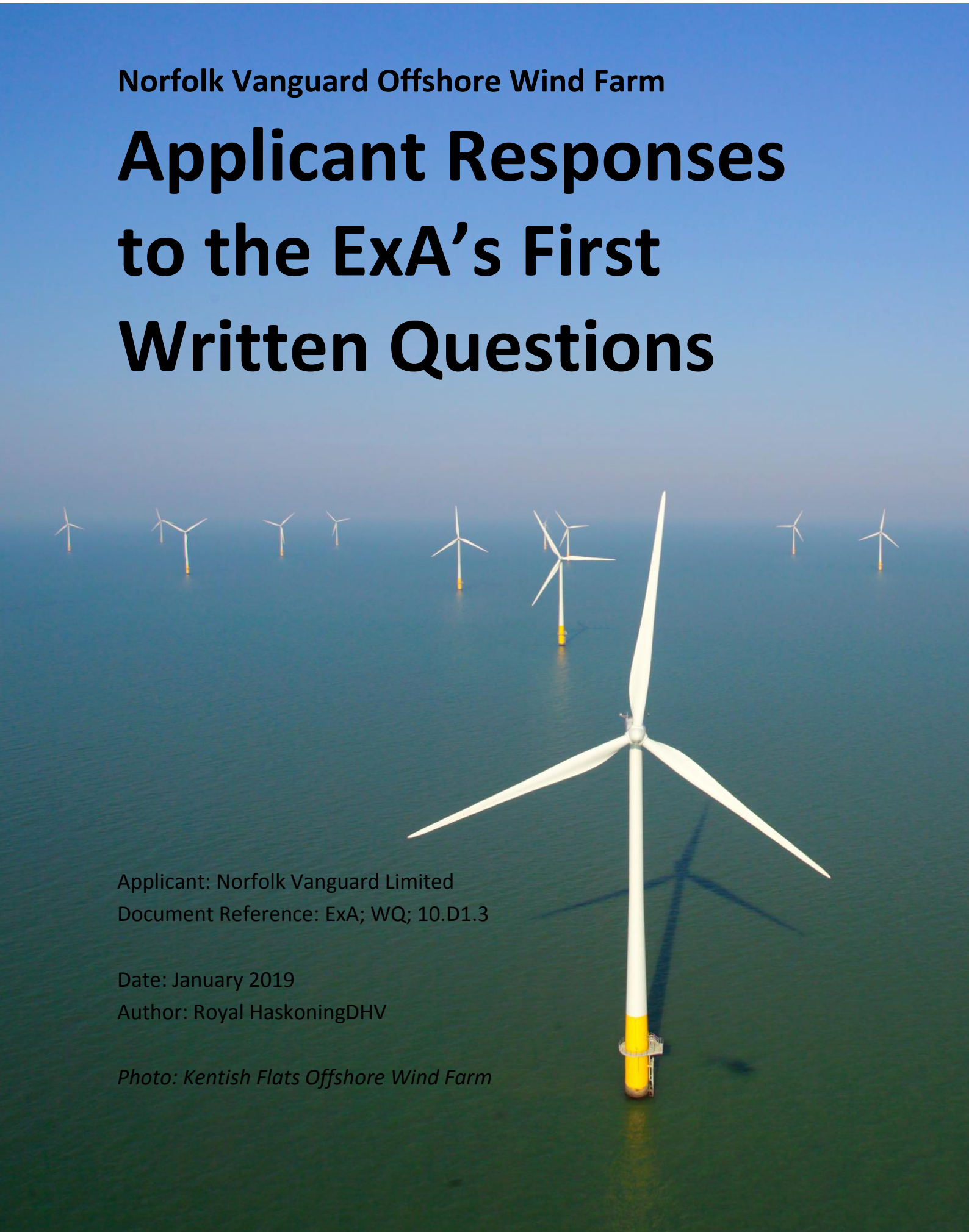
Norfolk Vanguard Offshore Wind Farm

Applicant Responses to the ExA's First Written Questions



Applicant: Norfolk Vanguard Limited

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Author: Royal HaskoningDHV

Photo: Kentish Flats Offshore Wind Farm

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Glossary

ACP	Airspace Change Proposal
ADD	Acoustic Deterrent Device
ADR	Alternative Dispute Resolution
AEoI	Adverse Effect on Integrity
ALC	Agricultural Land Classification
ALO	Agricultural Liaison Officer
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
BB4ER	Better Broadband for East Ruston
BC	Breckland Council
BCT	Bat Conservation Trust
BDC	Broadland District Council
BDMPS	Biologically Defined Minimum Population Scales
BMV	Best and Most Versatile
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CBS	Cement Bound Sand
CfD	Contract for Difference
CIA	Cumulative Impact Assessment
CMS	Construction Method Statement
CNMP	Construction Noise Management Plan
CoCP	Code of Construction Practise
CPRE	Campaign to Protect Rural England
CRM	Collision Risk Modelling
CRoW	Countryside and Rights of Way
cSAC	Candidate Special Area of Conservation
DCO	Development Consent Order
dDCO	Draft Development Consent Order
DfT	Department for Transport
DIOS	Defence Infrastructure Organisation Safeguarding
DML	Deemed Marine Licence
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMP	Ecological Management Plan
EPS	European Protected Species
ERCOP	Emergency Response Cooperation Plans
ES	Environmental Statement
ESCA	European Subsea Cables Association
ETG	Expert Topic Group
ExA	Examining Authority
FID	Final Investment Decision
FLO	Fisheries Liaison Officer
FRA	Flood Risk Assessment
HDD	Horizontal Directional Drilling

