i>respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect."</i></p> <p>Notwithstanding these potentially significant thresholds, each location and proposed evening and night time noise events must be considered on a case by case basis as the effects on the living conditions of local residents will be subject to the proximity of the residents to the works, the level of noise generating activity, the duration of the event, and level of traffic and plant movements.</p> <p>At landfall for example, which is subject to the more complex works and therefore more likely to require continuous working, paragraph 8.12.1.22 of [APP 080] notes that given the likelihood of night-time working but of limited duration, the magnitude is considered to be minor for receptors within 211 m, and negligible beyond.</p> <p>Any impacts relating to noise on local residents would be weighed against the benefits of using HDD operations (such as keeping roads and PRowS open to traffic and users during construction).</p> <p>B) 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, at any part of the project programme and the length of time the equipment is used during any given period.</p>



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Q1.12.8	Applicant	<p>Paragraph 4.1.1.2 of the Outline Code of Construction Practice states that the mobilisation period of up to one hour before and after core working hours would not include heavy goods vehicle (HGV) movements into and out of construction areas [APP-179].</p> <p>A) What arrangements would be made for HGVs waiting to access construction sites in order to ensure that such vehicles would not adversely affect local residents?</p> <p>B) Would it be appropriate to include such measures in the Outline Code of Construction Practice?</p>	<p>A) No HGV movements into or out of construction site would be allowed outside of the agreed times and all HGV movements subject to abnormal loads movement orders would only be allowed to enter or leave any construction site within the times detailed in the order. All HGV movements which are not planned to arrive at site after any time restrictions would be required to park at an appropriate Approved Lorry Park, Motorway Services and other designated overnight parking locations. All construction sites shall be capable of accommodating multiple simultaneous HGV movements within the site such that no HGV vehicles would be required to wait outside or locally during the regulated delivery / outgoing movement times. All vehicle movements would be subject to a Traffic Management Plan produced by the Principal Contractor and adopted by all affected Contractors.</p> <p>B) The Applicant has considered and paragraph 6.1.1.5 of the Outline CoCP (APP-179) has been amended as follows (with new text shown in underline):</p> <p><i>"6.1.1.5 The CTMP will ensure that all construction traffic follows pre-prescribed routing, to avoid impacts on the wider network and conflicts with local users, however some larger vehicles, such as cable drum deliveries may need to follow specially advised routes to avoid low bridges. <u>The CTMP is to ensure that HGVs delivery times are managed in accordance with approved Section 4.1.1. Working Hours.</u>"</i></p> <p>Furthermore, paragraph 2.1.4.1 of the Outline CTMP (APP-176) has been amended to state:-</p> <p><i>"... Mobilisation does not include heavy good vehicle (HGV) movements into and out of sites, but suppliers can make use of the wider highway network outside these hours to travel to site. In certain circumstances, specific works may have to be undertaken on a continuous working basis (00:00 to 00:00 Monday to Sunday). <u>All HGV movements which are not planned to arrive at site after any time restrictions would be required to park at an appropriate Approved Lorry Park, Motorway Services and other designated overnight parking locations.</u>"</i></p>
Q1.12.9	Applicant	"Paragraphs 3.7.3.32 of the ES [APP -058] states that Oulton Airfield is proposed to be the main construction compound.	A) Please see Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline I which provides details of the hours of use of the main construction compound.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>A) What would be the hours of use of the construction compound, including for vehicles coming to and from the compound?</p> <p>B) Please provide an assessment of noise arising from the use of the compound, including from vehicle movements on Oulton Street.</p> <p>C) What noise mitigation measures may be required at this location?"</p>	<p>B and C) Please see Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline I which provides a summary of the assessment of noise arising from the use of the main construction compound (drawing from Volume 3, Chapter 8: Noise and Vibration from the Environmental Statement (APP-180), including access along The Street, is provided within the Main Construction Compound Position Paper.</p> <p>An update on the assessment and mitigation regarding noise from access along The Street is provided in Section 8 of Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline I.</p>
Q1.12.10	Applicant and 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.	<p>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.</p> <p>These assessments represent the worst-case scenario for two crossing points, one where both transmission systems use HVAC technology and the other where both use HVDC technology. It should be noted that this worst-case scenario was correct at the time of writing, however NV and NB have subsequently made the decision to deploy HVDC technology. The parameters modelled are included in the tables below and are conservative as maximum rating, minimum burial depth and most acute crossing angle (45°) were taken and the most highly loaded circuits were located on top which produced the highest magnetic fields.</p> <p>Summary of the cumulative impact of Hornsea Three, NV and NB found:-</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>The study found that the maximum calculated AC magnetic fields were 50.7 <math>\mu</math>T, which is 14% of the UK exposure limit values; the maximum calculated DC magnetic fields were 60.8 <math>\mu</math>T which is less than 1% of the UK exposure limit.</li> <li>All of the cable crossing scenarios irrespective of whether DC or AC cable connections are used will be compliant with the UK exposure limits set to protect the health of members of the public against electric and magnetic field exposure.</li> <li>As the magnetic field is mainly dependant on cable rating, burial depth and phase separation, all cable crossings with similar or less onerous design parameters will also be compliant.</li> </ul> <p>The study advises that if both cable routes that cross use the same power transmission technology, i.e. AC and AC or DC and DC, the fields can combine to add or subtract from one another. However, if different technologies are used, i.e. AC and DC, the magnetic fields do not interact with one another. In that scenario, the installations of the HVAC and HVDC cables can be considered separately. It is noted that this summary report is available for download from both Orsted and Vattenfall corporate websites as well as being attached as Appendix 19 Vattenfall and Ørsted Circuit Crossings- EMF Information Sheet to the Applicant's response to Deadline 1.</p>
Q1.12.12	Applicant	Table 8.16 of the ES [APP-080] appears to be missing some text. The rows for 'Minor' and 'Negligible' magnitude of impact of the 'BS 4142 Semantic Description' column appear to have been amalgamated.	<p>The Applicant would clarify that the BS4142 Semantic Description "<i>Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context</i>" should apply to the negligible magnitude of impact alone. The Applicant notes that the text currently applied to the moderate magnitude of impact (i.e. "<i>A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.</i>") should be applied to both moderate and minor magnitude of impacts. This error has been corrected in Annex to Ex. A WQ 1.12.12 and Appendix 18 to the Applicant's response to Deadline 1 which provides Errata to the Application.</p>

## 1.16 Written Question 1.13 Content of the DCO

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.2	Applicant	<p>The dDCO [APP-027] includes two Deemed Marine Licenses (DML), one for generation and one for transmission assets. Some previous DCOs for offshore windfarms where phased development was envisaged, (East Anglia Three for example), have included separate DMLs for each phase.</p> <p>What is the justification for taking a different approach here?</p>	<p>The Applicant is of the view that having separate licences can be beneficial where from the outset the NSIP is sub-divided into one or more projects, with more than one undertaker responsible for each project (for example on Hornsea Two Offshore Wind Farm Order 2016, where two undertakers are named). That approach can avoid the need for transfer of benefit in the future provided the number of undertakers and sub-division of projects doesn't change.</p> <p>However, for Hornsea Three it is proposed that there will be one undertaker responsible for the whole project and the phasing strategy will be determined closer to the point of construction (hence a single DML for each of the generation and transmission assets). If this changed, there is nothing in law to prevent the sub-division of the DMLs in accordance with Article 5 of the draft DCO (Benefit of the Order). There is no need to further sub-divide the DMLs at this stage.</p>
Q1.13.3	Applicant, Norfolk Vanguard Limited	<p>The onshore cable route proposed as part of the Norfolk Vanguard project would cross the Hornsea Project Three cable route near Reepham.</p> <p>A) What assessment has been carried out of the engineering requirements for the cable crossing, such as to demonstrate that the works could be carried out satisfactorily within the Order limits?</p>	<p>The Applicant is currently in on-going discussions with Norfolk Vanguard Limited, the applicant for the Norfolk Vanguard project, with the aim of reaching a commercial agreement to manage the co-existence of the projects.</p> <p>As part of this agreement, the parties will agree a mechanism to determine the method and design at the point of crossing incorporating the principle that one project would install using open cut, and one through HDD.</p> <p>Should Hornsea Three install using HDD, there is a need for a corridor wider than the typical 80m width provided for along the onshore export cable corridor at this location to accommodate the works. This accords with the approach adopted at some of the other technically complex HDD crossings along the Hornsea Three onshore cable corridor route.</p> <p>The width at this crossing point has been determined based on professional experience drawn from previous offshore wind export cable installation campaigns by the Applicant (Hornsea Three) and is reflected in the relevant Land Plan (onshore) (Sheet 16 of 35 of APP-011) and Work Plans (Sheet 16 of 35 of APP-013).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>B) How would the powers sought by Norfolk Vanguard Limited interact with those sought by the Applicant?</p> <p>C) Should the Order include protective provisions in respect of Norfolk Vanguard Limited?</p>	<p>As set out in Volume 1, Chapter 3: Project Description of the Environmental Statement [APP-058], detailed ground investigations will be undertaken should HDD be proposed to determine geotechnical data and thermal resistivity properties of the soil to assist with detailed cable route design. Notwithstanding this, the Applicant is confident the works can be carried out within the Order Limits as set out in the Order Limits and Grid Coordinates Plan (Onshore) [APP-010].</p> <p>The Applicant and Norfolk Vanguard Limited consider that the powers sought by the Applicant and Norfolk Vanguard Limited in their respective DCOs can co-exist.</p> <p>The Applicant is currently in on-going discussions with Norfolk Vanguard Limited, the applicant for the Norfolk Vanguard project, with the aim of reaching a commercial agreement to manage the co-existence of the projects. The Applicant is engaging with Norfolk Vanguard to consider the approach to protective provisions for the Hornsea Three DCO.</p>
Q1.13.4	Applicant	<p>The second paragraph on page 3 of the dDCO [APP-027] includes the words 'which has made a report to the Secretary of State section 74(2) of the 2008'.</p> <p>Please review this sentence as it may have some words missing.</p>	<p>The Applicant has reviewed and in the draft DCO (Version 1, submitted for Deadline 1) the wording is amended as set out below (new words underlined):</p> <p><i>The application was examined by the Examining Authority, which has made a report to the Secretary of State <u>under</u> section 74(2) of the 2008 <u>Act</u>.</i></p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.5	Applicant	<p>The definition of 'commence' in Article 2 excludes offshore site preparation works. Consequently, 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.</p> <p>A) What is the justification for adopting a broader definition, (in relation to offshore works), than that used in comparable projects?</p> <p>B) How would pre-construction surveys be secured through the dDCO if boulder clearance and sandwave clearance would not amount to commencement?</p>	<p>A) The Applicant has considered the representations of the MMO and Natural England on this point has removed the wording "<i>offshore site preparation works</i>" from this definition in Article 2 the draft DCO (Version 1, submitted for Deadline 1).</p>
			<p>B) As per previous answer, the Applicant has removed reference to "offshore site preparation works" from this definition.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.6	Applicant	<p>The Explanatory Memorandum [APP-028], commenting on the definition of 'commence', draws attention to a Correction Order made by the Secretary of State in relation to the A160 - A180 Port of Immingham Improvement Development Consent Order 2015. This Order gave consent for onshore highways works.</p> <p>What relevance does this have in relation to the offshore elements of the current application?</p>	As stated in response to Q1.13.5, the Applicant has removed the " <i>offshore site preparation works</i> " from this definition.
Q1.13.7	Applicant	<p>The definition of 'commence' in Article 2 refers to 'site preparation works' in respect of the onshore works. Should this refer to 'onshore site preparation works' as this is a defined term in the dDCO?</p>	Yes. An appropriate amendment has been made to this definition in the draft DCO (Version 1, submitted for Deadline1)

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.8	Applicant, Broadland District Council (BDC), North Norfolk District Council (NNDC), South Norfolk Council (SNC)	<p>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.</p> <p>A) What is the justification for excluding site clearance and demolition from the definition of 'commence' in the particular circumstances of this application?</p> <p>B) How would pre-construction surveys be secured through the dDCO if site clearance would not amount to commencement?</p> <p>C) How would Requirement 16, relating to archaeological investigations, operate if those investigations were themselves excluded from the definition of commencement?</p>	<p>A) Site preparation works including site clearance and demolition will be required prior to the commencement of the works for multiple reasons including, but not limited to:</p> <p>Ahead of site clearance works, pre-construction surveys may need to be undertaken (as specified in the Outline Ecological Management Plan [APP-180]). These ecological surveys are required to be undertaken at specific times of year and therefore, to allow the commencement of construction works outside of this optimum 'survey period', the surveys and subsequent site clearance works may need to be undertaken in the preceding year.</p> <p>Specifically regarding demolition, the Applicant has reviewed the position and will remove this from the definition of onshore site preparation works in the draft DCO (Version 1, submitted for Deadline 1).</p> <p>B) 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.</p> <p>C) The Applicant has reviewed and amended the wording of Requirement 16 and in the draft DCO (Version 1, submitted for Deadline 1) as set out below (new words underlined):</p> <p><i>16(1) No phase of the connection works may commence until for that phase a written scheme of archaeological investigation for Work Nos. 6 to 15 has been submitted to and approved by the relevant planning authority.</i></p> <p><i><u>(2) The term commence as used in requirement 16(1) only shall include any onshore site preparation works.</u></i></p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.9	Applicant, BDC, NNDC, SNC	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.	A) The Applicant considers that this approach provides more flexibility to undertake these activities without the need to trigger the various pre-commencement requirements in the DCO. Many of the activities in question will be undertaken in parallel with work to discharge these requirements, and as such this also helps the Applicant to shorten its timetable. Whilst the Applicant recognises that the Hornsea Two Offshore Wind Farm Order 2016 was more limited in this regard, since that DCO was granted, the Applicant has gained more experience of constructing offshore wind farms under DCOs (including the Hornsea One Offshore Wind Farm ) and therefore has a better practical understanding of works that may be required in the pre-construction stage. Additionally, the Applicant notes that other offshore wind farm orders have adopted wording which mirrors that in the draft DCO, including the East Anglia Offshore Wind Farm Order 2017, the Dogger Bank Teesside A and B Offshore Wind Farm Order 2015, and the Dogger Bank Creyke Beck Order 2015.
		<p>A) What is the justification for adopting a broader definition in this case?</p> <p>B) How would relevant mitigation measures 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?</p>	B) 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.
Q1.13.10	Applicant	The definition of 'intrusive activities' in Article 2 includes the words 'but not limited to'.	A) The draft DCO states under the definition of intrusive activities in Article 2 that " <i>intrusive activities means activities including but not limited to anchoring of vessels, jacking up of vessels, depositing soil and seabed clearance</i> ". It is the Applicant's position that no intrusive activities in addition to those stated are envisaged. The language "but not limited to" is to provide for flexibility should any additional activities be required that are not listed in this definition.
		<p>A) What other activities are envisaged?</p> <p>B) Have any other activities been assessed in the ES?</p>	B) As stated above the Applicant's position is that no intrusive activities in addition to those stated are envisaged and therefore no additional intrusive activities have been assessed in the ES.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.11	Applicant	The term 'maintain' in Article 2 includes 'remove, reconstruct and replace'. Some previous orders have used similar wording but have been qualified to the effect that replacement would only be in relation to a component part of a wind turbine generator, offshore substation or accommodation platform.	A) The Applicant assumes that the Examining Authority's concern relates to the undertaker's ability to repower the project without a further consent.
		A) What is the justification for adopting a broader definition in this case?	The Applicant would firstly highlight that the wording in the definition of "maintain" is constrained by the wording " <i>to the extent assessed in the environmental statement</i> ". No such repowering is captured in the environmental statement. Therefore, wider activities such as wholesale replacement of the wind farm turbine array could not occur and no further qualification of the definition is necessary.
		B) Please provide some illustrative examples of what 'remove, reconstruct and replace' might entail.	B) The Applicant would advise that it is not intended that such wording would include replacement of the turbines and their foundations as a whole.
		C) What works might be included if 'repowering' became necessary?	C) See above.
Q1.13.12	Applicant	The definition of 'the Order limits' in Article 2 includes the words 'within which the authorised project may be carried out'. Planning Inspectorate Advice Note 3 advises that 'may' should be avoided in DCOs to avoid ambiguity.  Please review the drafting of this definition.	The Applicant notes PINS Advice note 15 states that the term "may" could create ambiguity. However, the Applicant considers that this is not the case in the provision highlighted. The Applicant notes that this term is used regularly in previous granted DCOs and the model provisions, and considers this to be a legal term, not intended to give ambiguity, rather denoting that the undertaker has the power to undertake the act but not an obligation.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.13	Applicant	<p>The definition of 'pontoon gravity base 1 foundation' in Article 2 includes the words 'and either'. These words seem unnecessary and inconsistent with the subsequent definition of 'pontoon gravity base 2 foundation'.</p> <p>Please review the drafting of this definition.</p>	<p>The Applicant notes this comment and has removed this wording from the draft DCO (Version 1, Deadline 1).</p>
Q1.13.14	Applicant	<p>The arrangements for seeking the consent of the Secretary of State to transfer the benefit of the Order include provision for arbitration (Article 5(6)). The Explanatory Memorandum [APP-028] states that this approach is unprecedented but has been developed on the basis of experience on other projects and is required to provide certainty.</p> <p>A) What is the evidential basis for the suggestion that arbitration is necessary?</p> <p>B) Please provide legal submissions on the lawfulness of seeking to impose an arbitration procedure which would appear to fetter the discretion of the Secretary of State.</p>	<p>A) The approach of prescribing the process for arbitration (see Schedule 13 dDCO) is novel, but the principle of the Secretary of State being subject to arbitration in the event of disagreement/dispute, as per other parties to a DCO, is not. The model provision, which has been adopted in other made DCOs applies to all parties and disputes. The Hornsea Three dDCO simply makes that clearer and has prescribed a process for parties to follow in the event of a dispute.</p> <p>With specific regard to the transfer of benefit (ToB) provisions, both PINS and BEIS will be aware that there is currently no statutory or other formal process in relation to an application to the Secretary of State to transfer the benefit of a DCO, nor is there any appeal mechanism. In the absence of such provision the only alternative would be judicial review, which for the reasons set out below, is unsatisfactory and could reasonably be expected to delay or otherwise prejudice an NSIP being realised.</p> <p>The Applicant is of the view that having the ability to defer either refusal of a transfer or non-determination to arbitration is in line with Planning Inspectorate Advice Note 15 Good Practice Note 3 which states:</p> <p><i>"It is recommended that a mechanism for dealing with any disagreement between the Applicant and the discharging authority is defined and incorporated in a draft DCO Schedule. For example, including arrangements for when the</i></p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>C) Why it is considered necessary to apply an arbitration procedure when any decision of the Secretary of State could be challenged by way of Judicial Review?</p> <p>D) If an arbitration procedure were to apply, how could the Secretary of State be satisfied, at the time of making the Order, that the rights of those persons subject to Compulsory Acquisition would be sufficiently protected upon any transfer of the benefit of Compulsory Acquisition provisions?</p>	<p><i>discharging authority refuse an application made pursuant to a DCO Requirement, or approve it subject to conditions or fail to issue a decision within a prescribed period."</i></p> <p>B) Section 120 of the Planning Act 2008 prescribes what may be included in a DCO and includes those matters listed in Part 1 of Schedule 5. Paragraph 37 of Schedule 5 prescribes "<i>The submission of disputes to arbitration</i>".</p> <p>That reference is not qualified at all. It does not limit or exclude any party to the dispute in question. There is nothing in the Planning Act 2008 or other legislation that has limited the application of para 37, or otherwise serves to exclude the SoS from arbitration.</p> <p>It is conceivable that, in general, a dispute arising from a DCO may include a dispute between the undertaker and SoS, for example, on a matter of a technical nature that is beyond the everyday expertise and experience of that regulator. In those circumstances it is entirely appropriate for the matter to be determined by an appropriately qualified expert arbitrator.</p> <p>There would be no fettering of the discretion of the SoS because the procedure set out in Schedule 13 of the draft DCO makes provision for all parties to the dispute to engage in the appointment of the arbitrator, make submissions to the arbitrator, and for the exchange of evidence. Therefore, the appointed arbitrator would necessarily have regard to the submissions and standing of the SoS when considering and determining the dispute. The possibility that the arbitrator may arrive at a different conclusion on the evidence than that of the SoS would not amount to fettering of discretion, but would provide swift and effective dispute resolution in accordance with well-established principles of natural justice, which does not exist in DCOs made to date.</p> <p>A typical example of arbitration provisions previously endorsed by the SoS can be found in Article 41 of the Hornsea Two Offshore Wind Order 2016, which states: "<i>Any difference under any provision of this Order, unless otherwise provided for, must be referred to and settled by a single arbitrator to be agreed between the parties or, failing</i></p>

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			<p><i>agreement, to be appointed on the application of either party (after giving notice in writing to the other) by the Secretary of State".</i></p> <p>Identical provisions exist in other offshore wind farm DCOs granted since the PA08 came in to force. There is nothing in those provisions that limits or excludes any party to the dispute in question. In other words the SoS could well be a party to a dispute determined by arbitration under those made DCOs, if an undertaker or other party chose to take that action.</p> <p>The SoS has previously considered whether a public body, Natural England, should be a party to arbitration provisions in a DCO. In respect of both the Triton Knoll Offshore Wind Farm Order 2013 and the Burbo Bank Extension Offshore Wind Farm Order 2014, in relation to which Natural England submitted that it should be excluded from those provisions on the basis that the exercise of NE's statutory powers should not be subject to arbitration. In both cases, the SoS did not agree.</p> <p>At para 7.3 of the Triton Knoll decision letter the SoS states: <i>"The Panel also asked the Secretary of State to consider whether SNCBs should be removed from the provisions for arbitration covered by Article 12 of the draft Order at Appendix E (headed "Arbitration") [ER 5.11.20]. To maintain consistency with other offshore wind farms approved under the Planning Act 2008 since the close of the Panel's Examination, the Secretary of State has decided that the arbitration provisions should apply to SNCBs and has therefore modified the article in the Order accordingly."</i></p> <p>The outcome in Triton Knoll was noted by the ExA in its report on Burbo (as noted in para 7.45 and 7.46 of the Report): <i>"This draft article provides for the appointment of an arbitrator if a dispute arises in respect of any provision of the DCO. Early draft DCOs excluded NE from the operation of the provision, pursuant to an opinion provided by NE to the Triton Knoll Offshore Wind Farm Examining Authority that the exercise of its statutory powers should not be subject to arbitration and should only be adjudicated upon by the court. However, the Secretary of State in the Triton Knoll decision decided not to exclude NE from the arbitration provision in that DCO, on the basis that all issues and parties should be equally subject to arbitration on the same basis. I proposed to delete the exclusion of NE from the arbitration provision in my draft DCO. The applicant and NE did not object to this revision which was sustained in the</i></p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p><i>applicant's draft DCO Version 6 [APP-099]. I am content with the current drafting of this article."</i> The SoS endorsed the ExA's conclusion in the made Order.</p> <p>Therefore, Examining Authorities and the SoS have already opined on this point as highlighted above and concluded that <i>"all issues and parties should be equally subject to arbitration on the same basis"</i>.</p> <p>Those arbitration provisions in made DCOs are silent on how the arbitration should be put into effect. For example, no provision is made for the appointment of the arbitrator, the terms of reference for the arbitrator, the exchange of evidence, or a determination period. This means that if a party wished to refer a matter to arbitration under those existing DCOs, there is no procedure for doing so, which could render the provision ineffective.</p> <p>It is for the above reasons that the Applicant believes that the expanded arbitration provisions in the draft DCO would provide greater certainty to all parties potentially involved in a dispute under the DCO, not just in relation to the SoS in terms of Article 5. The Applicant has clarified that those parties may include the SoS and clearly set out a process for the arbitration to follow.</p> <p>Objectively, this clarity must be an improvement over the arbitration provisions included in DCOs to date. The applicant notes that the arbitration provisions in the Hornsea Three dDCO have been adopted in their entirety in Vattenfall Wind Power Limited's applications for DCOs in respect of the Norfolk Vanguard Offshore Wind Farm (PINS Ref: EN010079) and the Thanet Extension Offshore Wind Farm (PINS Ref: EN010084). The same provisions were also accepted (without challenge) into the Examination of The Millbrook Power (Gas Fired Power Station) Order which closed on 13 September 2018 (PINS Ref: EN010068).</p>

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			<p>C) The Applicant considers that the option to resort to judicial review does not provide for an expeditious alternative mechanism for dispute resolution.</p> <p>Indeed, years can be consumed following that procedure, which an NSIP developer can ill-afford to follow, given the Agreement for Lease and Contract for Difference milestones it is subject to. There is also a substantial cost involved in pursuing litigation firstly in the High Court and potentially thereafter in an appeal. This would result in increased costs and prejudices the common objective of the industry and Government to reduce the cost of energy, whilst achieving decarbonisation and security of energy supply.</p> <p>The timescales referred to in the arbitration provisions (and the discharge of conditions in the DMLs) have been adopted from the Town and Country Planning Act 1990 (TCPA), e.g. determination in 8 weeks, and are designed to provide for an expeditious procedure in a regime which currently makes no provision for process, determination periods or appeal.</p> <p>The TCPA also provides for appeals for non-determination to be made after the statutory time limit has expired. The applicant considers that it is fair to have a similar provision in relation to DCO, with associated reference to arbitration.</p> <p>D) The requirements of Articles 5(8)(b) and 5(10) are relevant to this question:</p> <p>(a) pursuant to Article 5(8)(b) no SoS consent is required in the circumstances prescribed in (i)-(v), e.g. time limits for a CA claim have expired, no claim made, claim has been determined; or</p> <p>(b) when SoS consent is applied for, Article 5(10)(a)(v) requires confirmation of the availability and adequacy of funds for compensation associated with the compulsory acquisition of the Order land. If the SoS (or any other party) had concerns about the ability of the transferee to meet any CA compensation claim, or otherwise respect the rights of</p>

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			affected parties, submissions could be made to the arbitrator. The arbitrator would have regard to those submissions and any evidence to support or counter them when determining the dispute under the provisions of Schedule 13.
Q1.13.15	Applicant	Should Article 5(2) be amended to include reference to 5(7) such that it would read:  Where an agreement has been made in accordance with paragraph (1) references in this Order to the undertaker, except in paragraphs (5), (7) and (9), shall include references to the transferee or lessee?	The Applicant agrees and has amended the draft DCO (Version 1, submitted for Deadline 1) to reflect this change.
Q1.13.16	Applicant, 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.	<p>The Applicant notes that it is common to many offshore wind DCOs for the transferee of a DML to have no ongoing obligations, such as the Walney Extension Offshore Wind Farm Order 2014 (as amended), the Hornsea Two Offshore Wind Order 2016 and the East Anglia Three Offshore Wind Farm Order 2017.</p> <p>Therefore, it has been accepted by several Examining Authorities and the SoS that once the ownership of the transmission assets has been transferred to an OFTO under the statutory regime, along with the related benefit of the DCO/DML, it is reasonable for liability for those assets to reside exclusively with the OFTO.</p> <p>This is reasonable because once ownership of those assets has transferred the generator no longer has control over them and so cannot and should not be liable for them. The balance of provisions in Article 5 state that the obligations under the DMLs transfer to the transferee and so the DML conditions would be enforceable by the MMO against the transferee as if it were the transferor. In addition, and without prejudice to that position, it should be noted that the MMO has a suite of enforcement powers under the MCAA 2009 available to it in respect of any unlawful activity carried out by the transferee. Therefore, as concluded by the ExAs and SoS in respect of the many offshore wind DCOs to date, the ExA here can be confident that the enforcement powers of the MMO are not prejudiced by Article 5(7).</p> <p>Given that this point, and related substantive legal submissions, that have been considered at length by several ExAs and the SoS, and DCOs have been granted making provision for the allocation of liability for enforcement, it is very</p>



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			disappointing that the MMO has raised this point again. The ExA is asked whether it is reasonable for the MMO to do so having regard to this matter having been settled in the past. There is nothing to distinguish Hornsea Three from those past and very recent DCOs in this regard. Therefore, the Applicant submits that it would be unreasonable for it to have to incur costs responding to submissions in this regard.
Q1.13.17	Applicant	<p>Where a transfer of the benefit of the Order takes place Article 5(11) provides for a notice period of 5 days. This seems to be a rather short period.</p> <p>What is the justification for the notice period proposed in Article 5(11)?</p>	<p>The Applicant considers five days' notice to be reasonable where the undertaker is notifying the SoS of the date on which a transfer is to take effect and this is based on discussions between the Applicant's legal advisers and BEIS in relation to the ToB of other DCOs.</p> <p>Article 5(9) relates to a situation either where the SoS has already consented to the transfer, or the undertaker does not require SoS consent (e.g. where the transferee is a licensee under the Electricity Act 1989). Therefore, the SoS does not have to take any action, and the notification is for information only.</p> <p>In answering this question, the Applicant has noticed the need for an amendment to Article 5(11) so that the five day notice does not apply to Article 5(3). Article 5(11) should be amended as follows:</p> <p>(11) The date specified under paragraph (10)(a)(ii) in respect of a notice served in respect of paragraph (3) must not be earlier than the expiry of five days from the date of the receipt of the notice.</p>
Q1.13.18	Applicant	Article 6 would dis-apply provisions of the Neighbourhood Planning Act 2017 relating to the temporary possession of land which may come into force during the course of the examination. There are elements of the Neighbourhood Planning Act 2017 regime that are fixed by the statute itself, for	The Applicant's rationale for this is that the provisions relating to temporary possession in the Neighbourhood Planning Act 2017 have not yet come into force and that regulations required to provide more detail on the operation of the regime have not yet been made (or even consulted on). The Applicant is of the view that it is not currently possible to understand or reflect accurately the temporary possession provisions as intended by Government in respect of DCOs. For example, whilst the notice period is set out in section 20(3) of the Neighbourhood Planning Act 2017, it is not yet known whether this particular provision will apply to DCOs or whether there will be any transitional arrangements.

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		<p>example a notice period before possession is taken and a requirement for notices to identify the period of temporary possession.</p> <p>Can the applicant justify why such elements are not appropriate in this case?</p>	<p>As such, it is considered appropriate to apply the 'tried and tested' temporary possession regime which has been included in numerous DCOs and Orders made under the Transport and Works Act 1992 to date until the relevant provisions in the Neighbourhood Planning Act 2017 come into force.</p> <p>A similar provision was included, for the reasons outlined above, in the Silvertown Tunnel Order 2018 (see Article 3(1)(p)), the Eggborough Gas Fired Generating Station Order 2018 (see Article 26(12)) and the A19/A184 Testo's Junction Alteration Development Consent Order 2018 (see Article 2(7)).</p> <p>The Applicant notes that there are no residential properties within the Order land and therefore considers that 14 day notice period set out in Article 25 of the draft DCO remains appropriate.</p>
Q1.13.19	Applicant	<p>Article 7, which would provide a defence to proceedings in respect of statutory nuisance, is a model provision. Nevertheless, National Policy Statement EN-1 states that the decision maker should have regard to whether any particular nuisance is an inevitable consequence of the project (paragraph 4.14.3).</p> <p>Having regard to the mitigation measures described in the ES, what is/are the potential nuisance(s) that would be an inevitable consequence of the construction, operation or decommissioning of the project?</p>	<p>As set out in the Statutory Nuisance Statement [APP-174] there is not predicted to be any statutory nuisance in accordance with section 79(1) of the Environmental Protection Act 1990 arising from the Hornsea Three project during the construction, operation or decommissioning phases of the project.</p>

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Q1.13.20	Applicant	Article 10 distinguishes between 'any street' (at 10(1)) and the streets which are set out in Schedule 4 (at 10(4)). However, Schedule 4 appears to include all streets within the Order limits. Please provide further explanation of the drafting of Article 10, with particular regard to why it distinguishes between 'any street' and the streets set out in Schedule 4.	<p>The wording highlighted by the Examining Authority permits the temporary stopping up of streets, as set out in Article 10(1), however, the effect of Article 10(4) is that for those streets where the Applicant is already aware that it will require to be temporarily stopped up, it is able to provide details of the extents of these for the benefit of relevant third parties by reference to the schedule and the Public Rights of Way Plan [APP-016].</p> <p>The Applicant would point out that the clause as drafted features in previous offshore wind farm orders including: The Hornsea One Offshore Wind Farm Order 2014; Walney Extension Offshore Wind Farm Order 2014; The Dogger Bank Creyke Beck Offshore Wind Farm Order 2015; The Dogger Bank Teeside A and B Offshore Wind Farm Order 2015; and The Hornsea Two Offshore Wind Farm Order 2016. In addition, the wording highlighted by the Examining Authority matches that provided within the Model Provisions.</p>
Q1.13.22	Applicant	<p>Article 11 provides for the temporary stopping up of public rights of way. The ES [APP-058] states that there may be a gap in construction of up to 3 years.</p> <p>A) Is it envisaged that public rights of way would be reopened if there was a significant gap in construction?</p> <p>B) Does the drafting of this article adequately reflect the potential for phased implementation?</p>	<p>A) To provide context to the Applicant's response, the Applicant would note that the Outline Code of Construction Practice [APP-179] (paragraph 6.8.1.10) specifies that where a PRoW crosses the onshore cable corridor the contractor is to either: seek to maintain a pedestrian access or provide a localised diversion. In this regard it is envisaged that the temporary stopping up of public rights of way provided for in Article 11 would only be implemented in an unexpected event where to maintain access along the existing route, or diversion would present a health and safety concern. As such any stopping up of the public rights of way would be short term (days at most). The Applicant proposes the following change to paragraph 6.8.1.18 to clarify this point (new text show in underline):</p> <p><i>Paragraph 6.8.1.18 – "PRoW affected during the construction phase of the works would be crossed by either HDD or by open trench. When HDD is utilised, the PRoW would remain open during the duration of construction. Where open trenching is used to cross PRoW, the routes would either be <del>temporarily stopped up</del>/diverted or traffic management measures would be put in place in some locations to maintain access. Where such measures cross a bridleway, all material used would be suitable for use by horses. <u>Temporary stopping up of PRoW would only occur in unexpected events where to maintain access along the existing route, or diversion would present a health and safety concern.</u>"</i></p> <p>On the basis of the above, the Applicant would confirm that no PRoW will be stopped up for the duration of the onshore construction works, with temporary being a matter of days in this instance.</p>

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			<p>Notwithstanding this, the Applicant has amended paragraph 6.8.1.17 of the Outline CoCP to provide clarity on the management of PRoW should the project be construction in two phases (new text shown in underline):</p> <p><i>Paragraph 6.8.1.17 "Following completion of construction activities <u>for a given phase</u>, all public access within the working area (PRoWs) will be <u>returned to their original alignment (if appropriate) and/or reinstated with a standard commensurate to that existing prior to the commencement of construction works unless otherwise agreed with the local planning authority.</u>"</i></p> <p>As noted in paragraph 1.1.1.6 of the Outline CoCP, if construction is to be undertaken in two phases, the works in the first phase will be left in a safe state as agreed with relevant local authorities.</p>
			B) The Applicant considers the drafting of Article 11 of the draft DCO (APP-027) is adequate relating to phasing.
Q1.13.25	Applicant	<p>Article 17(1) states that the undertaker 'may acquire compulsorily so much of the Order land as is required for the authorised project, or to facilitate, or is incidental, to it. Use of 'may' is discouraged in DCO drafting.</p> <p>Please review the drafting of this article.</p>	<p>As per the Applicant's answer to Q1.13.12, it is of the view that the language used here is appropriate. The Applicant would be happy to review this if the Examining Authority could provide the reference to the guidance referred to.</p>

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Q1.13.26	Applicant	<p>Article 18 provides for the time limit for the exercise of compulsory acquisition powers to be 7 years. The Explanatory Memorandum [APP-028] states that this period is necessary due to the complexity and scale of the project. Whilst there are examples of a period of 7 years (Dogger Bank Teesside A and B) other projects, such as Hornsea Project Two and East Anglia Three have a time limit of 5 years. Paragraph 3.8.1.1 of the ES [APP-058] states that, in this case, construction is expected to begin in 2021.</p> <p>Please provide further justification for the proposed 7 year time limit.</p>	<p>Similar to Dogger Bank Teesside A and B DCO which has secured a seven year consent time limit, Hornsea Three is one of the largest, and furthest offshore Round 3 offshore windfarms to come forward through the consenting phase (and therefore one of the planned largest and further offshore wind farms to be promoted in the world).</p> <p>The application of a consent time limit is interlinked with the UK government's stated policy objective to support the development of a domestic offshore wind industry which delivers renewable energy at a reducing cost to the UK consumer through competitive market mechanisms. The applicant strongly supports this policy and recognises the value that vigorous competition between offshore developers and within the offshore supply chain brings to the wider industry and to the UK consumer. Within the Hornsea offshore wind zone alone, continual development of the supply and offshore construction industry, incentivised by the competitive allocation of price support contracts, has delivered reductions in the cost of energy from £140/MWh for Hornsea Project 1 to £57.50/MWh for Hornsea Project 2 between 2015 and 2017 respectively.</p> <p>Within this context, there are a number of benefits which an award of seven years consent would offer, including: -</p> <ul style="list-style-type: none"> <li>- maximising the ability to bring forward strong, viable projects;</li> <li>- broaden the ability for a wider WTG supplier offer. Currently two main WTG suppliers (Siemens and MHI Vestas) are prevalent in the UK offshore market, with the preceding years this may expand to include new widely large-scale commercially available suppliers into the market (such as GE and Samsung), helping to increase competition within the WTG market place, driving costs down and strengthening the ability for WTG suppliers to deliver up to 4GW over two CfD delivery years (or under a non-capped CfD scenario, delivery of a higher total capacity of consented projects further supported by additional generation capacity) potentially deliverable from Hornsea Project Three and other projects in the advanced stages of consenting.</li> <li>- broaden the ability for the supply chain to make use and drive the expansion of key supporting suppliers, this includes installation vessels, foundations suppliers, offshore substations, HVAC booster stations and turbine suppliers.</li> </ul>