HE	Highways England
HGV	Heavy Goods Vehicle
HHW	Haisborough Hammond and Winterton
HistE	Historic England
HoTs	Heads of Terms
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IALA	International Association of Marine Aids to Navigation And Lighthouse Authorities
ICPC	International Cable Protection Committee
IPMP	In Principle Monitoring Plan
JNCC	Joint Nature Conservation Committee
km	Kilometres
LiDAR	Light Imaging, Detection and Ranging
LMS	Landscape Management Scheme
LVIA	Landscape and Visual Impact Assessment
MarESA	Marine Evidence Based Sensitivity Assessments
MarLIN	Marine Life Information Network
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
MSS	Marine Scotland Science
NCC	Norfolk County Council
NE	Natural England
NFFO	National Federation of Fishermen's Organisations
NNDC	North Norfolk District Council
NNG	Neart Na Gaoithe
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OASIS	Online Access to the Index of Archaeological Investigations
OCoCP	Outline Code of Construction Practise
OCP	Onshore Connection Point
OFH	Open Floor Hearing
OFTO	Offshore Transmission Owner
OLEMS	Outline Landscape and Ecological Management Strategy
OREI	Offshore Renewable Energy Infrastructure
ORJIP	Offshore Renewables Joint Industry Programme
OTMP	Outline Traffic Management Plan
OTP	Outline Travel Plan
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way

pSPA	Potential Special Protection Area
PSR	Primary Surveillance Radar
PTS	Permanent Threshold Shift
PVA	Population Viability Analysis
RAF	Royal Air Force
RPA	Relevant Planning Authority
RR	Relevant Representation
RSPB	Royal Society for The Protection of Birds
RYA	Royal Yachting Association
SABN	Substation Access Briefing Note
SAC	Special Area of Conservation
SAR	Search and Rescue
SCI	Site of Community Importance
SIP	Site Integrity Plan
SNCB	Statutory Nature Conservation Body
SoCG	Statement of Common Ground
SoR	Statement of Reasons
SPA	Special Protection Area
SPZ	Source Protection Zone
SuDS	Sustainable Drainage Systems
SWDP	Surface Water Drainage Plan
TCE	The Crown Estate
TCP	Transmission Capital Partners GP Limited
TCPA	Town and Country Planning Act 1990
TH	Trinity House
TMP	Traffic Management Plan
TMZ	Transponder Mandatory Zone
TWT	The Wildlife Trusts
UKHO	UK Hydrographic Office
UXO	Unexploded Ordnance
WDC	Whale and Dolphin Conservation
WFD	Water Framework Directive
WHO	World Health Organisation
WSI	Written Scheme of Investigation

1 APPLICANT'S RESPONSES TO THE FIRST WRITTEN QUESTIONS

1. Following the issue of First Written Questions by the Examining Authority (ExA) outlined in the Rule 8 Letter of 19 December 2018 to the Applicant and other Interested Parties, the Applicant has subsequently responded to each of those relevant questions. Details of Applicant's responses are set out within this document in subsequent sections below.

1.1 General

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
1.1	Applicant	Please confirm whether the additional material contained in the Change Report [AS-009] and Errata document [AS-010] falls within the parameters that have been assessed in the ES. If any of the proposed changes/corrections fall outside the assessed parameters, please highlight these and explain how they have been subject to further assessment and the results of that assessment. In the event that the changes are accepted please confirm how they would be secured in the dDCO, giving a clear indication of all consequential amendments to the dDCO.	In preparing the Change Report and the Errata, the Applicant has considered whether each amendment has the potential to give rise to any significant impacts beyond those which have been assessed in the Environmental Statement (**ES**). In addition, the Applicant has considered the potential implications of the amendments on the application documents as submitted in June 2018. Following a thorough review of these potential implications, none of the proposed amendments have been found to result in any change to the impacts assessed in the ES or any relevant Development Consent Order (**DCO**) application documents as submitted. Table 2.16 of the Change Report lists the relevant application documents which will require updating if the changes are accepted. This table also makes it clear that there are no changes to the significance of the impacts assessed in the ES. The relevant amendments to the Order Limits will be captured in the Land Plans (document reference 2.02), Works Plans (document reference 2.04), and other relevant Plans (e.g. Access to Works Plans) which will be secured through the draft Development Consent order (**dDCO**) (in particular through Schedule 1, Authorised Project). These changes will also be explained further in the Statement of Reasons and Explanatory Memorandum, as well as outlined in an updated version of the Book of Reference. A full list of the documents to be updated can be found in the Applicant's Guide to the Application, submitted at Deadline 1 (document reference 1.4 (Version 2)). The Applicant intends to submit revised versions of the relevant application documents at Deadline 2. The Errata document provides information on inconsistencies and errors identified in the DCO application documents. These inconsistencies are all considered to be non-material. Table 2.1 and Table 28.27 of the Errata provides a full list of the errata identified in the ES and how the changes impact on other application documents.
1.2	Breckland Council, Broadland District Council, Norfolk	Please provide comments on any relevant information contained in the Change Report [AS-009] and Errata document [AS-010], and	

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	County Council, North Norfolk District Council, Natural England (NE), Marine Management Organisation (MMO), Environment Agency, Historic England (HistE), Highways England (HE)	whether you agree with the conclusions reached by the Applicant. In the event that the amendments are accepted please indicate any consequential amendments which you require to the dDCO.	
1.3	Applicant	Chapter 5, paragraph 289 of the Environmental Statement [APP-329] states that the temporary landfall compound shown in Figure 5.3 of the ES [APP-378] would be 60m long by 50m wide. However, Figure 5.3 [APP-378] depicts two indicative landfall compounds. Please clarify this.	With reference to paragraph 295 of ES Chapter 5 Project Description, the Rochdale envelope for Norfolk Vanguard includes the option of concurrent drilling with two parallel drilling rigs. Therefore, two indicative landfall compounds, each of 50m x 60m are depicted in Figure 5.3.
1.4	Applicant	Please supply a full, up-to-date and unabridged copy of the Horlock Rules.	A full version of the Horlock Rules is provided in Appendix 1.1 (document reference ExA; WQApp1.1; 10.D1.3). Table 4.3 of ES Chapter 4 Site Selection Alternatives presents how the Horlock Rules have been taken into consideration as part of the development of the onshore project substation location.
1.5	Applicant	Please comment upon the concerns raised by interested parties at the Open Floor Hearing (OFH) in relation to the deliverability of the project having regard to your commitment to use HVDC technology.	Vattenfall considers that the project as defined in the application and including the commitment to high voltage direct current (**HVDC**) technology is fully deliverable, given the current state of the art in offshore wind technology and construction practice. This applies to the HVDC export system in addition to the offshore wind farm itself. Vattenfall is currently working with a number of HVDC technology providers, to evaluate a range of HVDC solutions for the export infrastructure for both Norfolk Vanguard and Norfolk Boreas. This activity has reinforced Vattenfall's confidence in the breadth and depth of the supply chain for HVDC solutions, and in the deliverability of the HVDC export systems for these projects.

1.2 Principle and Nature of the Development

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2.1	Applicant	Chapter 4 of the ES [APP-328] and the Strategic Approach to Selecting a Grid Connection Point document [AS-007]. Having regard to the Horlock Rules and NPS EN-1 paragraph 5.9.8, as well as the concerns expressed by Interested Parties in the RRs and at the OFH with regard to why Necton was chosen for the location of the proposed substation, could you provide further and more detailed information regarding the site selection process and the decisions taken within that process, with full justification for each decision.	Paragraph 5.9.8 of the National Policy Statement (**NPS**) EN-1 addresses landscape impacts. *"Virtually all Nationally Significant Energy Infrastructure Projects will have effects on the landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate".* Chapter 4 Site Selection and Assessment of Alternatives of the ES (along with Appendices 4.1 to 4.9 of the ES) (document 6.1.4, and 6.2.4.1-6.2.4.9) and the report titled Strategic Approach to Selecting a Grid Connection Point (document Pre-ExA; OCP Report; 9.2) provide detailed information on both the approach to identifying a grid connection point and the process for identifying, at the identified connection point, preferred locations for the onshore project substation and national grid extension. A summary of this process is provided below. The process of identifying a grid connection point was a joint process with National Grid plc aimed at providing, in line with National Grid's statutory duties, an efficient coordinated and economic assessment of available options to connect the project to the national transmission system, looking at technical, commercial, regulatory, environmental, planning and deliverability aspects to identify the preferred connection to the consumer. A long list of potential onshore connection points (**OCP**) was identified and included Walpole, King's Lynn, Necton, Shipdham, Dereham, Brandon Parva, Norwich Main, Diss, Eye and Bramford, and coastal connection points at Bacton, Gorleston-on-Sea, Lowestoft and Sizewell. Locations requiring longer transmission distances (with higher costs and environmental impacts) were eliminated from the list, as were inland locations that did not make use of existing (or proposed) 400kV substation infrastructure. This left a shortlist

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			comprising inland locations at Norwich Main, Necton and Eye, and coastal locations at Bacton, Gorleston-on-Sea and Lowestoft. An offshore cable route screening exercise identified three possible landfall areas (Bacton to Cart Gap, Gorleston-on-Sea and Lowestoft to Kessingland). Lowestoft was removed at this stage due to the length of the offshore cable route and number of offshore cable crossings. Bacton to Cart Gap was considered more favourable than Gorleston-on-Sea due to the presence at the latter location of highly mobile sandwaves and proximity to dredging grounds. Bacton to Cart Gap was therefore taken forward as the landfall search area. (Due to the exclusion of these landfall areas, inland locations at Eye, as well as the two coastal locations at Gorleston and Lowestoft were eliminated). At this point, it was also determined – through discussions with National Grid – that the provision of a new coastal connection point within the required project time-frames would be unlikely. This was largely due to the long timescales involved in the planning and consenting of new overhead lines. This resulted in the elimination of the coastal location at Bacton. Following this, the only options remaining were Necton and Norwich Main for OCPs. Two study areas were developed for these OCP options. A constraints mapping exercise identified Necton as the preferred of these two options due to an increased interaction with designated sites, roads, rivers, and populated areas and particularly the proximity to the Broads National Park associated with a connection to Norwich Main from the landfall search area. Whilst information was provided by Norfolk Vanguard Limited to contribute to the joint process of identifying an OCP, the final decision and offer of a connection point was determined by National Grid plc. To refine the scoping area and identify the most appropriate location to site the onshore project substation, the National Grid's Guidelines on Substation Siting and Design (Horlock Rules) were taken into consideration, and specific applications of these guidelines and how they have been considered by the Applicant is detailed in Table 4.3 of Chapter 4 Site Selection and Assessment of Alternatives.

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			In order to minimise the distance between the OCP (existing Necton National Grid substation) and the onshore project substation a 3km substation search area was identified. Distances beyond 3km from the OCP are considered unacceptable due to transmission losses. The Horlock Rules also prioritise the grouping of existing electrical infrastructure. This 3km study area was consulted on as part of the Scoping Report, through formal and informal community consultation, and during community drops in, meetings with landowners, stakeholders and regulators. The Applicant undertook extensive pre-application engagement over a 20-month period with stakeholders, communities and landowners to seek input for refining the project design. This is detailed in the Consultation Report (document 5.1). As per the Horlock Rules section 4.1, *'consideration must be given to environmental issues from the earliest stage'*. NPS EN-1 para 5.9.8 (referred to above) also points to the need to take account of the potential impact on the landscape, to minimise harm to the landscape, and to provide reasonable mitigation where possible and appropriate. Therefore, areas with relatively fewer environmental constraints were preferred. Areas taken forward for consideration within the 3km search area were those with an absence of Public Rights of Way and environmental designations, as well as those being sufficient distance from residential areas to minimise noise impacts. Additional benefits associated with those areas progressed included existing natural screening, aggregation of electrical infrastructure, and the most direct cable corridors (to reduce transmission losses). This assessment (along with stakeholder feedback) allowed for refinement to a keyhole search area which was presented in March 2017 as part of community and stakeholder consultation, and then further refinement to an onshore project substation search area (Plate 7 in ES Appendix 4.9 document reference 6.2.4). Within this search area 4 potential footprint options were identified. These footprints were subject to a detailed environmental appraisal, taking into account flood risk, ground conditions, archaeology, noise, traffic, land use, air quality, ecology, ornithology, landscape and visual impacts, socio-economics and tourism. Option 4 was discounted due to concerns over visibility from nearby properties and Necton village, option 3 was less favourable due to likely presence of buried archaeology as well as

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			visibility concerns and option 1 was considered to have slightly greater noise, ecology, traffic and access issues. Therefore footprint option 2 (as presented in the ES (document 6.1) and works plans (document 2.5)) was considered the preferred option for the following reasons: • It provides a site within the original substation search area (in proximity to the Necton National Grid substation) and allows a comparatively simple alignment of cables coming from the onshore cable corridor, through the onshore project substation site and joining to existing infrastructure at the Necton National Grid substation; • The site has good ground conditions, with comparatively low risk from flooding; • The site is deemed to have comparatively less potential impact associated with known buried archaeology; • It poses the lowest potential noise impacts; • It has good potential for the development of screening planting and other mitigation measures that will be provided to help to mitigate the impacts of the development; and • Existing mature hedge lines will be retained and used as natural screening. The NPS is clear that '*from a policy perspective this NPS EN-1 does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option'*, however it does state that '*Applicant's are obliged to include in their ES...information about the main alternatives they have studied*.' ES Chapter 4 Site Selection and Assessment of Alternatives, along with ES Appendices 4.1 to 4.9 provide a detailed narrative of the siting, design and refinement process the project has followed during site selection. Using a multi-disciplinary design team, the site selection process as described above took into account environmental, physical, technical, commercial and social considerations as well as engineering requirements, with the aim of identifying a site that will be environmentally acceptable whilst also enabling benefits of the lowest energy cost to be passed on to the consumer.