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			<ul style="list-style-type: none"> <li>- broaden the ability for the supply chain to be able to draw on HVDC technology, utilise challenges faced through limited suppliers and longer lead in times.</li> </ul> <p>Since the DCO application was submitted, the CfD delivery mechanism has received further clarity in July 2018 from the Energy minister Claire Perry, who advised that:</p> <ul style="list-style-type: none"> <li>(a) the next CfD allocation round will be held in May 2019 (with successful auction round announcements anticipated to be made in summer 2019);</li> <li>(b) a subsequent allocation round in 2021; and</li> <li>(c) further auctions "around every two years".</li> </ul> <p>Nonetheless, there remain key elements of the CfD tender framework yet to be announced, including the total budget for each tender, with Central government noting that <i>"depending on the price achieved, these auctions will deliver between 1GW and 2GW of offshore wind each year in the 2020s"</i>. These elements have some influence over the optimum (in terms of cost and price of energy) time to develop the project.</p> <p>The Applicant remains confident of the viability and feasibility of Hornsea Three and the deliverability of it in good time. However, for the reasons set above, if the implementation period is set at 7 years, this would offer advantages to the energy consumer including development of increased clean generation cost efficiently and further progress towards subsidy free generation.</p>

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Q1.13.27	Applicant	<p>Schedule 6 of the dDCO gives details of the rights and covenants you seek for various plots of land. However, Article 19(1) as currently drafted would permit the creation of new rights and the imposition of restrictive covenants over all of the Order land, as shown on the Onshore Land Plan [APP-011] and described in the Book of Reference [APP-033].</p> <p>A) If this is your intention, please provide details of the new rights and restrictive covenants you seek to compulsorily acquire in the rest of the Order land not already shown in Schedule 6.</p> <p>B) Article 19(1) would also permit the compulsory acquisition of existing rights. Do you intend to acquire any existing rights compulsorily?</p>	<p>A) The plots listed in Schedule 6 include land over which only new rights and restrictive covenants are being sought. Article 19(2) of the draft DCO does not permit the acquisition of the freehold of the plots listed in Schedule 6.</p> <p>Article 19(1) enables the Applicant to compulsorily acquire new rights (and impose restrictive covenants) over land where the freehold can be compulsorily acquired. Such land is shown coloured pink on the Land Plan – Onshore [APP-011]. The purpose of this provision is to enable the Applicant to take a right instead of freehold where appropriate to do so. This ensures that the minimum amount of land is acquired. For example, the final design of the onshore booster station may have a slightly smaller footprint than the maximum design parameters applied for. In this scenario, the Applicant would not need to compulsorily acquire the whole of plot 9-012 (as shown on the Land Plan – Onshore [APP-011] but would need to acquire new rights and impose restrictions over the remainder of plot 9-012 so as to be able to construct, use and maintain the onshore cables through that plot.</p> <p>The new rights and restrictive covenants must be required for the authorised project or to facilitate, or is incidental, to it (see Article 17(1)).</p> <p>B) The Applicant may need to acquire existing rights compulsorily in order to deliver Hornsea Three. The existing rights that the Applicant is aware of are listed in the Book of Reference [APP-033]. However, additional rights may be granted between the date of the submission of the Application and the commencement of the authorised project. In certain circumstances it may be more appropriate for the Applicant to acquire an existing right instead of imposing a new right.</p>

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Q1.13.28	Applicant	<p>Article 19(3) refers to paragraph 5 of Schedule 7.</p> <p>Please review and confirm whether this reference is correct.</p>	<p>This reference is incorrect and this reference has been removed from the draft DCO (Revision 1, submitted for Deadline 1).</p>
Q1.13.29	Applicant	<p>Article 21 applies the vesting procedures in the Compulsory Purchase (Vesting Declarations) Act 1981. Paragraph 5.39 of the Explanatory Memorandum [APP-028] states that the article has been updated to reflect changes brought about by the Housing and Planning Act 2016.</p> <p>Please explain the changes you propose in consequence of the Housing and Planning Act 2016.</p>	<p>Sections 182(2) and 202(2) of the Housing and Planning Act 2016 inserted new sections 5A and 5B in to the Compulsory Purchase (Vesting Declarations) Act 1981. These provisions relate to a time period of 3 years which is not consistent with the time period referred to in Article 18 of the draft DCO. Therefore there is a need to amend the Compulsory Purchase (Vesting Declarations) Act 1981 accordingly.</p>
Q1.13.30	Applicant	<p>Please explain how Article 23(4) would interact with the proposed amendments to the Compulsory Purchase Act 1965, as set out in Schedule 7.</p>	<p>The amendments set out in Schedule 7 specifically relate to the acquisition of new rights.</p> <p>Article 23(4) deals with the temporary possession of land and states that the provisions in Schedule 2A do not apply where entry onto to land is pursuant to Articles 25 or 26 of the draft DCO.</p>



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Q1.13.31	Applicant	<p>Article 25 provides for temporary use of land. The applicant has sought to retain the flexibility to construct the development in two phases with a gap in construction of up to 3 years. This may have implications for landowners in terms of the duration of any temporary possession. The drafting of Article 25(3) does not appear to address the potential for a gap in construction works.</p> <p>A) When would a decision on the approach to phasing be made and how would this be communicated to landowners?</p> <p>B) Is it envisaged that the undertaker would remain in possession of land used under Article 25 during any gap in construction?</p> <p>C) How would Article 25 (as drafted) limit any impacts on landowners in the event that the development was to be constructed in phases?</p> <p>D) Insofar as the design flexibility sought by the applicant has impacts on the use and enjoyment of land, how would those impacts be minimised and/or mitigated?</p>	<p>A) Requirement 6 of the draft DCO (Version 1, submitted for Deadline 1) requires a phasing scheme in relating to connection works to be submitted to the relevant planning authority prior to the commencement of the authorised development. This phasing scheme would set out whether a HVAC or HVDC transmission system would be used for each phase (if applicable). The Applicant will provide regular updates to landowners on the project generally, including on the HVAC or HVDC transmission decision and phasing, in accordance with the Communication Plan Framework at Appendix A of the Outline CoCP. Appendix (A1.1.3) will be amended to add:</p> <p><i>"The Newsletters (or appropriate alternate form such as a letter) will be issued to landowners to advise of the proposed phasing of the authorised project, the use of HVAC or HVDC transmission system to be used for that phase, land take and period of construction works and the details of the body responsible for carrying out those works."</i></p> <p>B) The Applicant does not anticipate remaining in temporary possession of the majority of the Order land during any "gap" in construction. However, this may be necessary in certain circumstances; for example, if the "gap" is likely to be a short timeframe or if mitigation measures need to be put in place. It may be less disruptive for the landowner for the Applicant to remain in possession than to remove all works and return a short period of time later.</p> <p>The Applicant refers to paragraph 4.1.6.2 of the Outline CoCP [APP-179] which states that if works are delivered in phases, temporary construction compounds and accesses will be removed on completion of construction work associated with that phase unless otherwise approved by the Local Planning Authority. Subsequently, this paragraph is proposed to be further amended to confirm that the land would be reinstated and so reading <i>"If works are delivered in phases, temporary construction compounds and accesses will be removed <b>and the land reinstated</b> on completion of construction work associated with that phase unless otherwise approved by the Local Planning Authority."</i> This is also captured in the Construction Traffic Management Plan, the outline of which, as amended for Deadline 1 [APP-176], states at paragraph 3.2.1.4 that accesses must be removed within 28 days of no longer being required for construction of Hornsea Three.</p> <p>At the main compound it is possible that the Applicant will remain in possession during a gap in construction if reasonably necessary.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>C) Article 25(3) states that the Applicant must not remain in possession of any land for longer than is reasonably necessary and what is necessary will depend on the approved phasing scheme.</p> <p>In the event that the Applicant does need to remain in temporary possession of part of the Order land then compensation is payable to the landowner pursuant to Article 25(5).</p>
			<p>D) The Applicant refers to section 6.8 of the Outline CoCP [APP-179] which sets out the measures that will be taken to minimise and/or mitigate any impacts on the use and enjoyment of land during construction.</p>
Q1.13.32	Applicant	<p>Article 34 would enable the removal of trees subject to tree preservation orders.</p> <p>Are there any trees subject to tree preservation orders within or adjacent to the Order limits and, if not, is this article necessary?</p>	<p>The Applicant would direct the Examining Authority towards the Tree Preservation Order and Hedgerow Plan [APP-021] which details the locations of Tree Preservation Orders near and within the Hornsea Three order limits. In particular, Sheets 3, 4 and 34 show overlaps with the order limits. Therefore, the Applicant considers that this article is necessary.</p>
Q1.13.33	Applicant	<p>Article 40, which deals with Crown rights, does not reflect recently approved drafting, for example in Article 37 of the East Anglia Three Offshore Wind Farm Order 2017.</p> <p>Please review this drafting in the light of recently approved examples.</p>	<p>The Applicant agrees with the ExA's observation. The drafting in the dDCO was specifically requested by TCE. Discussion between the Applicant and TCE is ongoing, but currently TCE has confirmed that Article 40 should remain as drafted.</p>
Q1.13.34	Applicant	<p>Article 42(4) would provide for a funding guarantee lasting for 15 years. An equivalent provision in the Hornsea Two Offshore Wind Farm Order 2016 provides for a period of 20 years.</p>	<p>The Applicant considers that 15 years is a sufficient period of time for an affected person to make a reference to the Upper Tribunal (Lands Chamber) in respect of a claim for compensation. The Applicant has taken into account the statutory limitation period for making such a reference of 6 years. This time period has been included in the Wrexham Gas Fired Generating Station Order 2017 and the Eggborough Gas Fired Generating Station Order 2018 where similar funding provisions were included.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		What is the justification for the period proposed in this application?	
Q1.13.35	Applicant	<p>Part 1, paragraph 1(a) refers to an output of 'over 100 megawatts'. The MMO [RR-085] states that the dDCO should define an upper generating output limit as part of the 'Rochdale Envelope' approach.</p> <p>A) Please provide further justification for the suggested approach.</p> <p>B) How can it be demonstrated that the suggested approach could not allow an increase in the anticipated generating output and greater impacts than those assessed in the ES?</p>	<p>A) and B)</p> <p>The Applicant interpreted the MMO's comment to be that the MMO would normally expect to see an upper limit on capacity, rather than one should be required. Nonetheless, please see the Applicant's response to the MMO's relevant representation:</p> <p>"Paragraph 2.10 of the Explanatory Memorandum explains why:</p> <p><i>"The description of Work No.1 does not refer to an upper limit on the capacity of the generating station that development consent is being sought for. It is not considered that imposing an upper limit is desirable or necessary. The DCO includes parameters in which the Authorised Project must be constructed and it is on this basis which the environmental impact assessment has been undertaken. There is no reason to limit the electrical output capacity of the Authorised Project provided the parameters of development are not exceeded. There are advantages in not imposing an upper limit so that the Undertaker can take advantage of technical advancements that emerge in the coming years in terms of wind turbine efficiency which would enable it to still construct the Authorised Project within the existing parameters but to increase capacity beyond that which is currently anticipated based on existing technology. It is currently anticipated, when completed, the Authorised Project will have a total capacity of approximately 2.4 GW. However, Orsted does not wish to limit the development to this capacity and this is the reason that the description of the NSIP in Schedule 1 has been adopted."</i></p> <p><i>The maximum output capacity of an offshore wind farm is irrelevant for the purposes of EIA and so does not need to be fixed or capped in the ES or draft Order."</i></p>

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			The approach taken accords with the Government's decarbonisation policy and objectives, by allowing capacity from this renewable energy project to be maximised by utilising new technology available at the time of construction, provided that falls within the parameters assessed in the ES. The parameters in the ES and captured in the Requirements and DML conditions are the appropriate means to control the environmental impacts of the project, not the maximum capacity. To achieve greater than the anticipated 2.4GW capacity would be a good thing and should not be prohibited by the DCO.
Q1.13.36	Applicant	<p>Table 3.57 of the ES [APP-058] refers to 440 joint bays. These do not appear to be referred to in Part 1 of Schedule 1.</p> <p>Please review whether joint boxes ought to be included in Part 1.</p>	<p>The Applicant has reviewed and amended the draft DCO (Version 1, submitted for Deadline 1) to add to Part 1 of Schedule 1:</p> <p><i>"d) up to 440 joint bays."</i></p> <p>The following has also been added to Article 2, Interpretation:</p> <p><i>"joint bay means the underground concrete pits in Work No 8 where the sections of onshore cable are jointed to one another"</i></p>
Q1.13.37	Applicant	Requirement 1 provides for the time limit for commencement to be 7 years. The Explanatory Memorandum [APP-028] states that this period is necessary due to the complexity and scale of the project. Whilst there is precedent for a period of 7 years (Dogger Bank Teeside A and B) other projects, such as Hornsea Project Two and East Anglia Three have a time limit of 5 years. Paragraph 3.8.1.1 of the ES [APP-058] states that, in this case, construction is expected to begin in 2021.	Please see response to Q1.13.26 above.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		Please provide further justification for the proposed 7 year time limit.	
Q1.13.38	Applicant	<p>The drafting of Requirement 2 assumes a scheme of either up to 160 wind turbine generators (WTG) or precisely 300 WTG.</p> <p>Does this drafting cover the range of possible combinations of WTG numbers, types and layouts that is contemplated in the application?</p>	<p>The Applicant agrees that Requirement 2 of the draft DCO needs to be amended and proposes the following revised draft Requirement:</p> <p><i>"Detailed offshore design parameters</i></p> <p>2.—(1) <i>The total number of wind turbine generators comprised in the authorised project must not exceed 300 and a total rotor swept area of 9km<sup>2</sup>.</i></p> <p>(2) <i>Subject to paragraph (3), each wind turbine generator forming part of the authorised project must not—</i></p> <ul style="list-style-type: none"> <li>a. <i>exceed a height of 325 metres when measured from LAT to the tip of the vertical blade;</i></li> <li>b. <i>exceed a rotor diameter of 265 metres;</i></li> <li>c. <i>be less than 34.97 metres from LAT to the lowest point of the rotating blade; and</i></li> <li>d. <i>be less than one kilometre from the nearest wind turbine generator in all directions.</i></li> </ul> <p>(3) <i>The reference in sub-paragraph (2)(d) to the location of a wind turbine generator is a reference to the centre point of that wind turbine generator."</i></p> <p>The limitations set out in this draft Requirement better reflect those parameters assessed in the ES. The Ornithology Chapter: Chapter 5 of the Environmental Statement (APP-065) assesses the potential collision risk on birds using a turbine scenario for which the parameters fall within the range proposed in the revised Requirement (See Table 5.8 (APP-065): the Maximum design scenario considered for the assessment of potential impacts on offshore ornithology).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.39	Applicant	Requirement 5 refers to 'cable systems'. Part 1 of Schedule 1 refers to 'cable circuits' which is a term defined in Article 2.  Is the difference intentional and, if it is, why is different terminology used?	The Applicant advises that this should refer to cable circuits and has made the necessary amendment in the draft DCO (Version 1, as submitted for Deadline 1).
Q1.13.40	Applicant	Requirement 6 refers to a scheme of phasing to be approved by the relevant planning authority (onshore) and the MMO (offshore). The ES [APP-058] assumes a maximum of 2 phases.  A) Does the drafting of this requirement adequately secure the approach to phasing assessed in the ES?  B) How would any difference of view between the MMO and a relevant planning authority and/or between adjoining relevant planning authorities be resolved?  C) How does this requirement take account of the needs of those whose land and rights are affected by the phasing of construction works?	A) The Applicant considers that the approach offers flexibility to the undertaker and the relevant planning authority, given that it has not determined presently whether it will construct the project in one or two phases. In addition, as details of the phasing will be set out in detail by way of a phasing plan, this also allows the undertaker to provide more explanation and detail, in dialogue with the relevant consultees on its proposals than would be possible with a simple DCO requirement to phase either one way or another.  This approach has been approved on previous DCOs, including the Dogger Bank Teeside A and B Offshore Wind Farm Order 2015, and the Dogger Bank Creyke Beck Order 2015 and the East Anglia Three Offshore Wind Farm Order 2017.  B) Established practice for previous offshore wind farms is that the MMO and LPAs are able to resolve any differences between them over time. However, the Applicant has included arbitration provisions in the draft DCO to assist in this regard.  C) Detailed consideration is given to such interests across the application documents, in particular in the Environmental Statement. This is set out for example in the Outline Code of Construction Practice [APP-179] (paragraph 1.1.1.6) which specifies that if construction is to be undertaken in two phases, the works in the first phase will be left in a safe state as agreed with relevant local authorities

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		D)How would the scheme of phasing be communicated to those whose land and rights are affected by the phasing of construction works?	<p>D) The Applicant has been, and remains in, regular contact with landowners to ensure that they are aware of how and when the authorised development would be anticipated to proceed, and the impact that this is likely to have on their property and rights.</p> <p>The Applicant refers to Appendix 22 Transmission System (HVAC/HVDC) Briefing Note in the Applicant's response to Deadline 1, which sets out when the Applicant anticipates making a decision on whether to use a HVAC or HVDC transmission system.</p>
Q1.13.41	Applicant	<p>Requirement 7(1) provides for design details relating to onshore booster/substations to be approved, including implementation timetables for all landscaping works.</p> <p>A) Does this drafting ensure that the details of the landscaping works would be subject to approval?</p> <p>B)Would 'relating to that work' provide greater certainty than 'relating to that element'?</p>	A) The detail of landscaping works is secured by Requirement 8 of the draft DCO (Version1, as submitted for Deadline 1), which requires a landscape management plan for each phase to be provided for approval before works commence on the relevant phase.
			B) Agreed – this wording has been amended in the draft DCO (Version 1, as submitted for Deadline1).
Q1.13.42	Applicant	<p>Requirement 8 provides for landscape management plans relating to phases of the connection works to be approved.</p> <p>A) Would it be appropriate to refer to the</p>	A) The Applicant considers that the present wording on this requirement is correct. As set out in the ES Volume 3, Chapter 3 (Ecology and Nature Conservation) [APP-075], and the Outline Landscape Management Plan [APP-181] the intention is that not only would the onshore substation and booster station will be included in the final Landscaping Plan, but also areas of hedgerow along the cable corridor. Therefore, it is more efficient to refer to phases rather than the work numbers that make up the onshore cable route.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		relevant Work numbers, consistent with Requirement 7?	B) The wording does allow for this, as it states that the works may not commence until the landscaping plan has "been submitted and approved by the relevant planning authority".
		B) Does this drafting ensure that the details of the landscaping works would be subject to approval?	C) Correct – for this and other requirements, the term “phase” is intended to refer to the phase of development approved as per Requirement 6.
		C) Are the phases referred to in this requirement the same as those to be approved under Requirement 6? If not, what is being referred to?	D) As per answer to C).
		D) Similar points in relation to references to phasing apply to Requirements 10, 12, 13, 16, 17, 18 and 19. Please comment in relation to those requirements as well.	
Q1.13.43	Applicant	Requirement 9 provides for implementation of landscaping.  Would the drafting be more precise if the appropriate British Standards were referred to explicitly?	The Applicant has not referred to these so as to mitigate for the situation arising where the British Standard has, by the time of discharge of the requirement, changed or is no longer extant. The landscaping scheme is required to be approved by the relevant planning authority. The planning authority should have regard to relevant standards applicable at the time details are submitted for approval.
Q1.13.44	Applicant	Requirement 11 provides for details of accesses (including access management measures) to be approved although such approval would not be needed if there were no construction or modification of an	The Applicant has amended this requirement in the draft DCO (version 1, as submitted for Deadline 1) so that approval is needed where there is no construction or modification to the access.