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			A full landscape assessment of the proposed substation is set out in Chapter 29 of the ES together with proposed mitigation measures.
2.2	Applicant	In Para 56 of [APP-071] (Consultation Report Appendix 9.8 Water Resources, Flood Risk, and Ground Conditions Outgoing Documents), it is noted that the Happisburgh South landfall site is the only landfall option which can accommodate 12 ducts. The requirement for 12 ducts appears to have been predicated upon the use of HVAC technology. When was the landfall site finally chosen and was the need to accommodate 12 ducts determinative in that decision? If it was before the decision to commit to HVDC technology please confirm whether or not the decision to choose Happisburgh for landfall was revisited and set out details of the decision making process.	The preferred landfall site at Happisburgh South was identified and presented at PEIR (October 2017), prior to the decision to commit to HVDC technology. However the sites suitability was reviewed following the commitment to HVDC technology (February 2018) as part of the refinement of the onshore cable route (see Section 4.11 of Chapter 4 Site Selection and Alternatives). The ability of the Happisburgh South landfall site to accommodate up to 12 ducts (sufficient for Norfolk Vanguard and Norfolk Boreas with high voltage alternating current (**HVAC**) technology) was a consideration in the site selection, however it was not a determining factor. With reference to Para 57 of ES Chapter 4 Site Selection and Alternatives and with further detail in ES Appendix 4.6, Happisburgh South was selected as the preferred landfall location for the following key reasons: • Avoids the nationally designated Marine Conservation Zone (**MCZ**) (the Cromer Shoal Chalk Beds); - this was the only shortlisted landfall site to achieve this • Allows co-location of Norfolk Vanguard and Norfolk Boreas landfall and reduces total amount of area directly impacted; • Avoids populated areas as far as possible; • Avoids areas at risk of flooding as far as possible; • Provides opportunities associated with Happisburgh archaeology - consultation ongoing with Natural History Museum, British Museum, Queen Mary University of London and Norfolk County Council Historic Environment Service; and • Avoids technical engineering and feasibility risks associated with locating infrastructure in the brown field site within the Bacton Gas Terminal land.
2.3	Applicant	Please set out the full extent of the proposed 'enabling works' for Norfolk Boreas [APP-029], and	Para 5 of ES Chapter 5 Project Description notes that in order to minimise impacts, Norfolk Vanguard Limited will include within its DCO application some

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		confirm whether these have been fully assessed in the ES.	enabling works for the Norfolk Boreas project. These are clearly defined within Chapter 5 and are assessed in the relevant technical chapters. Para 281 of Chapter 5 outlines these enabling works as: Installation of ducts to house the Norfolk Boreas cables along the entirety of the onshore cable route from the landward side of the transition pit at the landfall to the onshore project substation; and Overhead line modifications at the Necton National Grid substation for both projects. The installation of additional ducts for Norfolk Boreas throughout the onshore cable route is described within the dDCO under Work No. 5, 6 and 7. Overhead line modifications will be required for Norfolk Vanguard (as described in Work No. 11) and will benefit Norfolk Boreas. Pre-construction works detailed within Section 5.5.8.1 of Chapter 5 also consider the requirements of Norfolk Boreas to minimise future disruption and therefore cover a cable route width of up to 45m. These pre-construction works include: • Road modifications for access; • Hedge and tree netting / removal; • Ecological preparations; • Archaeological preparations; and • Pre-construction drainage These Norfolk Boreas enabling works have been fully assessed in the ES as part of the Norfolk Vanguard design envelope. Other aspects of the Norfolk Boreas project not classified as enabling works, are considered within cumulative assessments of the ES.

1.3 Ecology Offshore - Ornithology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
3.1	NE and RSPB	Can you confirm that you are content that the baseline environment for ornithology along the offshore cable corridor has been sufficiently well informed and has been characterised correctly?	
3.2	NE	Based on the 'Rochdale envelope' parameters for the project that the Applicant has stated, can you confirm whether in your view the methodology used in the modelling assesses the worst case collision risk?	
3.3	Applicant, NE and RSPB	Can an update be provided on the progress that has been made since NE's RR [RR-106] and RSPB's RR [RR-197] in resolving the outstanding areas of disagreement regarding the following offshore ornithology matters for Norfolk Vanguard alone and in-combination, and in particular in regard to the following matters: a) The use of potential biological removal (PBR) versus population viability analysis (PVA) modelling; b) The mean peak seasonal abundances for red-throated diver that have been used in the operational displacement assessments and matrices in Tables 13.27 to 13.29 of ES Chapter 13 [APP-337]; c) The displacement and mortality rate levels that have been used for red- throated diver; d) The use of the Applicant's own stochastic collision modelling (CRM) rather than that advocated by the RSPB and NE (ie the Marine Scotland Science Model, MacGregor *et al*	The Applicant has been working on assessment clarifications and updates which address the points raised by Natural England and the Royal Society for the Protection of Birds (RSPB) in their Relevant Representations (RRs). The following updated assessments are attached as appendices to this response: • Norfolk Vanguard Offshore Wind Farm Offshore Ornithology: Red-throated diver displacement (Appendix 3.1, document reference ExA; WQApp3.1; 10.D1.3) • Norfolk Vanguard Offshore Wind Farm Offshore Ornithology: Collision Risk Modelling: update and clarification (Appendix 3.2, document reference ExA; WQApp3.2; 10.D1.3) • Norfolk Vanguard Offshore Wind Farm Offshore Ornithology: Operational Auk Displacement: update and clarification (Appendix 3.3, document reference ExA; WQApp3.3; 10.D1.3) Work to address further comments from Natural England (**NE**) and the RSPB is ongoing and updates will be submitted for later Examination deadlines. Further responses to the specific questions are provided below. a) No further discussion has been had on this topic due to an initial focus on addressing the questions raised by NE and the RSPB on the estimated mortalities due to collisions and displacement. Once these aspects have been

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		2018); e) As requested by NE, please can the Applicant please provide the CRM input data that it has used in its own stochastic CRM, including the R code; f) The use of median bird densities within the CRM, and the overall derivation of bird densities used in the CRM; g) The Nocturnal Activity Factor that has been used in the CRM; h) Can the Applicant explain its reasoning for using displacement assessments for Norfolk Vanguard East using birds in flight and birds on the water, but only birds on the water for Norfolk Vanguard West, and clarify whether any corrections if made would be likely to alter the conclusions reached; i) The differences between the deterministic model and the Applicant's model in terms of collision mortality; j) The apportioning of mortality to SPAs; k) Having regard to the evidence from Cleasby *et al* (2015) that the RSPB has cited, the appropriateness of the gannet avoidance rate in regard to the breeding season; l) The kittiwake tracking data, including the availability of the RSPB data; m) The effectiveness of predator management at the Alde-Ore Estuary SPA as a mitigation measure in regard to lesser black-backed gull.	resolved, the appropriate means to predict the consequences (i.e. population modelling) will be considered in order to reach agreement on the most appropriate means to predict impact consequences. b) The mean peak estimates for Norfolk Vanguard West used in the original assessment mistakenly omitted birds in flight. This error has been corrected and the revised estimates have been presented in Appendix 3.1: Red-throated diver displacement. c) A comprehensive review of red-throated diver displacement at operational offshore wind farms has been undertaken and is provided in Appendix 3.1 Red-throated diver displacement. The revised assessment provides predictions using the NE advised range of rates of displacement and mortality and also evidence-based ones derived from the review of data collected at operational offshore wind farms. d) The Marine Scotland Science (**MSS**) Collision Risk Model (**CRM**) was not available at the time of the Norfolk Vanguard assessment. Appendix 3.2 (Collision Risk Modelling: update and clarification) provides comparisons of the outputs from the MSS model with those presented in the Norfolk Vanguard ES and also other collision risk input parameters and outputs as requested by Natural England. The report clearly demonstrates that the Applicant's stochastic model, the MSS model and the Band deterministic model all calculate collisions in the same way and (given the same input parameters) produce the same collision estimates. e) The Collision Risk Modelling: update and clarification (Appendix 3.2) provides the complete input data as requested by NE in their RR to allow them to calculate deterministic collision mortalities. Data files containing input data to allow NE to use the MSS model can also be supplied on request, however the Applicant's R code was not written to be accessible for others to use and is

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			embedded within a much larger piece of code which runs the complete analysis of the data. It would take considerable effort to modify the code and input data to make it a standalone piece of analysis code and this would simply replicate the MSS model. Therefore, the Applicant considers that this is not an efficient or appropriate use of time or resources. The above considerations notwithstanding, the Applicant can submit the R code to NE in confidence and subject to an agreement that it would only be used to confirm the modelling methods and would not be shared with third parties. f) This aspect is discussed in the Collision Risk Modelling: update and clarification (Appendix 3.2) which provides further explanation for why this measure has been used for the deterministic CRM. It is also important to note that the stochastic CRM is not based on median densities but rather samples across the complete range of densities estimates from the survey data. g) Nocturnal activity factors have not been subject to further discussion, although the rates for gannet are now available in Furness *et al*. 2018. However alternative outputs using the NE recommended rates have been provided in the Collision Risk Modelling: update and clarification (Appendix 3.2). With respect to kittiwake nocturnal flight activity, this is an area of ongoing research and discussion with the RSPB and further updates will be provided when they become available. h) As noted in response to Q3.3b above, this refers to a mistake in the assessment of red-throated diver displacement which has been corrected in Appendix 3.1: Red-throated diver displacement. It should be noted that taking all the available evidence into account and including the corrected abundance estimates Appendix 31: Red-throated diver displacement reaches the same conclusions as those presented in the ES.

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			i) The Collision Risk Modelling: update and clarification (Appendix 3.2) presents the outputs from the deterministic CRM which are the same as those obtained using the Applicant's model when run using the same input parameters. This demonstrates that there is no inherent difference between the models. j) Apportioning of mortality to Special Protected Areas **(SPA**) colonies was conducted for the Habitats Regulations Assessment (**HRA**) using a variety of sources including recent assessments and available evidence. The apportioning rates have not been reviewed at this stage, but this aspect will be considered during the Examination and an update provided as necessary. k) Cleasby *et al*. (2015; Appendix 3.8) showed that gannets fly higher when searching for fish and fly lower when commuting. They did not suggest that there is any difference in behaviour of breeders and nonbreeders in this respect (and their study was only of breeding adult gannets). It seems likely from the results in Cleasby *et al*. (2015; Appendix 3.8) that collision risk will be lower for gannets that are commuting than for gannets that are foraging. That raises questions about the behaviour of gannets at the Norfolk Vanguard site. If gannets forage at the Norfolk Vanguard site, then risk of collision may be higher than if they just commute through the area. However, Cleasby *et al*. (2015; Appendix 3.8) did not provide any evidence that breeding gannets forage more than nonbreeding gannets. So there is no evidence to suggest that avoidance rates should be considered to be different between nonbreeders and breeders based on data in Cleasby *et al*. (2015; Appendix 3.8). It would be necessary to compare behaviour of breeding and nonbreeding gannets in order to assess whether birds forage more during the breeding season or during the nonbreeding season. The Applicant is not aware of any studies which present such evidence. It is possible that gannets forage more during the nonbreeding season because fish are less readily available than during the breeding season (one reason for gannets breeding in summer is thought to be that they have better food supplies at that time of year so breeding is timed to coincide with best