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		existing access.  Would this drafting adequately protect highway safety, for example if temporary traffic management were needed because construction traffic would be using an existing access with restricted visibility splays?	
Q1.13.45	Applicant	Requirement 15 provides for details of surface water drainage in relation to the HVAC booster station and HVDC/HVAC substation. Norfolk County Council (NCC) [RR-035] has proposed alternative, more detailed drafting.  A) Please comment on the drafting suggested by NCC.	A) NCC's proposed drafting differs in that it provides more detail on what should be in this scheme on the face of the requirement. The Applicant considers that the drafting of Requirement 15 is adequate as it provides a framework for agreement of detailed issues in a detailed surface water drainage scheme later, rather than limiting this to detail set out in the requirement. The Applicant can provide assurance of its intentions as it has engaged with NCC as lead local flood authority, and will continue to do so during the detailed design stage. Further, it has provided an outline Code of Construction Practice [APP-179] which provides that details of drainage to be secured under the final CoCP, and outline drainage strategies for the onshore HVAC booster substation and the onshore HVDC converter/HVAC substation have been prepared and are provided in Volume 6, Annex 2.1: Onshore Infrastructure FRAs [APP-124].
		B) In the Applicant's drafting, should 'and onshore HVAC booster station' be added after the second reference to HVDC/HVAC substation in (1) and the reference to HVDC/HVAC substation in (2)?	B) Yes, these have been added in the draft DCO (Version1, as submitted for Deadline 1).
		C) Should 'and' be inserted after 'Environment Agency' in (1)?	C) Yes, this has been added in the draft DCO (Version1, as submitted for Deadline 1).

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.46	Applicant, NCC, BDC, NNDC, SNC	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.	A) The Applicant has reviewed the suggested drafting provided and would prefer the current version of Requirement 16. This represents wording used in past granted DCOs, and also, as per the answer to Q1.13.45, allows a measure of flexibility as details of the WSI are not as prescriptive on the face of the requirement. The Applicant is currently in discussions with NCC over these requirements and hopes it will be able to agree these in this manner.
		A) Please can the applicant comment on the drafting suggested by NCC.  B) Which authority (or authorities) should be responsible for approving the scheme?	B) The Applicant believes this would be NCC.
Q1.13.47	Applicant	Requirement 17 provides for codes of construction practice to be approved for phases of the connection works by the relevant planning authority.	A) Should the CoCP relate to an area of more than one planning authority, the Applicant would seek approval of this document with both such authorities, with area specific points in a schedule to be approved by the respective authority. . It doesn't envisage practical problems in this regard.
		A) Would this create practical problems if a phase were to fall within more than one planning authority area?  B) Should the requirement include a clause to the effect that the works should be carried out in accordance with the approved codes of construction practice?	B) Yes. The Applicant has amended the draft DCO (Version 1, as submitted for Deadline 1) accordingly.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.48	Applicant	Requirement 18 provides for construction traffic management plans to be approved for phases of the connection works by the relevant planning authority.	A) See answer for Q1.13.47.
		A) Would this create practical problems if a phase were to fall within more than one planning authority area?	B) Yes. The Applicant has amended the draft DCO (Version 1, as submitted for Deadline 1) accordingly.
		B) Should the requirement include a clause to the effect that the works should be carried out in accordance with the approved construction traffic management plans?	C) The Applicant agrees and has amended the draft DCO (Version 1, as submitted for Deadline 1) accordingly to remove this.
Q1.13.49	Applicant	Requirement 19 relates to European Protected Species.  Should 'has been' be inserted in (2) before 'granted by Natural England'?	The Applicant considers that the current wording is clear.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.50	Applicant	<p>Requirement 20 relates to restoration of land used temporarily for construction.</p> <p>A) Would it be appropriate to have a positive requirement to submit a scheme of restoration?</p> <p>B) The drafting assumes that the details will be approved. How would restoration be secured if the details were not approved?</p>	<p>A) The Applicant would highlight that this is the intention of the Requirement, as it states that the land : <i>"must be reinstated in accordance with such details as the relevant planning authority in consultation with, where appropriate, the MMO, and the relevant highway authority, may approve"</i>.</p> <p>B) It is reasonable to assume that the details would be approved. It would be in the interests of the LPA to grant approval in order to facilitate the restoration.</p>
Q1.13.51	Applicant	<p>Requirement 21 provides for the approval of a noise management plan for the HVAC/HVDC substation. The DCOs for some other projects (for example Hornsea Project Two and East Anglia Three) have included specific noise limits in relation to identified sensitive receptors.</p> <p>A) Would it be appropriate to identify specific noise limits at sensitive receptors in the locality of the proposed HVAC booster station (if any) and the HVAC/HVDC substation?</p> <p>B) If so, what should those limits be?</p>	<p>A and B) The Applicant considers that there is no need for set noise parameters as the Noise Management Plan secured by requirement 21 of the draft DCO would set out the proposed noise control measures (i.e. physical control measures as well as management measures such as regular maintenance of the plant) to achieve the rating levels as set out in Volume 3, Chapter 8: Noise and Vibration of the Environmental Statement [APP-080]. These rating levels are based on the predicted noise levels at the residential receptors in the vicinity.</p> <p>This approach is taken to ensure that appropriate mitigation for noise is secured, given that different mitigation would be needed depending on whether HVAC or HVDC transmission is used and other details that would not be known until the detailed design stage.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.52	Applicant	<p>Requirement 22 relates to local skills and employment.</p> <p>Given the current uncertainty over the location of any onshore support activities, what confidence is there that this requirement would secure the economic benefits outlined in the ES?</p>	<p>As stated in Volume 3, Chapter 10: Socio economics of the ES [APP-082], the measures to be considered as part of the plan to discharge Requirement 22 are built in mitigation and as such would apply to any location. The benefit of the utilisation of a Skills and Employment Plan to be drawn up later is that this can be discussed with the relevant local authorities and Local Enterprise Partnership(s) (as provided for in the requirement) and tailored for a particular area, and therefore ensure that mitigation is appropriate and adequate. Notwithstanding this requirement, Ørsted believes that the Skills and Employment Plan will be of immense value to both Hornsea Three and the East Anglia and Humber regions.</p>
Q1.13.53	Applicant	<p>Requirement 23 refers to decommissioning. The drafting assumes that a scheme will be submitted to and approved by the relevant planning authority within three months of the cessation of commercial operation.</p> <p>A) How would this condition be enforced if no scheme were submitted?</p> <p>B) What would happen if the scheme were not approved?</p> <p>C) What examples are there of alternative mechanisms to secure</p>	<p>A) This requirement, along with all others in the DCO, are subject to the provisions of Part 8 of the Planning Act 2008, which govern enforcement of the terms of a DCO. Section 161(1)(b) of the Planning Act 2008 states that it is a criminal offence to, without reasonable excuse, fail to comply with the terms of a DCO.</p> <p>Enforcement is similar to that under the Town and Country Planning Act 1990, as it is undertaken by the relevant local planning authority, which has wide powers to investigate, prosecute, to seek an injunction, and require the breaching undertaker to remedy the breach of the DCO.</p> <p>In relation to this particular requirement, if the undertaker were to commence decommissioning without having had a plan approved, it would be committing a criminal offence. Along with the penalties under the Planning Act 2008, this would also create reputational damage.</p> <p>B) The wording of the requirement provides that the decommissioning plan must be approved by the relevant planning authority and then implemented as approved. If this is not complied with this would constitute a breach of the DCO and the consequences outlined above would apply.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		appropriate decommissioning of comparable onshore infrastructure?	<p>C) The Applicant is unaware of any alternative mechanisms, and is of the view that this is the most appropriate means to provide decommissioning of the onshore elements of Hornsea Three. The Applicant understands that all previous offshore wind farm DCOs (or those for the onshore infrastructure of offshore wind farms) have a requirement identical or similar, with different timing requirements (e.g. that the plan must be submitted on commercial operation cessation, or six months before in one case). The only exception is Hornsea Project One, which had no such condition.</p> <p>DCOs for other energy related developments have a similar process with different timing, reflecting, presumably, that decommissioning would have a greater environmental impact. For example, the Wrexham Gas Fired Generating Station Order 2017 requires the undertaker to provide a decommissioning scheme in accordance with the environment management plan previously approved within 24 months of the power plant ceasing operation, with a requirement to undertake demolition in accordance with this scheme. This is also the case in the Eggborough Gas Fired Generating Station Order 2018, which requires within 12 months of the decision to decommission, a plan to be submitted for approval by the relevant planning authority. The Requirement specifies what matters are to be included in this plan, which must be implemented on decommissioning.</p> <p>The Applicant has also considered DCOs for non electricity generating infrastructure which will conceivably be decommissioned, such as the National Grid (Richborough Connection Project) Order 2017, which also requires a plan for approval by the local planning authority upon the decision to decommission the infrastructure. Again, this requirement states that the approved plan must be implemented. Similar wording is also contained in the North Wales Wind Farms Connection Order 2016.</p>
Q1.13.54	Applicant	A) Would it be appropriate, in the interests of mitigating impacts on benthic ecology, to include a requirement limiting the footprint of foundations and scour protection for each type of	<p>A) The draft DCO (Version 1, as submitted for Deadline 1) currently provides in Requirement 2(5)(a) and (b), 3(11)(a) and (b) and (12) (a) and (b) for an overall restriction on footprints of both the offshore infrastructure (i.e. the turbines, accommodation platforms, and substation and booster stations) itself, and scour protection for those elements of the project. This approach means that the project has flexibility over the number of turbines and other infrastructure it builds within the envelope, but it is limited in the overall scale of that, as it must stay within the envelope of the assessment of benthic ecology undertaken and presented in Volume 2, Chapter 2, Benthic Ecology of the ES [APP-062] secured in the DCO and which presented no significant effects of this worst case.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>foundation contemplated in the application?</p> <p>B) If so, should there be different limits for the differing sizes of WTG which are proposed?</p>	<p>B) The Applicant is content with the current approach. Notwithstanding our comments above on A), the reason for capturing a maximum area for the foundations in a global figure was that it would permit, in a simple manner, the Applicant to be able to choose the turbine type at detailed design stage whilst also securing a parameter that could otherwise have environmental effects. In other words, the current approach allows the maximum number of smaller turbines, or the smallest number of larger turbines or something in between but also ensures that the seabed area is kept within the assessed maximum envelope.</p>
Q1.13.55	Applicant	<p>The design parameters for the offshore accommodation platforms and substations would be secured through Requirement 3 and conditions on the DMLs. However there are no equivalent provisions in relation to the onshore HVAC booster station and the HVAC/HVDC substation.</p> <p>Would it be appropriate to include a requirement to secure the design parameters for the onshore HVAC booster station and the HVAC/HVDC substation as assessed in the ES?</p>	<p>The Applicant would highlight that Requirement 7 provides a process for approval of the final design of the HVAC booster station, with these details to be provided to and approved by the relevant local planning authority. Such approval would have to remain within the assessed envelope of the various ES chapters which relate to this element of the project. This provides both flexibility to the undertaker in settling the design later in the build process, but also allows a dialogue with the relevant local authorities. The final design must also accord with the limits documented on the Onshore Limits of Deviation Plan [APP-026].</p>
Q1.13.56	Applicant	<p>The ES makes extensive references to the use of horizontal directional drilling (HDD) as a form of mitigation in relation to impacts on ecology, landscape, recreation and highways. An onshore crossing schedule</p>	<p>A) The onshore crossing schedule is indicative, but its intent is to establish how an obstacle is to be crossed and the design envelope against which the project has been assessed in the ES. For example, where the onshore export cable corridor crosses a river, the design is limited to a "HDD only".</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>has been provided [APP-089].</p> <p>A) Is the onshore crossing schedule to be regarded as indicative or definitive?</p> <p>B) Would it be appropriate to include a requirement to secure the extent of HDD set out in the onshore crossing schedule?</p>	<p>B) Rather than placing reliance on a definitive list in a crossing schedule, but to provide certainty of where the project has committed to HDD, HDD with a haul road or HDD with ducting, the Applicant has included a "Onshore Export Cable Prescribed Crossing Method plan", attached to the Outline CoCP (Appendix E) which establishes the definitive list of where "HDD Only", "HDD with Haul Road Over" or "HDD and ducting laydown" are to be provided for in accordance with the onshore crossing schedule.</p>
Q1.13.57	Applicant	<p>Articles 33 and 34 would permit the removal or lopping of trees and hedgerows which may be of landscape and ecological significance.</p> <p>Would it be appropriate to include a requirement to the effect that any works permitted under this article should not take place until relevant ecological surveys have been carried out and that any such works should be carried out in accordance with BS3998 2010 and BS5837 2012?</p>	<p>Articles 33 and 34 provide the power to remove such trees and hedgerows during construction, maintenance or operation. The Applicant has amended Articles 33 and 34 of the draft DCO (Version 1, as submitted for Deadline 1) to clarify that onshore site preparation works are included in this power. In response to this question, the Applicant has amended Requirement 10 so that it is clear that a separate Ecological Management Plan is needed for onshore site preparation works, as well as prior to construction. This will ensure that these are carried out in line with appropriate ecological requirements.</p> <p>In addition, any removal of trees or hedgerows would be undertaken outside the bird breeding season (14 February to 31 August inclusive). Where this is not practicable, the trees or hedgerows would be surveyed by an ecologist prior to clearance. Any trees identified as having potential to support bat roots in Volume 6, Annex 3.8: Bat Surveys of the Environmental Statement [APP-136] would be surveyed prior to removal.</p>
Q1.13.58	Applicant	<p>NCC [RR-035] has suggested a requirement to secure the removal of temporary construction accesses and reinstatement of highway verges.</p>	<p>Please see the Applicant's response to RR-035, which has also been agreed with NCC through the SoCG.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		Please comment on this suggested requirement.	
Q1.13.59	Applicant	<p>Schedule 7 would modify Compulsory Acquisition enactments.</p> <p>A) In paragraph 2(2)(a) should the phrase to be substituted be 'land is acquired or taken from'?</p> <p>B) In paragraph 3 should sub-paragraphs (a), (b) and (c) of section 5A be substituted to maintain consistency within the section? (This would be to avoid a residual inappropriate reference in the un-amended part of the section to 'additional land')</p> <p>C) In paragraph 5 should the eighth line read 'are so modified as to secure...'?</p> <p>In relation to the 1965 Act, would it be appropriate to include wording to the effect that:</p> <p>References in the 1965 Act to land are, in the appropriate contexts, to be read (according to the requirements of the particular context) as referring to, or as including references to—</p> <p>(a) the right acquired or to be acquired, or the restriction imposed or to be imposed; or</p> <p>(b) the land over which the right is or is to be</p>	A) The Applicant has made this amendment to the draft DCO (Revision 1, submitted for Deadline 1).
			B) The Applicant has made this amendment to the draft DCO (Revision 1, submitted for Deadline 1).
			C) The Applicant has made this amendment to the draft DCO (Revision 1, submitted for Deadline 1).