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			availability of food). However, breeding gannets may forage more during chick-rearing than during incubation because they then have a chick to feed as well as themselves. This may tend at least in part to cancel out the likely lower availability of fish during winter. The Applicant cannot see any evidence in Cleasby *et al*. (2015; Appendix 3.8) to suggest that breeding and nonbreeding gannets should be considered to differ in their avoidance rates. However, based on Cleasby *et al*. (2015; Appendix 3.8) it is highly likely that collision risk varies spatially depending on whether an area is important for foraging or is not important for foraging. In that regard, the Applicant expects that the Norfolk Vanguard site is likely to be less important for gannet foraging, because numbers of gannets at the site are low in most months of the year, except during the migration period when birds are commuting through the area towards their preferred wintering areas such as off West Africa. Indeed, Cleasby *et al*. (2015; Appendix 3.8) specifically state '*in the southern North Sea where gannets are mainly seen during migration, when they may spend little time foraging*'. On that basis, the Applicant considers that collision risk at Norfolk Vanguard is likely to be lower than in areas where gannets regularly forage. The Applicant would note that the avoidance rate recommended for collision risk modelling by the Statutory Nature Conservation Bodies (**SNCBs**) (98.9%) is itself precautionary, as recognised by the SNCBs. That avoidance rate is lower than the rate recommended by the SNCBs for large gulls, despite the fact that there is strong evidence that gannets show much higher macro-avoidance than shown by large gulls. Furthermore, the recent ORJIP study (Skov *et al*. 2018*) has calculated a gannet empirical avoidance rate of 99.9%. The RSPB provides no evidence to support use of an avoidance rate of 98% for breeding gannets, and the Applicant cannot find any evidence to suggest that an avoidance rate of 98% would be appropriate. The Applicant does, however, think that it is relevant to consider whether an area may be used predominantly for foraging or predominantly for commuting, as that is more likely to affect collision risk, through differences in the distribution of flight heights. It is important to note that this would not necessarily have anything to do with the

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			avoidance rate, but rather would relate to differing proportions of birds at potential collision height in areas used for foraging and areas used for commuting. *Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. and Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final Report – April 2018. The Carbon Trust, United Kingdom. l) The RSPB has supplied the kittiwake tracking data to the Applicant and preliminary analysis has been undertaken. However, further work is required and this will be discussed with the RSPB and NE. Following this the results will be presented and used as appropriate. m) Breeding numbers of lesser black-backed gulls at Orfordness (part of the Alde-Ore Estuary SPA) fell from 23,000 pairs in 2000 to 5,500 pairs in 2001 Joint Nature Conservation Committee (**JNCC**) SCM database) and this decrease was attributed to fox predation; 75% of nests in 2000 failed as a result of fox predation and many breeding pairs abandoned the colony as a consequence (Mavor *et al*. 2001). Breeding numbers remained around 4,500 to 6,500 pairs from 2001 to 2006, then declined further to 1,678 pairs in 2007, 1,584 pairs in 2008, 900 pairs in 2009, 550 pairs in 2010, 550 pairs in 2011 and 640 pairs in 2012 (JNCC SCM database). The main cause of this further decrease also appears to have been fox depredations at the colony. The Applicant simply made the point that excluding foxes from this colony could have a much greater beneficial effect for lesser black-backed gull conservation than any other single conservation measure associated with this site. Foxes can be controlled by shooting, but protection of the colony area with fox-proof fencing would be a practical measure and is well established as a successful method to protect ground nesting birds from foxes, without the need for lethal control. Predator proof fences have been used in several locations with great success. One example is successful deployment of predator proof fence around 20 ha of

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			coastal habitat within Ka'ena Point Natural Area Reserve, Hawaii (Young *et al*. 2012). By 2006, in total, around 109 km of predator proof fencing had been erected in various areas of mainland New Zealand to exclude predators from sites with important populations of native animals and birds (Scofield *et al*. 2011, Innes *et al*. 2012, Scofield and Cullen 2012). A predator proof fence was established in 2007 for 10.6 km across Cape Kidnappers Peninsula, New Zealand, to protect burrow-nesting seabirds from predators (Cooper 2013). A predator proof fence was used at Pitt Island (Chatham Islands) to protect 36 ha of breeding seabird habitat from feral pigs and cats (Furness 2013). Cooper (2013) lists further examples of highly successful deployment of predator proof fencing around seabird colonies at 50 sites around the world. Less expensive is deployment of electric fence around gull colonies which can exclude foxes, although not with complete success, so that monitoring of fox presence and the integrity of the electric fence needs to be reviewed regularly. It is clear that the collapse of the Alde-Ore lesser black-backed gull population can be attributed primarily to depredations by foxes over many years since 1999 (Mavor *et al*. 2001 and subsequent annual reports), but there appears to have been little work done yet to prevent these depredations by foxes (Natural England 2017); no predator-proof fencing has yet been erected at the site as far as the Applicant is aware. Natural England has defined the status of lesser black-backed gulls at the Alde-Ore Estuary SPA as requiring to be restored, with an objective to restore the population to above 14,074 pairs. The Applicant understands that Natural England (2017) has been developing a predator control management plan for this colony (but the Applicant has not yet seen that published or put into action) which is intended to return the colony to a positive population trajectory. This appears sensible given the evidence that this form of management is highly likely to be successful and would have a much greater conservation gain for this site than any other management measure. It is also important to note that, irrespective of the proposed Natural England led management action, the impact on the SPA population due to the Norfolk Vanguard wind farm is predicted to be negligible and therefore not significant (see Applicant's response to Q23.35 for further supporting

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			discussion on this impact) and consequently there is no requirement for project level mitigation. Cooper, J. 2013 Predator-proof fences are helping to protect procellariiform seabirds, including ACAP-listed albatrosses and petrels[1] Furness, R.W., MacArthur, D., Trinder, M. and MacArthur, K. 2013. Evidence review to support the identification of potential conservation measures for selected species of seabirds. Report to Defra[2]. (Appendix 3.4) Innes, J., Lee, W.G., Burns, B., Campbell-Hunt, C., Watts, C., Phipps, H. and Stephens, T. 2012. Role of predator-proof fences in restoring New Zealand's biodiversity: a response to Scofield *et al*. (2011). New Zealand Journal of Ecology 36, 232-238. Mavor, R.A., Pickerell, G., Heubeck, M. and Thompson, K.R. 2001. Seabird numbers and breeding success in Britain and Ireland, 2000. UK Nature Conservation No 25. JNCC, Peterborough. Natural England 2017. Alde-Ore Estuary SPA Supplementary Advice[3] Scofield, R.P., Cullen, R. and Wang, M. 2011. Are predator-proof fences the answer to New Zealand's terrestrial faunal biodiversity crisis? New Zealand Journal of Ecology 35, 312-317. Scofield, R.P. and Cullen, R. 2012. Fenced sanctuaries need critical evaluation: a reply to Innes *et al*. (2012). New Zealand Journal of Ecology 36, 239-242. Young, L.C., Vanderwerf, E.A., Mitchell, C., Yeun, E., Miller, C.J., Smith, D.G. and Swenson, C. 2012. The use of predator proof fencing as a management tool in the Hawaiian Islands: a case study of Ka'ena Point Natural Area Reserve. University of Hawaii Pacific Cooperative Studies Unit Technical Report 180, 1-87.