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		exercisable, or the restriction is or is to be enforceable.	
Q1.13.60	Applicant	<p>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.</p> <p>Are there additional comments in relation to the definition in the Deemed Marine Licence (DML)?</p>	See comments made by the Applicant in response to Q1.13.4.
Q1.13.61	Applicant	<p>Paragraph 11 would require any differences relating to the provisions of the DML to be referred to arbitration. The MMO [RR-085] has suggested that this proposal would shift the responsibility of decision making from the hands of the regulator to an independent arbitrator, contrary to the intent of Parliament as set out in the Marine and Coastal Access Act 2009.</p> <p>A) Please comment on the MMO's view</p>	A), B) and C) The Applicant would point to its response to Q1.13.14 above, which equally applies to the MMO as it does the Secretary of State.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>that this provision would be contrary to the intent of Parliament.</p> <p>B) What is the evidential basis for the suggestion that arbitration is necessary in relation to approvals required under the terms of the DML?</p> <p>C) Please provide legal submissions on the lawfulness of imposing an arbitration procedure on the MMO.</p> <p>D) Why would the procedures that would otherwise apply to decisions taken by the MMO be insufficient?</p>	<p>D) Along with the points raised in Q1.13.14, specifically in relation to this sub question, the Applicant would draw attention to its response to the MMO's relevant representation to answer this question as follows:</p> <p><i>"It is for the above reasons that the applicant believes that the expanded arbitration provisions in the draft DCO would provide greater certainty to all parties potentially involved in a dispute under the DCO. The applicant has clarified that those parties may include the SoS/MMO and clearly set out a process for the arbitration to follow. Objectively, this clarity must be an improvement over the arbitration provisions included in DCOs to date. The alternative "appeal" routes mentioned by the MMO, i.e. the MMO's complaints procedure, Ombusman procedure and judicial review, do not provide for an expeditious alternative mechanism for dispute resolution."</i></p>
Q1.13.62	Applicant	<p>The drafting of Condition 1 assumes a scheme of either up to 160 WTG or precisely 300 WTG.</p> <p>Does this drafting cover the range of possible combinations of WTG numbers, types and layouts that is contemplated in the application?</p>	<p>See answer to Q1.13.38, as the proposed wording will also be incorporated into condition 1 of the DML. The final number of turbines would be limited by the maximum total rotor swept area as given by the maximum design scenario, driven by the 300 WTG case. The total rotor swept area in this case is 9.0 km<sup>2</sup>, and the environmental impacts of this have been assessed in the ES as a maximum design scenario.</p>
Q1.13.63	Applicant	<p>The definition of maintenance works set out in Condition 4 includes 'major wind turbine component or offshore accommodation platform replacement'.</p>	<p>A) Such maintenance for wind turbine generators would include replacement of blades, blade bearings, gearboxes, gearbox main bearings, transformers, hub generators, yaw rings or nacelles. For substations, this would include works requiring replacement of major components of substations including (but not limited to) transformers, reactors, filters, switchgear.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>A) Please provide some illustrative examples of the types of works envisaged.</p> <p>B) What works might be included if 'repowering' became necessary?</p> <p>C) Is this definition consistent with the equivalent definition in Article 2 of the DCO?</p>	<p>B) As stated within the definition of "Maintain" in Article 1 of each of the DMLs and Article 2 of the DCO, what can be undertaken as maintenance is limited to activities <i>"to the extent assessed in the environmental statement"</i>. Repowering, i.e. renewing the life of the wind farm, is not envisaged to be undertaken under the DCO applied for. The DCO and supporting documents provide only for construction, operation, maintenance and decommissioning of the proposed offshore wind farm for a period of up to 35 years, with any repowering to be undertaken under a separate consent. Therefore the definition of Maintain in the DCO and DMLs cannot permit repowering.</p> <p>C) This condition of the deemed marine licences provides further detail on the works that are envisaged to be considered maintenance. The definitions in both DMLs mirror the DCO definition word for word.</p>
Q1.13.65	Applicant	<p>A) Condition C11(1)(a)(iii) provides for the length and arrangement of cable to be approved. Is this intended to include depth of burial?</p> <p>B) How does the approval required under this condition relate to the cable specification and installation plan?</p>	<p>A) This detail would be included within the cable specification and installation plan, as required under condition 13(1)(h) (as numbered in Version 1, submitted for Deadline 1).</p> <p>B) The approval required under this condition relates to the length of the cable, within the wider design of the project. However, the cable specification and installation plan relates to the technical design of the cable itself and how it would be laid, rather than where it will be located.</p>
Q1.13.66	Applicant	<p>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.</p> <p>Please comment on the MMO's objection to this aspect of the condition.</p>	<p>The Applicant has amended condition 13(1)(a) in the draft DCO (as numbered in Version 1, submitted for Deadline 1) so that a design plan is required to be submitted for approval by the MMO.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.67	Applicant	<p>Condition 11(1)(a)(v) provides for the indicative layout of the WTGs to be approved.</p> <p>A) Why would the layout only be indicative?</p> <p>B) At what stage (if any) would the MMO approve the actual layout?</p>	<p>A) The Applicant has amended the draft DCO DMLs (Version 1, as submitted for Deadline 1) to remove this sub-condition. Instead, condition 13(1)(a)(i) will be more specific, as set out below.</p> <p>B) Condition 13(1)(a)(i) of the generation assets DML (Schedules 11 of the draft DCO, Version 1 as submitted for Deadline 1) has been amended to clarify the final layout to be approved by the MMO to provide:</p> <p>“(i) the proposed location, including grid co-ordinates <u>of the centre point of the proposed location for each wind turbine generator and offshore accommodation platform, subject to any micro-siting required due to anthropological constraints, environmental constraints or difficult ground conditions.</u> and choice of foundation types for all wind turbine generators and offshore accommodation platforms”</p> <p>Condition 14(1)(a)(i) of the transmission assets DML has been amended accordingly (changes underlined):</p> <p>(i) <u>the proposed location, including grid co-ordinates of the centre point of the proposed location for each offshore electrical installations, subject to any micro-siting required due to anthropological constraints, environmental constraints or difficult ground conditions and choice of foundation of all offshore electrical installations;</u>”</p>
Q1.13.68	Applicant	<p>Condition 11(1)(h) (ii) provides for a cable specification and installation plan to be approved.</p> <p>A) Is it intended that the MMO would approve the depth of burial of any given section of cable?</p> <p>B) Without knowing the depths of burial that will be achieved what level of confidence is there in the volumes of excavated material assumed in the ES?</p>	<p>A) Cable burial depth is specified as a parameter of the cable specification and installation plan as per condition 11(1)(h)(i).</p> <p>B) A target burial depth of 1-2 m has been assessed in the Environmental Statement. The ES has applied a sufficient level of precaution to adequately estimate the volumes of excavated materials assumed in the ES. It is unlikely cables will be buried deeper than the 2 meter target depth and as such excavated volumes are not expected to exceed those volumes provided for in the ES.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.69	Applicant	<p>Condition 11(2) provides for a written scheme of archaeological investigation to be submitted.</p> <p>A) Does the drafting make clear that this scheme would be subject to the approval of the MMO?</p> <p>B) At what point would the decision be made to micro-site around a wreck?</p> <p>C) Is it intended that the actual siting would be subject to MMO approval?</p>	<p>A) The requirement for approval by the MMO has been added to this condition of both DMLs in the draft DCO (Version 1, submitted for Deadline 1).</p> <p>B) The Applicant will define the final Route Position List (RPL) within the DCO order limits during the detailed design phase, after consent has been granted. The final micro-sited RPL will be informed by detailed geophysical and geotechnical survey data, considering obstructions (such as wrecks), seabed features (such as sandwaves and boulders) and third-party infrastructure.</p> <p>C) With specific regard to marine archaeology outlined in 13(2)(d), Condition 12(1)(a)(v) requires the Applicant to provide evidence and receive approval from the MMO for micro-siting requirements prior to the commencement of construction activities.</p>
Q1.13.70	Applicant	<p>Condition 12 sets a timetable of 8 weeks for the MMO to approve applications for consent under the DML.</p> <p>Is this a reasonable timetable having regard to the scale and complexity of the project?</p>	<p>The Applicant has considered the concerns of the MMO on this point, and this condition in both DMLs in the DCO (Version 1, submitted for Deadline 1) have been amended to make this period 4 months.</p>
Q1.13.71	Applicant, MMO	<p>A) 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?</p>	<p>A and B) Please see the applicant's response to Q1.13.54.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		B) If so, should there be different limits for the differing sizes of WTG which are proposed?	
Q1.13.72	Applicant, MMO	<p>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.</p> <p>A) Please can the Applicant comment on this suggestion.</p> <p>B) Please can the MMO comment on what measure(s) should be used in relation to the amount of boulder clearance.</p>	<p>A) and B) The Applicant's position is set out in its response to the MMO's relevant representation:</p> <p>"The volume of sandwave and boulder clearance are included in the Draft DCO (Document 3.1) as follows:</p> <ul style="list-style-type: none"> <li>Schedule 1, Part 1, Requirement 1(c) includes for the removal of material from the seabed for the construction of Work Nos 1 to 5 and the disposal of up to 3,563,133 cubic meters of inert material of natural origin within the Order limits produced during [...] cable installation preparation such as sandwave clearance, boulder clearance [...].</li> <li>Schedule 11, Part 1, Condition 2(f) includes for the disposal [...] of up to 1,344,318 cubic metres of inert material of natural origin produced within Work No. 1.</li> <li>Schedule 12, Part 1, Condition 2(f) and (g) includes for the disposal [...] of up to 2,218,816 cubic metres of inert material of natural origin produced [...] within Work Nos. 2, 3, 4 and 5.</li> </ul> <p>The sandwave and boulder clearance material will be disposed of within the disposal site (specifically Works Nos. 1, 2, 3, 4 and 5) as outlined within the Draft DCO.</p> <p>The Applicant's response to the Planning Inspectorate on the 25 July 2018 provides further information on the relationship between the disposal volumes quoted in the Draft DCO and Volume 1, Chapter 3: Project Description of the Environmental Statement (APP-058).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.73	Applicant, MMO	<p>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 Teesside A and B) of imposing limits relevant to the various foundation types under consideration.</p> <p>A) Would it be appropriate to include a condition restricting maximum hammer energy?</p> <p>B) If so, should any such restriction vary according to the foundation type being used?</p>	<p>A) The Applicant accepts this point and has added a new condition as requested by the MMO in both DMLs in the DCO (Version 1, submitted for Deadline 1). The Applicant does not consider this should become industry standard practice.</p>
			<p>B) The Applicant has included an appropriate condition as set out above. The Applicant considers this to be sufficient. If any alternative foundation type is deployed (to monopile) then the afore mentioned documents (MMMP and CMS) will provide adequate control for ensuring that hammer energies do not exceed that assessed within the ES. The Applicant considers that it is in agreement with the MMO on this matter.</p>
Q1.13.74	Applicant, MMO	<p>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.</p> <p>Would it be appropriate to include a condition requiring the 'in-principle</p>	<p>The Applicant has updated the monitoring commitments for both benthic ecology and marine processes as detailed within the updated IPMP (Version 2.0) as submitted at Appendix 2 to the Applicants response to Deadline I, and also within the updated draft DCO (see Schedule 11, Part 2, Conditions 17 – 19 (generation assets) and Schedule 12, Part 2, conditions 18 – 20 (transmission assets) of the draft DCO (Version 1, as submitted for Deadline 1) as submitted at Appendix [APP-027] to the Applicants response to Deadline I. The Applicant considers that these updates should address the MMO's concerns on this matter.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		monitoring plan' to include pre and post-construction surveys and monitoring for benthic communities and geophysical features?	
Q1.13.75	Applicant	There are numerous provisions in transmission assets DML that mirror equivalent provisions in the DML for generation assets. Where questions have been asked above they are not repeated here. However, the applicant is invited to provide any additional comments in response to the above questions which are specific to this DML.	The Applicant notes this comment. The responses of the Applicant above equally reflect on both DMLs.
Q1.13.76	Applicant	<p>Condition 5(2) limits maintenance works to those assessed in the ES. However, this is subject to a tailpiece 'unless otherwise approved by the MMO'.</p> <p>Is it appropriate to include a tailpiece which could enable works not assessed in the ES to be carried out?</p>	<p>Please note conditions 9 &amp; 10 of both DMLs which state:</p> <p><i>9. With respect to any condition which requires the licensed activities be carried out in accordance with the plans, protocols or statements approved under this Schedule, the approved details, plan or scheme are taken to include any amendments that may subsequently be approved in writing by the MMO.</i></p> <p><i>10. Any amendments to or variations from the approved details must be in accordance with the principles and assessments set out in the environmental statement. Such agreement may only be given in relation to immaterial changes where it has been demonstrated to the satisfaction of the MMO that the subject matter of the agreement</i></p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p><i>sought is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement.</i></p> <p>This drafting was first adopted by the SoS in the Hinkley Point C (Nuclear Generating Station) Order 2013 and in offshore wind DCOs granted since then including the Walney Extension Offshore Wind Farm Order 2014, the Ramion Offshore Wind Farm Order 2014, the Hornsea Two Offshore Wind Farm Order 2016, and the East Anglia THREE Offshore Wind Farm Order 2017. The ExA will note that the effect of this drafting is to limit the extent to which subsequent approvals by the MMO may vary from details in the ES. Subject to the inclusion of the above conditions, the tailpiece wording in condition 5(2) and elsewhere in the DCO and DMLs is appropriate as upheld by the SoS in respect of other DCOs.</p>
Q1.13.77	Applicant	<p>Condition 16 requires a pre-construction survey to identify Annex I reefs.</p> <p>A) How would the results of such surveys inform the micro-siting of the cables?</p> <p>B) Would detailed siting around Annex I reefs be subject to the approval of the MMO?</p>	<p>A) The Applicant notes that the Conditions relating to monitoring have been updated (as reflected in the Applicants response to Q1.13.74). The commitment to undertake pre-construction surveys to inform micro-siting remains in place (see Schedule 11, Part 2, condition 13(2)(a)(v) (generation assets) and Schedule 12, Part 2, condition 14(1)(a)(v) of the draft DCO (Version 1, as submitted for Deadline 1)).</p> <p>Geophysical surveys (with ground-truthing where appropriate) will identify any Annex I features (amongst other constraints, such as archaeological features and or magnetic contacts) within the proposed cable corridor. These surveys will ensure that any areas where constraints to installation are identified that a buffer around these (within the Order Limits) will be surveyed (where appropriate) to ensure that the undertaker can identify appropriate "unconstrained" seabed. The outputs of these surveys will then be reviewed by the design team to re-route around any constraints as appropriate. With specific regard to Annex I reef features this process would be undertaken in consultation with the relevant SNCB.</p> <p>B) Yes. As would be required by Condition 13 (1) (a) (v) of the generation assets DML and Condition 14(1)(a)(vi) of the transmission assets DML (Schedules 11 and 12 respectively of the draft DCO (Version , as submitted for Deadline 1)) the Applicant is required to evidence and secure approval for any micro-siting.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.78	Applicant	Paragraph 5.62 of the Explanatory Memorandum [APP-028] states that the suggested approach will provide greater certainty to all parties involved in the process.	A) The main parties will be parties that are involved in the approval of applications to discharge requirements in the DCO, and conditions in the DML. This would therefore include the MMO, Natural England, Environment Agency and local authorities.
		A) Who are those other parties likely to be?	B) Other parties have provided feedback through their relevant representations, which the Applicant has considered and responded to accordingly.
		B) Has the applicant sought the views of those other parties on the suggested approach?	C) The Applicant sets out the main points in relation to Arbitration at Q1.13.61 above. In summary, as set out in the Explanatory Memorandum [APP-028], this schedule is aimed to provide certainty to the parties involved in the process. The Applicant would highlight that the use of arbitration itself is not a new concept in DCOs, and in fact is in the model provisions. The difference is that there was no procedure laid out for how this arbitration would be undertaken, which is the uncertainty the Applicant is seeking to address and remove.
		C) Please provide further justification for the bespoke procedure set out in Schedule 13.	D) Please see the Applicant's responses to arbitration related questions above. In addition, the drafting of previous DCOs were to be adopted, there would be no equivalent of this procedure. Hence, there would be no clarity for any party as to the process and timescales should any differences arise under the DCO.
Q1.13.79	Applicant	Paragraph 6(4) of schedule 13 provides for costs to follow the event.  What is the justification for imposing costs on regulatory bodies who may be acting reasonably in relation to their statutory functions?	The Applicant has amended Paragraph 6(4) of Schedule 13 so that each party pays its own costs unless it is unreasonable to do so.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.13.80	Applicant	<p>Paragraph 7 of Schedule 13 provides for confidentiality.</p> <p>What is the justification for seeking confidentiality where matters of public interest and environmental protection are involved?</p>	<p>The Applicant included this provision as it is standard in arbitration for the parties to be able to conduct matters without concern for outside parties becoming aware of sensitive commercial information. The Applicant acknowledges that should the counterparty to an arbitration dispute be a public body that has duties under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004, that this should not apply, and as such the Application has made an appropriate change to Rule 7 of Schedule 13 in the DCO (Version 1, submitted for Deadline 1).</p>

## 1.18 Written Question 1.14 Compulsory Acquisition

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.1	Applicant	Please provide updated information in relation to all outstanding objections to Compulsory Acquisition or temporary use of land in the form attached at Annex A to this document. Please ensure that this document is kept up to date as the Examination progresses.	Please see Annex A to the Applicant's Compulsory Acquisition (CA) Schedule. The Applicant will keep this document up to date as requested.
Q1.14.2	Applicant	<p>Paragraph 1.1.3.1 of the Statement of Reasons [APP-032] states that it has not yet been possible to acquire all of the land, the temporary use of land and the rights required by agreement. Negotiations are said to be ongoing. Paragraph 7.4.1.7 and Appendices A to D of the Statement of Reasons give further baseline information at the time that the application was submitted.</p> <p>Please give an update on the current position in respect of:</p> <ul style="list-style-type: none"> <li>•access to land;</li> <li>•the status of negotiations with landowners and others affected by the project; and</li> <li>•the current position in respect of the acquisition of the necessary land, rights over land and temporary use of land, either by agreement or otherwise.</li> </ul>	Please see Applicant's Compulsory Acquisition (CA) Schedule which includes an updated version of Appendices B, C and D to the Statement of Reasons [APP-032].

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.3	Applicant	<p>Section 135 of PA2008 only permits the compulsory acquisition of interests held otherwise than by or on behalf of the Crown. It does not permit the compulsory acquisition of any interests owned by or on behalf of the Crown. However, paragraph 9.2.1.2 of the Statement of Reasons [APP-032] states that 'Section 135 of the PA 2008 provides that a DCO may include provisions authorising the compulsory acquisition of an interest in Crown Land or any other provisions relating to the Crown Land only if the Crown consents to the inclusion of the provisions.'</p> <p>A) Please review the wording of paragraph 9.2.1.2 of the Statement of Reasons.</p> <p>B) Please confirm that you have excluded all interests owned by the Crown from the scope of Compulsory Acquisition by excluding them from the description of land in the Book of Reference.</p>	<p>A) The Applicant clarifies that paragraph 9.2.1.2 of the Statement of Reasons [APP-032] was intended to refer to the compulsory acquisition of an interest in Crown Land which is for the time being held otherwise than by or on behalf of the Crown in accordance with s135(1) of the PA 2008. This is reflected in the wording of Article 40(1)(b) of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1).</p> <p>B) The Applicant confirms that all of the Crown interests within the Order land (identified in Part 4 of the Book of Reference [APP-033]) have been excluded from the description of land in the Book of Reference.</p>
Q1.14.4	Applicant	<p>Paragraph 9.2.1.3 of the Statement of Reasons [APP-032] refers to Crown land discussions. Please give an update on the current position.</p>	<p>Discussions with The Crown Estate Commissioners are ongoing regarding consent pursuant to s135 of the PA 2008 and the wording of Article 40 of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.5	Applicant	<p>Paragraphs 5.3.1.4 and 6.2.1.3 of the Statement of Reasons [APP-032] refer to the need (or otherwise) for an onshore booster station at Little Barningham (sheet 9 of the onshore land plans [APP-011]) and paragraph 6.2.1.5 of the Statement of Reasons refers to the maximum permanent land take.</p> <p>A) If the onshore booster station is not required, what would the extent of compulsory acquisition be?</p> <p>B) Depending on whether or not the onshore booster station is required, how and when would landowners know the extent of compulsory acquisition of their land and/or interests?</p> <p>C) Would the uncertainty imposed upon the landowners in question be justified and proportionate?</p>	<p>A) If the onshore booster station is not required then New Connection Works Rights (as defined in the Book of Reference [APP-033]) would be required over plot 9-012 (as shown on the Land Plan – Onshore [APP-011]) for the onshore cables.</p> <p>The New Landscaping Rights over plots 9-002, 9-004, 9-011, 9-020, 9-023 would not be required.</p> <p>The New Access Rights over plots 9-017, 9-024, 9-025 would not be required.</p> <p>Article 19(1) of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1) enables the acquisition of new rights and the imposition of restrictions over any of the land shown coloured pink on the onshore land plan, including plot 9-012.</p> <p>B) The Applicant refers to Appendix 22 Transmission System (HVAC/HVDC) Briefing Note in the Applicant's response to Deadline 1, which sets out when the Applicant anticipates making a decision on whether to use a HVAC or HVDC transmission system.</p> <p>Requirement 6 of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1) requires a phasing scheme in relating to connection works to be submitted to the relevant planning authority prior to the commencement of the authorised development. This phasing scheme would set out whether a HVAC or HVDC transmission system would be used for each phase (if applicable).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		D) To the extent that there is land that would not be required if there were no onshore booster station, how can the compulsory acquisition of such land be justified given the availability of alternative transmission technology?	<p>C) The Applicant considers that no greater uncertainty is imposed on the relevant landowners than on all landowners affected by compulsory acquisition powers. The Applicant must exercise the compulsory acquisition powers within the timeframe specified in Article 18 of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1). However, there is no obligation on the Applicant to proceed with the authorised development and/or use its compulsory acquisition powers.</p> <p>The Applicant continues to discuss the terms of a voluntary agreement with the landowner for the acquisition of the land required for the onshore booster station and notes that the landowner has not submitted a relevant representation that specifically objects to the extent of the land.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>D) The Applicant refers to Appendix 22 Transmission System (HVAC/HVDC) Briefing Note in the Applicant's response to Deadline 1, which sets out the reasons why the Applicant is seeking consent for both HVAC and HVDC transmission systems.</p> <p>The Applicant also refers to paragraph 8 of the Communities and Local Government Guidance 'Planning Act 2008: Guidance related to procedures for compulsory acquisition' which states that the Applicant must demonstrate that all reasonable alternatives to compulsory acquisition (including modifications to the scheme) have been explored.</p> <p>The Applicant has considered carefully the need for the onshore booster station and concluded that circumstances exist where an onshore booster station will be necessary to deliver Hornsea Three in the event that the HVAC transmission system is selected.</p> <p>As set out in section 7.2 of the Statement of Reasons [APP-032], the Applicant's justification for seeking compulsory acquisition powers is to enable the Applicant to construct, operate and maintain Hornsea Three within a reasonable commercial timeframe.</p> <p>As Hornsea Three is a NSIP, the Applicant considers that there is a compelling case in the public interest for the power to compulsorily acquire land and rights over land (together with the imposition of restrictions) required for the onshore booster station to be included in the Order. The extent of the Order Land is no more than is reasonably necessary for the construction and operation of Hornsea Three should a HVAC transmission system with an onshore booster station be selected and is therefore proportionate and necessary. Compensation is payable to all affected landowners and occupiers.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.6	Applicant	<p>Paragraph 5.3.1.5 of the Statement of Reasons [APP-032] refers to the outstanding choice between a HVDC converter station and a HVAC substation close to the existing Norwich Main substation at Mangreen. Paragraph 6.2.2.5 of the Statement of Reasons implies that the area required for the HVDC converter station is less than that required for the HVAC substation.</p> <p>A) If the HVDC option is selected, what would the extent of compulsory acquisition be?</p> <p>B) Depending on whether or not the HVDC is selected, how and when would landowners know the extent of compulsory acquisition of their land and/or interests?</p> <p>C) Would the uncertainty imposed upon the landowners in question be justified and proportionate?</p>	<p>A) Paragraph 6.2.2.5 states that onshore HVDC converter/HVAC substation will require a "maximum permanent land take of 149,302 m<sup>2</sup> in area and a maximum temporary land take of 91,000 m<sup>2</sup> in area. The main building will be up to 25 m high (excluding lightning protection). If the substation uses HVAC technology there will be up to three main buildings. If the substation uses HVDC technology there will be up to two main buildings."</p> <p>Table 3.63 of Chapter 3 of the ES: Project Description [APP-058] sets out the maximum design parameters for the HVDC converter/HVAC substation. The maximum permanent land take is approximately the same for the HVAC and HVDC options. Although the HVAC scenario may have more buildings, each building will be smaller than the two buildings required for the HVDC scenario.</p> <p>The Applicant therefore anticipates requiring the whole of plot 33-014 (as shown on the Land Plan - Onshore [APP-011]) regardless of whether the HVAC or HVDC option is selected.</p> <p>B) As mentioned above, the Applicant anticipates requiring the whole of plot 33-014 (as shown on the Land Plan - Onshore [APP-011]) regardless of whether the HVAC or HVDC option is selected.</p> <p>As stated in Appendix B of the Statement of Reasons [APP-032], the Applicant entered into an Option Agreement to acquire plot 33-014 in April 2018.</p> <p>C) The Applicant does not consider that there is any uncertainty as the Applicant anticipates requiring the whole of plot 33-014 (as shown on the Land Plan - Onshore [APP-011]) regardless of whether the HVAC or HVDC option is selected</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		D) To the extent that there is land that would not be required if the HVDC option is selected, how can the compulsory acquisition of such land be justified given the availability of alternative transmission technology?	D) As mentioned above, the Applicant anticipates requiring the whole of plot 33-014 (as shown on the Land Plan - Onshore [APP-011]) regardless of whether the HVAC or HVDC option is selected
Q1.14.7	Applicant	Paragraph 1.2.1.1 of the Funding Statement [APP-029] mentions 'a number of 100% owned subsidiary companies' and these are shown in Figure 1.1. An overall company overview is given in section 8.5 of Annex 2 to the Funding Statement [APP-031].	A) Ørsted operates in a number of different countries and chooses to set up special purpose vehicles (SPVs) to develop, construct and operate its projects. The country specific SPVs are then owned by the Danish companies. This list of companies therefore reflects the corporate reality of a multinational company and the way in which Ørsted has chosen to do business.
		A) Explain the need for such a long chain of companies.	B) Ørsted is comprised of a number of companies that are linked to each other all of the way to the parent company, Ørsted A/S. The Applicant is willing to provide a full overview of its overall legal structure on request.
		B) What other companies are also owned in whole or in part by the various companies in the chain?	C) Given that the corporate structure is organised to deliver the most effective operating model from a financial/risk perspective, this arrangement has no negative impact on the likely funding of the project. The same corporate structure has had no material impact on the funding or divestment of past projects such as Walney Extension and Race Bank and the Applicant does not believe there will be any impact on the successful funding and construction of Hornsea Three.
		C) What impact does this arrangement have on the likely funding for this project?	

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.8	Applicant	<p>Paragraph 1.3.1.4 of the Funding Statement [APP-029] states that the total contingent liability associated with the acquisition of land or interests in land is £28 million. A financial assessment is given in paragraphs 7 and 8 on page 2 of Annex 1 to the Funding Statement [APP-030].</p> <p>Please give an update on this assessment, bearing in mind</p> <ul style="list-style-type: none"> <li>•the choice of transmission technology for the project;</li> <li>•the need (or otherwise) for an onshore booster station at Little Barningham (sheet 9 of the onshore land plans [APP-011]); and</li> <li>•the outstanding choice of alignment at Moor Farm (sheet 16 of the Onshore Land Plan [APP-011]).</li> </ul>	<p>The assessment for the total contingent liability associated with the land acquisition or land interest has been revised and is now £43,621,027. The upward revision is due to the receipt of new information in respect of potential commercial and residential development land and mines and mineral developments and has been amended to reflect the anticipated maximum-case scenario for compensation relating to that land. The Revised Funding Statement (Revision A) is submitted at Appendix 51 to the Applicant's response to Deadline 1.</p> <p>Both the previous and the updated version cover the maximum parameters for the options currently being considered for development, including; HVAC &amp; HVDC transmission, the requirement for an onshore HVAC Booster station and either route option at Moor Farm.</p>
Q1.14.9	Applicant	<p>Paragraph 1.3.1.4 of the Funding Statement [APP-029] states that the total contingent liability associated with the acquisition of land or interests in land is £28 million, with a financial assessment provided in Annex 1 to the Funding Statement [APP-030]. On what basis is the figure of 10% used as a contingency?</p>	<p>It is standard practice for linear project of this scale to forecast land compensation budgets and apply a contingency element that makes an allowance for costs which may be incurred as a result of unknown interests and other factors that may arise throughout the course of the project, that cannot reasonably be foreseen at such an early stage.</p> <p>10% is a figure that has been utilised based on experience of other large scale linear underground cable projects, the contingency allowance is also for 10% of the deemed worst-case scenario in terms of land compensation costs to be incurred.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.10	Applicant	<p>Paragraph 1.3.1.4 of the Funding Statement [APP-029] states that it is not expected that there will be any claims for blight.</p> <p>Please explain the basis for this statement.</p>	<p>The risk of receiving a valid blight notice has been assessed by the Applicant as being relatively low as the qualifying criteria are unlikely to be met. The reasons for this assessment are set out in Annex 1 to the Funding Statement [APP-030].</p> <p>To date, no blight notices have been served in respect of Hornsea Three. Should any claims for blight arise as a consequence of the threat of compulsory acquisition of land or rights over land related to Hornsea Three, the costs of meeting any valid blight notice claim will be met by the Applicant.</p>
Q1.14.11	Applicant	<p>Paragraphs 8.3.2.5, 8.3.2.9 and 8.3.2.11 of the Statement of Reasons [APP-032] and paragraph 1.4.1.1 of the Funding Statement [APP-029] refer to the prospects for achieving a Contract for Difference and proceeding to a Final Investment Decision.</p> <p>A) When do you expect to conclude a Contract for Difference?</p> <p>B) Do you expect further reductions in the strike price?</p> <p>C) What (if any) impediments are there to the Final Investment Decision being taken?</p>	<p>A) The Applicant cannot commit to a fixed date for conclusion of a Contract for Difference (CfD) due to uncertainties surrounding the timing of future auctions. The UK Government has committed to an auction before May 2019, with a further auction in 2021. It has indicated that it would then hold further CfD allocation rounds every two years. The Applicant intends to bid in at least one of these auctions prior to the expiry of any DCO granted. This timing of CfD auctions is not anticipated to prevent successful funding of the project.</p> <p>B) The Applicant cannot confirm strike price levels for future auctions although there was a 50% drop in strike price levels from CfD Allocation Round 1 to Allocation Round 2. A key driver of this is a significant reduction in the Levelised Cost of Electricity. Over the past five years, the cost of offshore wind has been reduced by up to 60% in Northwestern Europe and there is still potential for further cost reductions. It is not anticipated that further reductions in strike price will affect the ability of the Applicant to fund Hornsea 3.</p> <p>C) One of the key impediments for Hornsea Three taking a Final Investment Decision would be receipt of a valid DCO, without which the project would be unable to move forward with any construction plans or bid in any future CfD auctions (or alternative financial mechanism).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.12	Applicant	<p>In section 7.1 (page 131) of Annex 2 to the Funding Statement [APP-031], you state that your most significant market risks relate to:</p> <ul style="list-style-type: none"> <li>•energy prices;</li> <li>•foreign exchange rates;</li> <li>•inflation rates; and</li> <li>•interest rates.</li> </ul> <p>A) How do you see these factors manifesting themselves in the future?</p> <p>B) What effect are they likely to have on your ability to finance the project over its lifetime?</p>	<p>A) Ørsted's risk outlook diminished in 2017 after the divestment of its upstream oil and gas business, as the industry is generally characterised by a high level of inherent risk. Following this divestment, Ørsted's exposure to oil and gas prices therefore reduced. In contrast, its exposure to exchange rate fluctuations, primarily GBP, has increased, due to its large investments in offshore wind farms in the UK. This risk is mitigated through the implementation of currency hedging.</p> <p>There is also ongoing inflation risk related to fixed nominal earnings from offshore windfarms in Denmark, Germany and the Netherlands. This is mitigated through the issuance of debt with fixed nominal cashflows to match the original inflation risk.</p> <p>Energy price risk is also an ongoing future risk although Ørsted minimises this risk through obtaining fixed price offtake agreements (such as CfDs or alternative financial mechanism such as a fixed price Power Purchase Agreements) to reduce the impact of wholesale power price volatility. Ørsted also places hedges against energy price risk. Because of its risk management process and the implementation of mitigations, the Applicant does not anticipate these market risks to have any material impact on its ability to fund the project.</p> <p>B) Ørsted regards risks as a natural and integral part of its business activities. Through risk management, risks are reduced to an acceptable level. Managing risks is an important focus area for Ørsted, and the purpose of risk management is to identify the various risks to which it is exposed, and then decide how to manage them.</p> <p>Ørsted assesses the extent to which individual risks are acceptable, as well as the extent to which these risks can be reduced to ensure an optimum balance between risk and return. As has been indicated in the Applicant's response to Q1.14.12 part (A), risks are mitigated through hedging and strategic decision making which have led to a considerable reduction in Ørsted's overall exposure to key risks associated with currency and energy price fluctuations.</p> <p>As such, the Applicant does not think that these market risks pose any material threat to the successful funding of the project nor to the integrity of Ørsted as a company.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.13	Applicant	<p>Article 42 of the dDCO refers to either a guarantee under 42(1)(a) or an alternative form of security under 42(1)(b).</p> <p>A) Please give examples of the alternative form(s) of security contemplated.</p> <p>B) What factors would lead the undertaker to choose either a guarantee or the alternative security?</p>	<p>A) A typical alternative form of security would be a bond or a letter of credit from a bank or other financial institution. The amount of the security and the bank or financial institution would be approved by the Secretary of State.</p> <p>Another option would be to set up an escrow account. An escrow account is an independently held account into which the Applicant would pay a sum of money approved by the Secretary of State to meet the anticipated compensation requirements. The Applicant would then draw on the account to finance any compensation claims.</p> <p>B) The Applicant anticipates providing a guarantee in the same form as was used to satisfy Article 4 of The Hornsea Two Offshore Wind Farm Order 2016 (which has been approved by the Secretary of State). However, in certain circumstances it may be more cost effective for the Applicant to put in place an alternative form of security instead of a guarantee.</p>
Q1.14.14	Applicant	<p>Article 42(3) states that 'a guarantee or alternative form of security ... is to be treated as enforceable against the guarantor or person providing the alternative form of security by any person to whom such compensation is payable and must be in such a form as to be capable of enforcement by such a person'. Paragraph 1.4.1.6 of the Funding Statement [APP-029] states that the 'guaranteed funding (for compulsory acquisition) will be held by a means that is directly accessible to persons entitled to compensation'.</p> <p>Please explain how such funding would be directly accessible to persons entitled to compensation.</p>	<p>The ability for funding to be directly accessible to persons entitled to compensation would be included as a term of the guarantee or alternative form of security.</p> <p>The Applicant will ensure that a copy of the approved guarantee (or alternative form of security) is made available to persons entitled to compensation by placing it on deposit with the documents certified in accordance with Article 35 of the draft DCO. The Applicant has amended the Explanatory Note accordingly in the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.16	Applicant	<p>Paragraph 5.2.1.2 of the Statement of Reasons [APP-032] refers to the cable corridor width being 'typically 80m'. Paragraph 6.3.2.5 of the Statement of Reasons refers to a width of 80m. Paragraph 3 on page 2 of Annex 1 to the Funding Statement [APP-030] states that the onshore cable corridor will have a standard working width of 80m, wider at complex crossings, obstructions or storage areas and with a total area required for construction of 488 hectares including an allowance for severed areas.</p> <p>A) Does the 80m standard working width apply irrespective of which transmission technology is chosen?</p> <p>B) What level of confidence is there that all locations where extra width will be required have been identified?</p> <p>C) Is the extra width needed at complex crossings the same irrespective of which transmission technology is chosen?</p>	<p>A) Parameters for the onshore cable corridor under the HVDC scenario are provided within the Appendix 22 Transmission System (HVAC/HVDC) Briefing Note in the Applicant's response to Deadline 1. The 80m standard width is associated with the HVAC scenario and is primarily determined by the number of expected cable circuits. As the HVDC scenario would be expected to have a lesser number of circuits, the standard working width associated with the HVDC would be expected to be less.</p>
			<p>B) A high level of confidence as the route has been extensively planned and the Applicant has experience of constructing onshore cable routes across the UK.</p>
			<p>C) Extra width would be expected to be required regardless of the technology chosen, the extra width required for each would be commensurate with the number of circuits required for the chosen technology.</p>
			<p>D) Where extra width is required at horizontal bends it is identified on the Onshore Land Plans [APP-011]. There are only two locations where such extra width is anticipated; plot 16-002A where it is due to a sharp bend occurring immediately before a directional drill, entailing a requirement for additional land to straighten the cables before undertaking the drill; and at plot 26-010 where the cables emerge from a directional drill and then require extra horizontal extra width to allow the turn back to the 80m alignment.</p>
			<p>E) The extra width is identified in the two locations detailed above. This extra width is associated with the HVAC scenario and is primarily determined by the number of expected cable circuits. As the HVDC scenario would be expected to have a lesser number of circuits, the extra working width associated with the HVDC would be expected to be less.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>D) Is extra width also needed at horizontal bends in the alignment?</p> <p>E) If so, how much is required and is this extra width dependent on which transition technology is chosen?</p> <p>F) How have severed areas been assessed in order to arrive at the overall figure of 488 hectares?</p>	<p>F) Severed areas are expected to be minimal because crossing points can be provided in those areas where fields are severed by the works.</p> <p>Compensation will be payable for any losses arising for severance period.</p>
Q1.14.17	Applicant	Paragraph 1.1.2.2 of the Statement of Reasons [APP-032] states that 'Hornsea Three may use HVAC or HVDC transmission, or could use a combination of both technologies in separate electrical systems'.	A) Parameters for the onshore cable corridor under the HVDC scenario are provided within Appendix 22 Transmission System (HVAC/HVDC) Briefing Note in the Applicant's response to Deadline 1.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>A) Please explain how the choice of HVAC, HVDC, or a combination of both technologies in separate electrical systems, would affect how much land would actually be required for the project.</p> <p>B) What would happen to any Order land found not to be required once the choice of transmission technologies had been made?</p> <p>C) How would the interests of those whose land may or may not be required, as a consequence of the choice of transmission technologies, be protected?</p>	<p>B) The Applicant will only exercise its compulsory acquisition powers over those parts of the Order land where new rights and restrictions are required to deliver Hornsea Three.</p> <p>In the event that the choice of transmission technology for each phase (if there are two phases) results in permanent rights and restrictions not being required over parts of the Order land then the Applicant will not exercise its compulsory acquisition powers over such parts of the Order land.</p> <p>If it is established that parts of the Order land are not required after new rights have been compulsorily acquired and restrictions imposed over the whole of the Order land then the Applicant will have paid compensation to the landowner for such rights and restrictions even if the rights are not then utilised. The Applicant may enter into an agreement with the landowner to surrender/release the rights and restrictions over such parts of the Order land. However, the Applicant cannot compel the landowner to enter into such an agreement.</p> <p>For onshore underground cables and pipes it is common for there to be areas of the Order land that are identified as not being required once further ground investigations have been undertaken and the detailed design has been fixed. It is for this reason that temporary use powers are often used to commence construction works so that permanent rights and restrictions are sought over the minimum amount of land required.</p> <p>C) Persons with an interest in land are entitled to compensation in the event that the compulsory acquisition powers are exercised within the time period referred to in Article 18 of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1). If the compulsory acquisition powers are not exercised in respect of all or part of the Order land within the time period referred to in Article 18 then the compulsory acquisition powers fall away. This is no different to any landowner whose land is subject to compulsory acquisition powers and who must wait for the promoter to decide whether or not to proceed with the authorised development with the time period specified in the DCO.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.21	Applicant	<p>Paragraph 1.1.3.7 of the Statement of Reasons [APP-032] makes reference to Articles 25 and 26 in respect of temporary use of Order land. Article 25(4) refers to:</p> <ul style="list-style-type: none"> <li>•serving notice of entry under the 1965 Act;</li> <li>•making a declaration under section 4 of the 1981 Act; and</li> <li>•otherwise acquiring the land or rights over land.</li> </ul> <p>Please explain the circumstances in which each of these would be used on the project.</p>	<p>The Applicant may utilise the temporary use powers under Article 25 to undertake enabling works for the onshore cable corridor prior to exercising its compulsory acquisition powers to acquire permanent rights to construct, use and maintain the cables. The Applicant will make a decision as to whether to use the Notice to Treat/Notice of Entry procedure pursuant to the 1965 Act or make a declaration under the 1981 Act at the time. There are advantages and disadvantages to each process.</p> <p>Article 25(4) also provides that the Applicant is not required to remove any temporary works in the event that the Applicant has entered into a voluntary agreement with the landowner.</p>
Q1.14.22	Applicant	<p>Paragraph 1.1.3.7 of the Statement of Reasons [APP-032] makes reference to Articles 25 and 26 in respect of temporary use of Order land. Article 26(1)(b) authorises the construction of temporary works and buildings.</p> <p>A) Bearing in mind the length of time during which such temporary works and buildings may be in place, do you envisage mitigation works being required in respect of temporary use of land for maintenance?</p> <p>B) If so, how would this be secured?</p>	<p>A) Article 26(4) states that the Applicant may only remain in possession for as long as may be reasonably necessary to carry out the maintenance of the part of the authorised project for which possession of the land was taken. The Applicant does not envisage any mitigation works being specifically required in respect of the temporary use of land for maintenance.</p> <p>B) Please see the Applicant's response to Q1.14.22(A).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.23	Applicant	<p>Paragraph 1.1.3.9 of the Statement of Reasons [APP-032] states that you have explored reasonable alternatives to compulsory acquisition and made reasonable attempts to acquire the land and rights over land by agreement.</p> <p>Please explain what reasonable alternatives to compulsory acquisition have been explored. What attempts have there been to secure the necessary land and rights by agreement?</p>	<p>The Applicant refers to paragraphs 6.3.2.8 to 6.3.2.10 of the Statement of Reasons [APP-032] which sets out the alternatives considered in more detail.</p> <p>The attempts made by the Applicant to secure the necessary land and rights by agreement prior to submission of the Application are set out in Appendices A and B to the Statement of Reasons (APP-032). Further attempts made since submission of the Application are set out in the Applicant's Compulsory Acquisition (CA) Schedule which provides an updated to Appendix B of the Statement of Reasons (submitted for Deadline 1). Discussions with landowners are ongoing.</p>
Q1.14.24	Applicant	<p>Paragraphs 5.2.2.1 to 5.2.2.5 of the Statement of Reasons [APP-032] refer to the outstanding choice of cable alignment at Moor Farm. Both alignments currently under consideration are shown on sheet 16 of the Onshore Land Plan [APP-011].</p> <p>A) Should there be an open bracket before the word "plots" in paragraph 5.2.2.2?</p> <p>B) Please give an update on progress with negotiations on the alternative cable alignments and whether or not there is agreement with the land owner on a preferred alignment.</p>	<p>A) Yes. This typo will be corrected in the event that a revised version of the Statement of Reasons is submitted during the Examination.</p> <p>B) Negotiations with the landowner at this location are ongoing and a preferred alignment is likely to be confirmed ahead of Deadline 3.</p>