[1] http://www.acap.aq/index.php/en/news/latest-news/1359-predator-proof-fences-are-helping-to-protect-procellariiform-seabirds-including-acap-listed-albatrosses-and-petrels
[2] http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=19403
[3] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009112&SiteName=&SiteNameDisplay=Alde-Ore+Estuary+SPA&countyCode=&responsiblePerson=

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
3.4	Applicant	Can you please provide an assessment of the significance of disturbance and displacement effects to red-throated diver within a 4km buffer and with a range of displacement rates up to 100% and mortality rates of up to 10%.	Additional assessment of red-throated diver displacement has been provided in Appendix 3.1: Red-throated diver displacement (document reference ExA; WQApp3.1; 10.D1.3) using the displacement and mortality rates advised by Natural England (i.e. 100% displacement, 10% mortality within the wind farm and 4 km buffer). The note also provides a comprehensive review of studies conducted at operational wind farms and ecological studies of this species. Evidence based rates have been derived from this review and these have also been used for the assessment.
3.5	Applicant	In its RR [RR-106] NE has stated that the population data of red-throated diver pre-dates installations of some wind farms. Therefore please can you provide bird abundance estimates that are summed for each applicable offshore wind farm and inserted into a displacement matrix with 100% displacement and 10% mortality.	Additional assessment for red-throated diver has been presented in Appendix 3.1: Red-throated diver displacement (document reference ExA; WQApp3.1; 10.D1.3) includes estimates of the abundance in the applicable wind farms (where these could be obtained). The cumulative assessment has been undertaken using the rates advised by Natural England and also the evidence based rates derived from the review of studies at operational wind farms and ecological studies of this species. This updated assessment reaches the same conclusions regarding the magnitude and significance of predicted impacts.
3.6	RSPB	Can you clarify what information you consider is required to rule out cumulative operational displacement to North Sea populations of red-throated diver.	
3.7	Applicant	Please comment on how the results of the collision risk assessment for seabirds would be altered should the mean density values be used.	The Collision Risk Modelling: update and clarification note (Appendix 3.2, document reference ExA; WQApp3.2; 10.D1.3) provides comparisons of the collision predictions obtained using the mean densities alongside the median densities and those for the upper and lower 95% confidence interval density estimates. There is a direct relationship between the input density value and the output mortality, so if the density is doubled the mortality is doubled. Since the mean densities are higher than the medians (in many instances, although not all) this results in higher collision predictions. However, the Collision Risk Modelling: update and clarification note (Appendix 3.2) also includes additional discussion and presentation of survey data which provides further support for the use of the median densities rather than the mean densities for collision risk assessment. In summary, this is because the distribution of seabird densities

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			obtained from the analysis of survey data are very strongly skewed in most months, with large numbers of low values and occasional high ones. It is standard practice with such data to consider the median as the more reliable indicator of central values than the mean, since the latter is heavily influenced by the occasional high numbers. For example, Fowler and Cohen (1990) state that when the distribution of data is skewed (as in these seabird counts), 'the median provides a more realistic description of the centre of the distribution than the mean'. Sokal and Rohlf (1969) similarly point out that 'an example of the preferred application of a median over the arithmetic mean may be in populations showing skewed distribution', as the median provides a more representative measure than the arithmetic mean when data distribution is skewed. They present the often quoted example from economics; the very high salaries of the few senior executives shift the arithmetic mean to a completely unrepresentative value for employees as a whole. The median, on the other hand, is little influenced by the few very high outlying and unrepresentative values as it identifies the point on the salary scale where half of employees earn above and half earn below the value. Fowler, J and Cohen, L. 1990. Practical Statistics for Field Biology. Open University Press, Milton Keynes. Sokal, R.R. and Rohlf, F.J. 1969. Biometry: The Principles and Practice of Statistics in Biological Research. W.H. Freeman & Co, San Francisco.
3.8	Applicant	In relation to NE's RR [RR-106], and having regard to the non-stochastic model, please can you provide the full set of input parameters in order to be able to run the Band (2012) spreadsheets, including the multiple tables of non-stochastic outputs where each parameter in turn is varied.	The Collision Risk Modelling: update and clarification note (Appendix 3.2, document reference ExA; WQApp3.3; 10.D1.3) provides the full set of CRM input data and also presents copies of the spreadsheet outputs. Tables of the deterministic CRM obtained using the upper and lower input parameter values have also been provided.
3.9	Applicant	Can you please explain why you have used different displacement rates and mortality rates for the displacement of auks for the project alone and cumulatively?	The assessments presented displacement matrices which covered a very wide range of both displacement (10% - 100%) and mortality (1% to 100%) for both the project alone and cumulatively. For the project alone a highly precautionary combination of 70% displacement and 10% mortality were discussed as the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			worst case maximum impact. For the cumulative assessment, the 70% displacement was considered with 1% mortality. The lower mortality rate was considered appropriate for consideration of cumulative auk displacement as this more closely reflects the evidence base than the arbitrary precautionary value advised by NE. Evidence on auk displacement at operational wind farms has been reviewed in the Operational Auk Displacement: update and clarification note (Appendix 3.3, document reference ExA; WQApp3.3; 10.D1.3). This supports the use of the lower rate used in the cumulative assessment.
3.10	Applicant	Can you comment on how the results of the cumulative displacement assessment for auks would be altered should the same displacement and mortality rates be used as for the project alone.	Use of higher rates of displacement and mortality in the cumulative assessment would increase the significance of predicted impacts. However, following a comprehensive review of auk displacement provided in the Operational Auk Displacement: update and clarification note (Appendix 3.3, document reference ExA; WQApp3.3; 10.D1.3) it is clear that the Natural England advised rates are highly precautionary and are likely to considerably over-estimate predicted impacts.
3.11	Applicant	Can you comment on how the results of the assessment of displacement to gannet would be altered should an adult annual survival rate of 0.912 be used.	The ES used an all ages gannet survival rate of 0.81 in the assessment of displacement calculated from demographic data to reflect the range of age classes expected to be at risk of collisions and displacement, an approach which recognises that mortality would be likely to affect all age classes, and not just adult gannets. The worst case gannet displacement presented in the ES was an estimate for combined displacement mortality from both Norfolk Vanguard East and West (which is unrealistic since this would only occur if both sites were fully developed) summed across the whole annual cycle. The total mortality assessed in this manner was 25 individuals, which was calculated to raise the background mortality rate (defined as 0.191) of the largest Biologically Defined Minimum Population Scales (**BDMPS**) population and biogeographic population by 0.03% and 0.01% respectively. If the lower adult mortality rate of 0.088 (based on survival of 0.912) is used, the increases in background mortality would be 0.06% and 0.024% respectively. These remain well below the 1%