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Q1.14.25	Applicant	<p>Paragraphs 5.2.3.1 to 5.2.3.4 of the Statement of Reasons [APP-032] refer to the outstanding choice of cable corridor access routes north of Norwich Road. Both access routes currently under consideration are shown on sheet 30 of the Onshore Land Plan [APP-011].</p> <p>Please give an update on progress with access for surveys and negotiations on the alternative cable corridor access routes and whether or not there is agreement with the landowner on which is preferred.</p>	<p>The landowner at this location is currently refusing to engage with the Applicant and the Applicant is therefore unable to reach an agreement at this stage.</p> <p>Efforts to engage with the landowner are ongoing.</p>
Q1.14.26	Applicant	<p>Paragraph 1.1.5.1 of the Statement of Reasons [APP-032] specifies those parts of the Order land which are public open space:</p> <ul style="list-style-type: none"> <li>•parts of the foreshore and beach north of Weybourne military camp;</li> <li>•part of a woodland known as Bodham Wood; and</li> <li>•parts of a heritage trail known as Marriott's Way.</li> </ul> <p>Paragraph 1.1.5.2 of the Statement of Reasons states that there will be temporary interference with the use of the open space</p>	<p><b>Parts of the foreshore and beach north of Weybourne military camp:</b></p> <p>The Applicant would refer to Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement [APP-078] where the impacts of an open cut technique at landfall, which represents the maximum design scenario, on the beach and Norfolk Coast Path are assessed. Should open cut techniques be used at landfall, a temporary beach closure will be required from mean low water springs (MLWS) to the landfall construction compound for security and health and safety. The beach closure will have a duration of up to one month per cable circuit (on up to six occasions). Details on the timing of such closures will be determined during detailed design, when further clarity on the construction programme is known. Should HDD be used, beach access will only be required if a mud return line is dug into the beach, in order to carry recovered cuttings and drilling fluid from the drilling hole back to shore for processing. In this case, a temporary beach closure of a maximum 24 hours duration may be required for pulling in the mud line over the beach and the same for the removal of the mud line. In addition, a short beach closure of up to 24 hours per circuit will be required if pulling onshore welded pipes offshore or as a result of an unplanned beach clean-up arising from a bentonite break out, for example.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>land during the construction period.</p> <p>A) For each of the above locations, please describe the nature of the temporary interference in terms of:</p> <ul style="list-style-type: none"> <li>•overall duration;</li> <li>•time of day/week/year; and</li> <li>•impact of construction activities on those using the open space.</li> </ul> <p>B) What alternative working methods have been considered in order to minimise the overall impact of construction on each site?</p>	<p>Beach access measures will be set out within a PRoW Management Plan, which will be developed as part of the Code of Construction Practice secured under Requirement 17. This commitment is captured in the Outline CoCP [APP-179]. The Applicant is in ongoing discussions with NCC in regard to the proposed diversion of the Norfolk Coast Path and beach as set out in the NCC Statement of Common Ground. Impacts of such beach closures have been assessed in paragraph 6.11.1.27 of the Environmental Statement [APP-078], and whilst public access may be partially restricted during Hornsea Three landfall area construction activities, there remains large areas to the east and west that would remain accessible for fishing and other beach-based activities during the construction phase. Furthermore, there would be no disruption to the use of the beach side car park. As such, it was concluded that no significant effects on the foreshore and beach would occur for either technology (open cut or HDD) at landfall.</p> <p><b>Parts of a woodland known as Bodham Wood</b></p> <p>The woodland at Bodham wood will be crossed using HDD and as such will not be directly impacted by Hornsea Three. The HDD works at this location are likely to take approximately 12 weeks, but there would be no restrictions to the use of Bodham Wood during this period.</p> <p><b>Parts of Heritage Trail known as Marriott's Way</b></p> <p>The Marriott's Way long distance route for pedestrians, cyclists and equestrians is crossed by the Hornsea Three onshore cable corridor to the east of Reephams using HDD; as such the alignment and use of this route will not be affected at this location. Furthermore, there would be no restrictions to the use of Marriott's Way.</p> <p>However, there will be an interface with construction traffic associated with Hornsea Three at the following locations which are functionally linked to Marriott's Way (please refer to Public Rights of Way Plan Sheet 16 of 35, [APP-016]):</p> <ul style="list-style-type: none"> <li>• To the north of Moor Farm a construction access will cross Marriott's Way at grade (i.e. at the same level) to access the onshore cable corridor to the south. This junction will be gated to the north of Marriott's Way to halt construction traffic and manned when construction traffic is crossing the route to ensure the safety of those traversing along it. Following the completion of construction access at this location the surface of Marriott's Way would be reinstated to its pre-existing condition.</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<ul style="list-style-type: none"> <li>To the north of Marriott's Way, a construction access is proposed running from the B1145 Cawston Road, along the field track and then to the north of the disused railway line. Reepham FP34 runs along the field track from Cawston Road and will remain on its existing alignment throughout the construction works. This route will be temporary fenced to separate it from the construction access, within the onshore cable corridor, for health and safety purposes. This segregation of people and plant will be monitored and construction traffic controlled by means of speed restrictions and signage.</li> <li>The junction of Reepham FP34, Reepham FP18 and the construction access, together with the junction of the construction access at Cawston Road, will be managed and controlled to ensure the safe flow of construction traffic and pedestrians by the use of signage and speed restrictions. It may also be necessary to use a banksman when construction traffic is using this access.</li> </ul> <p>The HDD at Marriott's Way will have a duration of approximately 8 weeks. Traffic management measures will be in place at the locations above for approximately 3 months. The impacts on the uses of the Marriott's Way and associated footpaths are assessed in Volume 3, Chapter 6: Land Use and Recreation [APP-078] and concluded that no significant effects would occur. The measures as described above would be set out in the Public Right of Way Management Plan which will be developed as part of the Code of Construction Practice secured under Requirement 17. This commitment is captured in the Outline CoCP [APP-179].</p> <p>The Applicant has prepared a Communication Plan Framework (Appendix A of the Outline CoCP [APP-179]) which commits to the erection of notices in public area and on public rights of way crossed by Hornsea Three, and for these to be regularly updated with information where a workforce is active in the locality and disruption is anticipated.</p> <p>On the basis of the above, and as stated in the Statement of Reasons [APP-032], the Applicant therefore considers that the open space land when burdened with the rights sought in the Order will be no less advantageous to the public than it was before and therefore the test set out in s132(3) of the PA 2008 is satisfied.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
			<p>B) The Applicant has chosen to HDD at Bodham Wood and Marriott's Way to minimise the impact on the open space. An alternative which was considered early in the design process was open cut technology at both locations; however, the environmental impact (loss of trees at Bodham Wood and impact to users of the public right of way at Marriott's Way) were considered too great. At the beach, the Applicant has retained both open cut and HDD within the envelope and as such no other construction methods have been considered.</p> <p>If a cable requires replacement in any of these locations then the old cable will be removed from the ducts and then re-pulled through the ducts, thus having a minimal impact upon the open space.</p>
Q1.14.27	Applicant	<p>Paragraph 1.1.5.1 of the Statement of Reasons [APP-032] specifies those parts of the Order land which are public open space:</p> <ul style="list-style-type: none"> <li>•parts of the foreshore and beach north of Weybourne military camp;</li> <li>•part of a woodland known as Bodham Wood; and</li> <li>•parts of a heritage trail known as Marriott's Way.</li> </ul> <p>Paragraph 1.1.5.3 of the Statement of Reasons states that there may be</p>	<p>A) Following the completion of the construction works, the open space at parts of the foreshore and beach, woodland known as Bodham Wood and Marriott's Way affected by the onshore works would be re-instated (where applicable) to their current condition and/or along their current alignments. Periodic maintenance operations are unlikely to impact on their ongoing use for public recreation.</p> <p>Generally, maintenance activities would be limited to a walkover survey such that any interference would also be temporary.</p> <p>On the basis of the above, and as stated in the Statement of Reasons [APP-032], the Applicant therefore considers that the open space land when burdened with the rights sought in the Order will be no less advantageous to the public than it was before and therefore the test set out in s132(3) of the PA 2008 is satisfied.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>occasional future maintenance activities and that any interference with public recreational use of the open space land as a result would be temporary in nature.</p> <p>A) For each of the above locations, please describe the nature of the temporary interference in terms of:</p> <ul style="list-style-type: none"> <li>•overall duration</li> <li>•time of day/week/year</li> <li>•impact of activities on those using the open space.</li> </ul> <p>B) What alternative working methods have been considered in order to minimise the overall impact of maintenance activities on each site?</p>	<p>B) The Applicant considers that the use of cable ducts is the most appropriate working method to minimise the overall impact of maintenance activities at each of these locations.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.28	Applicant	<p>Paragraph 1.1.5.1 of the Statement of Reasons [APP-032] specifies those parts of the Order land which are public open space:</p> <ul style="list-style-type: none"> <li>•parts of the foreshore and beach north of Weybourne military camp;</li> <li>•part of a woodland known as Bodham Wood; and</li> <li>•parts of a heritage trail known as Marriott's Way.</li> </ul> <p>Paragraph 1.1.5.4 of the Statement of Reasons states that the open space land when burdened with the rights sought in the Order will be no less advantageous to the public than it was before. Please explain the basis for your conclusion for each of the above locations.</p>	<p>As stated in paragraph 9.1.1.6 of the Statement of Reasons [APP-032], no works are proposed which will permanently affect the public recreational use of the open space land or its physical appearance. The cables will be located underground and the open space land will be reinstated after construction of the onshore cable route. The only above ground infrastructure remaining in the open space land after construction (if any) will be marker posts. No permanent above ground infrastructure will be located on the beach.</p> <p>Paragraph 9.1.1.10 of the Statement of Reasons states that following completion of the construction of the onshore cable route, there may be occasional future maintenance activities associated with the onshore cable route. Any interference with public recreational use of the open space land as a result of such maintenance activities would be temporary in nature.</p> <p>The Applicant therefore considers that the open space land when burdened with the rights sought in the Order will be no less advantageous to the public than it was before for the reasons set out above and therefore the test set out in section 132(3) is satisfied.</p>
Q1.14.29	Applicant	<p>Paragraph 2.1.1.8 of the Statement of Reasons [APP-032] states that negotiations for the purchase of land, rights and interests are ongoing but that it is necessary to seek Compulsory Acquisition powers.</p> <p>Please explain why it is necessary to seek compulsory acquisition powers over land where agreement has been reached?</p>	<p>The Applicant refers to paragraph 7.4.1.2 of the Statement of Reasons which sets out the reasons why the Applicant is seeking compulsory acquisition powers over land where agreement has been already been reached. This is standard practice for DCO applications to ensure that there is no impediment to delivery of the NSIP.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.30	Applicant	Paragraph 5.2.1.4 of the Statement of Reasons [APP-032] states that the width of the permanent and/or temporary areas may change where obstacles are encountered.	A) Any increase would depend on the width of the obstruction that is encountered and would only be sufficient for avoidance of the obstacle. As much as possible any obstacle would be managed within the anticipated permanent corridor (maximum of 60m), but dependant on the extent of the obstacle encountered, additional width may be required. The Applicant is confident that any obstacles can be managed within the limits of the Order land.
		A) By how much might the width of the permanent and/or temporary areas change?	B) Any amendments to cable spacing for obstacle avoidance are an exception and will have to be dealt with by exception to working and cable installation methods in that specific area. This will cause disruption to working methods and add risks due to potentially reduced cable spacing and is therefore not applicable to other working areas. The cables are designed to a minimum cable circuit separation which will be reflected in the cable corridor arrangement. Where the minimum circuit spacing is reduced due to obstructions, the cables may operate outside of their design parameters, leading to potential loss of performance and possible future failure. The minimum cable circuit spacing separation is therefore required to be maintained along the entire route unless reasonably unavoidable, such as at locations where obstacles are encountered.
		B) Does this mean that it is possible to modify the cable spacing and/or working areas locally?	It would not be expected that cable spacing distance could be reduced as a result of any obstacle due to possible design limitations on the cable design, it would generally be expected that the cable spacing would increase if required to avoid the obstacle encountered, thus resulting in wider width being required. It may be possible to arrange for the temporary works, such as soil storage to be altered to allow for greater flexibility around obstacles, dependant on their nature.
		C) To what extent and over what distance might such local modifications occur?	C) Again, this is dependent on the obstacle, but they would be over the minimum distance possible, due to the requirement to minimise the risks highlighted in the previous answer.
		D) Does this mean that there may be areas of land within the Order limits which are not required?	D) Please see the Applicant's response to Q1.14.17B.
		E) If so, what would happen to such land?	
		F) Can you confirm that any such modifications would be within the Order limits sought?	
		G) How do you know that the land within	

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		the Order limits as applied for is the minimum necessary if the alignment is not fixed?	<p>E) Please see the Applicant's response to Q1.14.17B.</p> <p>F) The Applicant is not seeking compulsory acquisition powers or temporary use powers outside of the Order land and therefore any modifications would need to be within the Order land.</p> <p>G) Please see the Applicant's response to Q1.14.17B. The land within the Order land is the minimum necessary to deliver Hornsea Three taking into account the flexibility required in respect of transmission technology and recognising that further ground investigations and other ecological surveys will be undertaken prior to the commencement of construction. It would not be proportionate for the Applicant to be required to undertake detailed ground investigations along the entire onshore cable corridor and finalise the detailed design prior to the making of the DCO. Additionally, some flexibility for micro siting is required in case the topography, ecological status or use of the land changes between submission of the Application and the commencement of construction.</p> <p>The alignment of the cables is generally considered to be fixed for the maximum number of cables expected. Such alignment does not take into account unforeseen obstacles that could restrict the installation of the cables at any particular location.</p>
Q1.14.32	Applicant	<p>Paragraph 7.3.1.1 of the Statement of Reasons [APP-032] refers to the continuation of private rights where this would not interfere with the construction or operation of the Hornsea Project Three.</p> <p>How and when would the undertaker decide whether existing private rights would continue?</p>	<p>Article 20(6) of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1) sets out the procedure whereby the Applicant will notify the holder of a private right that the provisions in Article 20(1) to (3) (which provide for the right to cease to have effect or be suspended) do not apply to that right. The Applicant must serve the notice prior to the circumstances set out in Article 20(6)(a). Alternatively, the Applicant can enter into an agreement with the holder of a right at any time pursuant to Article 20(6)(b).</p> <p>A decision as to whether a right will interfere with the construction or operation of Hornsea Three cannot be made until the detailed design has been finalised. The Applicant will also need to assess the extent of private rights that exist at that point in time as further private rights may have been granted after the coming into force of the DCO.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.33	Applicant	<p>Schedule 4 gives details of those public rights of way (PRoW) which it is proposed would be temporarily stopped up. These are shown on the Public Rights of Way Plan [APP-016].</p> <p>Where diversions are to be put in place, how would the necessary rights be secured?</p>	<p>Temporary diversions would be located within the Order land and, if required, the Applicant could use the powers set out in Article 25(1)(f) to take possession of the land for this purpose.</p>
Q1.14.34	Applicant	<p>The Onshore Crossing Schedule [APP-089] states that the crossing of Footpath - Weybourne FP7 (OID 534) is to be by 'HDD with haul road over or Open Cut' and that prior to stopping up or localised diversion the Parish Council would agree measures in accordance with Outline Code of Construction Practice.</p> <p>A) Would it be appropriate to commit to horizontal directional drilling (HDD) at this location to minimise impacts on users of the footpath?</p> <p>B) Please explain what other measures might be used.</p>	<p>With reference to Weybourne FP7 (Peddars Way/ Norfolk Coast Path) at landfall, both HDD and open cut trenching is retained as options for cable installation at landfall. Based on the initial high level investigative works (in the form of preliminary nearshore geotechnical surveys) the Applicant considers that trenchless techniques may be feasible through the intertidal and therefore, has sought to include this option in the consent envelope. The specific approach taken forward (as part of the final scheme design) will be informed by HDD feasibility to be informed by detailed site investigation work undertaken post consent, as well as other construction logistics. In respect to these other construction logistics, open cut remains the Applicant's preferred approach to cable installation at landfall as it is less technically complex approach, utilising simpler construction methods as well as decoupling time critical construction activities, providing greater certainty in construction and installation programmes at reduced costs. Open cut works also reduces the marine interface, with no need for offshore HDD exit pits and associated dredge and backfill operations. Onshore, open cut activities typically entail less onshore traffic (with no HDD drill rigs required for example, or bentonite deliveries to site) and typically entail a smaller associated construction compound than those required to support HDD operations. Finally, open cut works can also be undertaken over a shorter time period when compared with HDD, with typical works per cable taking 1 month (Paragraph 3.6.12.23 of Volume 1, Chapter 3: Project Description of the Environmental Statement, APP-058) over 4 months for each HDD operation (Table 3.51: Maximum design parameters for TJBs and landfall work of APP-058).</p> <p>The assessment of impacts on PRoW within Volume 3, Chapter 6: Land Use and Recreation of the Environmental Statement (APP-078) has considered the maximum design scenario (which in this instance comprises the impact on PRoW resulting from the use of open cut technology).</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.35	Applicant	Given the standard cable corridor width of 80m, please explain why plots 1-001, 1-002, 1-003, 1-004, 1-006 and 1-008 as shown on sheet 1 of the Onshore Land Plan [APP-011] are the size they are.	Offshore cables at Plots 1-001, 1-002, 1-003 and 1-004 require a larger separation distance than onshore cables to accommodate the installation vessels and the agreed methodology for installing the cables at the beach location. As the methodology for the works at this location has not yet been finalised, it is not identified where exactly the cables will be installed at the plot numbers above.  1-006 and 1-008 are associated with the Transition joint bay locations and the indicated plot sizes reflect the requirement for the construction of a compound large enough to accommodate of the likely works and equipment at this location, including transition joint bays, HDD equipment, and offshore cable installation equipment. The exact size location and extent of these works has yet to be finalised.
Q1.14.36	Applicant	Should plot 1-023 as shown on sheet 1 of the Onshore Land Plan [APP-011] be contiguous with plot 1-022?	No, the reasoning behind the proposed arrangement of plots 1-023 and 1-022 is that there is a there a group of trees in the discontinued area between them and it not proposed that these trees will be affected by the works.
Q1.14.37	Applicant	Given the standard cable corridor width of 80m, please explain why plot 3-019 as shown on sheet 3 of the Onshore Land Plan [APP-011] appears to be up to around 120m wide.	Plot 3-019 is associated with the proposed HDD crossing of the North Norfolk Railway and in this regard in accordance with previous HDD crossings of railway crossings we have allowed for individual HDD crossings per cable phase rather than cable circuit, so this would result in up to 18 HDD crossings rather than 6 at the majority of other HDD locations. As such the wider corridor is required to accommodate all the HDD works associated with this crossing.
Q1.14.38	Applicant	In the Onshore Crossing Schedule [APP-089], OID 468 is shown as Cromer Road (A148). Should this read Kelling Road?	Correction made to Onshore Crossing Schedule [APP-089], OID 468, replacing <del>Cromer Road (A148)</del> with <u>Kelling Road</u> .  An updated Onshore Crossing Schedule [APP-089] is provided at Appendix 24 to the Applicant's response to Deadline 1.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.38  (Duplicate numbering by ExA).	Applicant	In the Onshore Crossing Schedule [APP-089], OID 425 is shown as Little Barningham Road.  Should this read Little Barningham Lane as shown on sheet 9 of the Onshore Land Plan [APP-011]?	Correction made to Onshore Crossing Schedule [APP-089], OID 425, replacing <del>Little Barningham Road</del> with <u>Little Barningham Lane</u> .  An updated Onshore Crossing Schedule [APP-089] is provided at Appendix 24 to the Applicant's response to Deadline 1.
Q1.14.39	Applicant	Sheet 9 of the Onshore Crossing Schedule [APP-089] shows HDD 74a as 'Horizontal Directional Drilling with haul road over or Open Cut'. There does not appear to be a corresponding entry in the schedule itself.  Please explain this apparent inconsistency.	Correction made in an updated Onshore Crossing Schedule [APP-089] which is provided at Appendix 24 to the Applicant's response to Deadline 1 submission. It is noted that the hedgerow at HDD73 (adjacent to OID423 has also been added).
Q1.14.40	Applicant	Should plots 11-007 and 11-008 as shown on sheet 11 of the Onshore Land Plan [APP-011] be contiguous with plots 11-005 and 11-006?	No, the intention at this location is to use an existing field entrance, rather than create a new one. The gap is intentional.
Q1.14.41	Applicant	Plot 13-006 as shown on sheet 14 of the Onshore Land Plan [APP-011] narrows locally to just over 60m wide at its southern end. Plot 32-004 as shown on sheet 32 of the Onshore Land Plan [APP-011] tapers over a distance of around 200m to around 60m wide.	Plot 13-006 narrows to a pinch point of 63m to avoid the need to HDD under or work through the established trees immediately to the east or west. Whilst this reduced width is not optimal and will require special working arrangements – the soil storage area proposed on the same plot just to north will assist in facilitating construction, by removing the need to provide for soil storage immediately next to the cable corridor as would typically be the case had the full 80m width been available.  Plot 32-004 narrows to a pinch point of 64m. The cables at this location need to curve around to cross Intwood Lane by way of HDD. To ensure that the cables are aligned at this HDD point they will need to be "pushed" to the northern

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		Given the standard cable corridor width of 80m, please confirm that these widths are sufficient to enable the project to be constructed.	<p>edge of the field. In doing so the full 80m width is not required on the southern part of the field. Whilst this reduced width is not optimal and will require special working arrangements – the soil storage area proposed on the same plot just to north will assist in facilitating construction, by removing the need to provide for soil storage immediately next to the cable corridor at this pinch point as would typically be the case had the full 80m width been available.</p> <p>In both these cases the corridor width at this location is suitable for the works to be constructed.</p>
Q1.14.42	Applicant	Sheet 15 of the Onshore Land Plan [APP-011] and the Book of Reference [APP-033] both show plot 15-007 as Reepham Road and plot 15-009 as B1145 Cawston Road. However, they appear on sheet 15 of the Onshore Crossing Schedule [APP-089] where they are described as OID 359 (HDD_58) Wood Dalling Road and OID 351 (HDD_56) Anglian Water respectively. Please amend as necessary to ensure consistency.	<p>Correction made to Onshore Crossing Schedule [APP-089], OID 359, replacing <del>Wood Dalling Road</del> with <u>Reepham Road</u>.</p> <p>Correction made to Onshore Crossing Schedule [APP-089], OID 351, replacing <del>Anglian Water</del> with <u>Cawston Road (B1145)</u>.</p> <p>An updated Onshore Crossing Schedule [APP-089] is provided at Appendix 24 to the Applicant's response to Deadline 1.</p>
Q1.14.43	Applicant	<p>The Onshore Crossing Schedule [APP-089] states that the crossing of Footpath - Reepham FP18 (OID 346) is to be by 'HDD with haul road over or Open Cut' and that prior to stopping up or localised diversion the parish council would agree measures in accordance with the Outline Code of Construction Practice.</p> <p>A) Would it be appropriate to commit to HDD at this location to minimise impacts on users of the footpath?</p>	<p>A and B) No, the project requires the ability to HDD or open cut at this location. This location is associated with the crossing of the Norfolk Vanguard Offshore Windfarm export cables. One project (Hornsea Three or Norfolk Vanguard / Norfolk Boreas) at this location will need to install by way of open cut and the other company installing the cables by HDD. As the arrangement between Vattenfall and Orsted has still to conclude which cables will be installed to which method, it would not be appropriate to commit to one particular method.</p>



PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		B) Please explain what other measures might be used.	
Q1.14.44	Applicant	Given the standard cable corridor width of 80m, please explain why plot 16-001 as shown on sheet 16 of the Onshore Land Plan [APP-011] appears to be up to around 120m wide.	Plot 16-001 is associated with the cable crossing with the Norfolk Vanguard Offshore Windfarm cables. Taking into consideration the potential technical difficulties associated with this crossing due to the electrical interaction of the two sets of cables, it is considered appropriate that additional space is allowed to ensure that the cables can be suitably separated either in open cut trenches or HDD to minimize the effects of the crossing of the cables.
Q1.14.45	Applicant	Should plots 19-002 and 19-004 as shown on sheet 19 of the Onshore Land Plan [APP-011] be contiguous with plots 19-001, 19-005, 19-006 and 19-007?	No, the intention at this location is to use an existing field entrance, rather than create a new one. The gap is intentional.
Q1.14.46	Applicant	In the Onshore Crossing Schedule [APP-089], OID 240 is shown as Ringland Lane (HDD_38).  Is it actually the track leading to Field Farm as shown on sheet 22 of the Onshore Land Plan [APP-011]?	Amendment made to Onshore Crossing Schedule [APP-089], OID 240, replacing <del>Ringland Lane</del> with <u>Track leading to Field Farm</u> .  An updated Onshore Crossing Schedule [APP-089] is provided at Appendix 24 to the Applicant's response to Deadline 1.
Q1.14.47	Applicant	Please explain the need for plots 23-006 and 23-007 as shown on sheet 23 of the Onshore Land Plan [APP-011].	These plots are required for an access track to allow access for the cable installation works.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.14.48	Applicant	<p>There are some small areas of land which it appears would be landlocked for the duration of the works by land subject to temporary possession (for example plot 1-020 on sheet 1 of the Onshore Land Plan [APP-011]).</p> <p>Please confirm that all persons with interests in landlocked plots have been included as Category 3 persons in Part 2b of the Book of Reference [APP-033].</p>	<p>Part 2b of the Book of Reference [APP-033] includes persons with an interest in land outside of the Order limits who the Applicant considers would or might be entitled to make a relevant claim pursuant to s10 of the Compulsory Purchase Act 1965, Part 1 of the Land Compensation Act 1973 or s152(3) of the Planning Act 2008. For example, those properties that may be entitled to make a claim for a diminution in value caused by physical factors once Hornsea Three is in operation.</p> <p>Persons with an interest in land subject to temporary possession are listed as Category 1 or Category 2 persons in Parts 1, 2a and 3 of the Book of Reference (as appropriate).</p> <p>Depending on the circumstances, a person with an interest in a "landlocked plot" may be able to make a claim for compensation due to injurious affection or severance, make a claim pursuant to s10 of the Compulsory Purchase Act 1965, Part 1 of the Land Compensation Act 1973 or s152(3) of the Planning Act 2008 or be entitled to compensation pursuant to Article 25(5) and Article 26(6) of the Applicant's Revised draft DCO [APP-027] (Revision A, submitted for Deadline 1).</p> <p>It would not be appropriate to list all persons with interests in "landlocked plots" as Category 3 persons in Part 2b of the Book of Reference.</p> <p>In respect of the area of land to the east of plot 1-020 and the west of plot 1-019, this land would not be landlocked as the Applicant is only seeking a temporary right of access so as to avoid locating the haul road through an area of trees. The existing agricultural track would remain available for use to those currently entitled to use the track.</p>

## 1.19 Written Question 1.15 General

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.15.1	Applicant	Please provide revised summary tables for all ES chapters showing the relevant National Planning Policy Framework 2018 policies and any revised Planning Policy Guidance extracts that you have relied upon.	Summary tables have been prepared for all the onshore chapters of the Environmental Statement showing the relevant National Planning Policy Framework (NPPF) 2018 policies and any revised Planning Policy Guidance (PPG) extracts. The tables are contained in Appendix 21 Revised National Planning Policy Framework to the Applicant's response to Deadline 1. Offshore chapters have not been included in the summary tables as there are no applicable policies in the NPPF or PPG.
Q1.15.2	Applicant	The Secretary of State will need to have regard to the Public Sector Equality Duty when determining this application.  Please provide an assessment of any equalities impacts the project may have.	The Applicant proposes to submit an equalities statement in order to assist the Secretary of State with its regard to the Public Sector Equality Duty at Deadline 2.
Q1.15.3	Applicant	"The lists of other plans or projects and maximum design scenarios for the cumulative effect assessments of each principal ES chapter do not account for the change in status of more recent projects such as Norfolk Vanguard and Thanet Extension.  Please provide updated tables and assessments that take into account all relevant plans and projects that have emerged since the application was submitted."	The Applicant refers the Ex.A to Appendix 16 to the Applicant's response to Deadline 1, which provides a detailed response. This includes an explanation of the effect of the recent changes in status of the Norfolk Vanguard and Thanet Extension projects on the Hornsea Three Cumulative Effects Assessment (CEA). The response also includes consideration of recent updates (e.g. change in status and Non Material Changes) to other offshore wind projects considered within the original Hornsea Three CEA and new onshore planning applications on the Hornsea Three CEA.  The response provides an updated CEA Screening Matrix for the identified projects to show which of the onshore and offshore topics had the potential to be affected by these updates and changes.

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.15.4	Marine Management Organisation (MMO)	<p>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.</p> <p>Please provide specific examples where, in your view, the ES assessments are not in line with the Rochdale envelope approach.</p>	<p>Following receipt of the MMO's Relevant Representation, the Applicant has discussed this issue with them and provided further clarification on the matter in their response to the MMO's Relevant Representation (RR85) at points 1.5, 1.21, 1.24 and 1.25.</p>
Q1.15.5	Applicant, Highways England	<p>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].</p> <p>A) 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?</p>	<p>A) A SoCG between the Applicant and Highways England is provided at Deadline 1, confirming that principal of the two assets crossing is not a material concern to either party. As referenced in paragraph 9.4.11.9 of the Consultation Report [APP-034] the Applicant met with Highways England during and post the statutory consultation (Phase 2.A) on the PEIR to discuss their plans to dual the A47 in more detail. In response to feedback, the Applicant slightly amended the locations at which Hornsea Three will HDD under the A47 and moved a temporary construction compound for the HDD works further north to ensure that both projects could continue to be delivered and not fetter each other.</p> <p>As part of detailed design, both projects will need to consider if any additional technical specifications will need to be applied at this location to ensure asset integrity is maintained. However the applicant is confident that all works can be captured within the Order Limits. Installation of crossing points with infrastructure such as larger roads is fairly common for high voltage export cable installation, with a similar construction method being utilised at the proposed A11 crossing, further south along the export cable corridor.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
		<p>B) How would the powers sought by the applicant interact with those which may in due course be sought by Highways England?</p> <p>C) Should the Order include protective provisions in respect of Highways England?</p>	<p>B) The Applicant considers it unnecessary to include protective provisions in the Order in respect of Highways England's improvements works to the A47. Highways England's project will be subject to its own DCO consent which is currently estimated to be submitted in 2020. The Applicant and Highways England are in discussions about the protection of each other's assets and the inclusion of protective provisions will be discussed further once Highways England are in a position to submit its DCO application.</p> <p>See response to part B)</p>
Q1.15.6	Applicant	<p>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.</p> <p>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?</p>	<p>It is the applicant's expectation that by the end of examination that the Outline CoCP is finalised and then forms part of the approved project. The final Outline CoCP then establishes the principles by which any subsequent detailed CoCPs prepared post consent / pre-commencement of works will be developed and agreed with each respective local planning authorities. The Outline CoCP is secured by Requirements 12, 15 and 17 of the Draft DCO [APP-027].</p> <p>The Outline CoCP is referenced as 'living' document post examination (pre-determination) in the event that, in determining the application the SoS may be minded to add additional obligations into the Outline CoCP (as opposed to adding in additional requirements in the DCO). 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.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.15.7	Applicant	<p>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.</p> <p>How would adequate mitigation be secured if it is not finalised by the end of the examination and then used as the basis for detailed Ecological Management Plans approved pursuant to Requirement 10?</p>	<p>It is the applicant's expectation that by the end of examination that the Outline EMP is finalised and then forms part of the approved project. The final Outline EMP then establishes the principles by which any subsequent detailed EMPs prepared post consent / pre-commencement of works will be developed and agreed with each respective local planning authorities. The Outline EMP is secured by Requirements 8 and 10 of the Draft DCO [APP-027].</p> <p>The Outline EMP is referenced as 'living' document post examination (pre-determination) in the event that, in determining the application the SoS may be minded adding additional obligations into the Outline EMP (as opposed to adding in additional requirements in the DCO). 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 EMP would then form part of the certified document under Article 35 of the DCO.</p>
Q1.15.9	Applicant	<p>Paragraph 1.3.1.2 of the Outline Code of Construction Practice [APP-179] states that local authorities, the highway authority and the MMO would agree or be consulted upon the content of any detailed Codes of Construction Practice.</p> <p>Would it be appropriate to include NE and the EA?</p>	<p>The detailed Code of Construction Practice for a given phase would be submitted and approved by the relevant planning authority, in consultation with the relevant highway authority and, if applicable, the MMO pursuant to Schedule 1, Part 3, Requirement 17 of the dDCO. The Applicant has amended the wording of this Requirement and paragraph 1.3.1.2 of the Outline CoCP [APP-179] to reflect the consultation of Natural England and the Environment Agency through the Discretionary Advice Service processes.</p>
Q1.15.10	Applicant	<p>Paragraph 4.1.7.7 of the Outline Code of Construction Practice [APP-179] states that secondary construction compounds may be required.</p> <p>Please specify where these are likely to be located.</p>	<p>A description of the secondary construction compounds is provided in paragraph 3.7.3.33 – 3.7.3.35 of Volume 1, Chapter 3: Project Description of the Environmental Statement [APP-058]. The location of the five secondary construction compounds at strategic points along the onshore cable corridor are identified in various topic chapters of the Environmental Statement, including Figure 1.1 of Volume 3, Chapter 1: Geology and Ground Conditions of the Environmental Statement [APP-073]. The secondary construction compound locations and soil storage locations are also identified on Works Plan (Onshore) [APP-013] labelled as Work No. 15 (storage areas). It is noted that separate, dedicated construction compounds are also provided in support of construction of landfall works, and at the HVAC Booster and HVDC converter/HVAC substation respectively.</p>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.15.13	Applicant	<p>Paragraph 1.1.1.4 of the Outline Landscape Management Plan [APP-181] states that the final version would be agreed with local planning authorities.</p> <p>Is it intended that the final version would be agreed during the course of the examination?</p>	<p>It is the applicant's expectation that by the end of examination that the Outline LMP is finalised and then forms part of the approved project. The final Outline LMP then establishes the principles by which any subsequent detailed LMPs prepared post consent / pre-commencement of works will be developed and agreed with each respective local planning authorities. The Outline LMP is secured by Requirements 8 and 9 of the Draft DCO [APP-027].</p> <p>The Outline LMP is referenced as 'living' document post examination (pre-determination) in the event that, in determining the application the SoS may be minded adding additional obligations into the Outline LMP (as opposed to adding in additional requirements in the DCO). At the point of determination of the DCO the Outline LMP and the principles it establishes would be fixed and no longer 'living'. That final Outline LMP would then form part of the certified document under Article 35 of the DCO.</p>
Q1.15.15	Applicant	<p>Paragraph 1.3.1.2 of the Outline Fisheries Coexistence and Liaison Plan [APP-183] states that it is a 'living document' that would be updated throughout the post consent process despite the preparation of a detailed Fisheries Coexistence and Liaison Plan.</p> <p>How would the production of an Outline Fisheries Coexistence and Liaison Plan be secured if it is not finalised by the end of the examination?</p>	<p>The Outline Fisheries Coexistence and Liaison Plan (FCLP) [APP-183] is an outline for the final FCLP which will be fully developed, post consent. As outlined in Schedule 11, Part 2, condition 13(4) and Schedule 12, Part 2, condition 14(4) of the draft DCO (Version 1, submitted for Deadline 1), the FCLP will be submitted and approved by the MMO prior to the commencement of licensed activities. The conditions to the DMLs also allow for subsequent approval of amendments to approved details.</p> <p>The Outline FCLP has been updated since submission of the Application for the project based on stakeholder feedback (and is submitted at Appendix 36 to the Applicant's response to Deadline 1). If required, further amendments could be made during the examination and the final outline document submitted before the examination closes.</p> <p>So, in summary, what is meant by "living document" is that:</p> <ul style="list-style-type: none"> <li>(a) there is scope to refine the Outline FCLP during the examination, but it must be finalised by examination close;</li> <li>(b) any post-exam/consent additions/amendments could be adopted in to the FCLP secured and approved by condition; and</li> <li>(c) the FCLP approved by the MMO could in theory be further amended, subject to approval by the MMO</li> </ul>

PINS Question number:	Question is addressed to:	Question:	Applicant's Response:
Q1.15.16	Applicant, BDC	<p>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.</p> <p>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.</p>	<p>Details of the relevance and implications of the appeal decision for the anaerobic digester plant at Oulton Airfield is provided within Annex B of Appendix 20 Main Construction Compound Briefing Note to the Applicant's response to Deadline 1.</p>