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			increase threshold at which effects are considered detectable and therefore this would not alter the conclusions of the assessment.
3.12	RSPB	Please set out what information you consider is required to enable cumulative operational displacement to North Sea populations of auks (guillemot, razorbill and puffins) to be ruled out?	
3.13	NE	In reference to the errors that you have noted in your RR [RR-106] in regard to Tables 13.69 and 13.71 of the ES [APP-337], please confirm that these have now been corrected in the revised assessment that has been submitted by the Applicant.	
3.14	Applicant	NE notes in its RR [RR-106] that the figures presented within the ES for gannet at Neart na Gaoithe Offshore Wind Farm differ from those presented for EA THREE in terms of being lower. Can you please explain this apparent discrepancy?	The gannet collision estimates presented for Neart na Gaoithe (**NNG**) in the Norfolk Vanguard ES assessment were taken from the NNG assessment and are therefore considered to be reliable. The figure reported in the East Anglia THREE ES assessment is cited as that presented in the Hornsea Project Two assessment (SmartWind 2015c. Hornsea Offshore Wind Farm Project Two, Clarification Note – Apportioning of predicted gannet mortality to the Flamborough and Filey Coast potential Special Protection Area (**pSPA**) population.). It is not therefore clear what the origin of this discrepancy is, however the figure presented in the Norfolk Vanguard assessment is correct as far as the Applicant can determine. The Applicant also notes that the collision predictions for all the Forth and Tay wind farms (NNG, Inch Cape and Seagreen Alpha and Bravo) have decreased following revised assessments which were submitted after the Norfolk Vanguard ES was submitted.
3.15	RSPB	Can you please explain what information is required to rule out cumulative collision mortality to North Sea populations of kittiwake and great black-backed gull?	
3.16	NE and Applicant	Can you confirm for which species of non-seabird migrants you consider cumulative CRM is required?	The assessment of non-seabird collision risk has not been updated at this stage so the Applicant is not in a position to provide an answer to this question at

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			present. This aspect will be addressed for subsequent submissions. However, the Applicant anticipates that as a minimum such an assessment would need to consider the inclusion of the same species assessed for the nearby East Anglia ONE and THREE wind farms, with the addition of those species identified by Natural England in their RR (Bewick's swan and avocet). In the first instance a screening exercise would be undertaken to ensure that all relevant species are considered and that those at risk are taken forward to assessment.
3.17	Applicant	Can you comment on the need for cumulative CRM for non-seabird migrants?	As noted in response to the previous question (Q3.16), the request for an updated non seabird collision risk assessment has not yet been addressed by the Applicant. The first stage of this will be to screen species for both project alone and cumulative collision risks, and it is anticipated that this will determine the need for a cumulative assessment.
3.18	Applicant or RSPB or NE	Please provide the following papers that have been referred to in either the ES, NE's RR [RR-106] or RSPB's RR [RR-197]: Cleasby *et al* (2015), Furness (2015), Furness *et al* (2013), Furness *et al* (2018), Garthe *et al* (2004), Green *et al* (2016), MacGregor *et al* (2018), O'Brien *et al* (2017), Wade *et al* (2016).	The requested documents are provided in the following appendices to this submission: • Appendix 3.4 Furness, B, MacArthur, D., Trinder, M. & MacArthur, K. (2013) Evidence review to support the identification of potential conservation measures for selected species of seabirds. Report to DEFRA. • Appendix 3.5 Furness, R.W. (2015). Non-breeding season populations of seabirds in UK waters: Population sizes for BDMPS. Natural England Commissioned Reports, Number 164. • Appendix 3.6 Wade, H.M., Masden E.M., Jackson, A.C. & Furness, R.W. (2016). Incorporating data uncertainty when estimating potential vulnerability of Scottish seabirds to marine renewable energy developments. Marine Policy 70:108-113. • Appendix 3.7 Furness, R.W., Garthe, S., Trinder, M., Matthiopoulos, J., Wanless, S. & Jeglinski, J. (2018) Nocturnal flight activity of northern gannets Morus bassanus and implications for modelling collision risk at offshore wind farms. Environmental Impact Assessment Review, 73, 1-6. • Appendix 3.8 Cleasby, I.R., Wakefield, E.D., Bearhop, S., Bodey, T.W., Votier, S.C. & Hamer, K.C. (2015) Three-dimensional tracking of a wide-

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			ranging marine predator: flight heights and vulnerability to offshore wind farms. Journal of Applied Ecology, doi: 10.1111/1365-2664.12529. • Appendix 3.9 Garthe, S and Hüppop, O. (2004). Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index. Journal of Applied Ecology 41: 724-734. • Appendix 3.10 Green, R.E., Langston, R.H.W., McCluskie, A., Sutherland, R. & Wilson, J.D. (2016) Lack of sound science in assessing wind farm impacts on seabirds. Journal of Applied Ecology, doi: 10.1111/1365-2664.12731. • Appendix 3.11 McGregor, R.M., King, S., Donovan, C.R., Caneco, B. & Webb, A. (2018) A stochastic collision risk model for seabirds in flight. Report to Marine Scotland. • Appendix 3.12 O'Brien, S., Ruffino, L., Lehikoinen, P., Johnson, L., Lewis, M., Petersen, A., Petersen, I.K., Okill, D., Väisänen, R., Williams, J. & Williams, S. (2018) Red-Throated Diver Energetics Project - 2018 Field Season Report. JNCC Report No. 627. JNCC, Peterborough, ISSN 0963-8091. • Appendix 3.13 O'Brien, S.H., Cook, A.S.C.P. & Robinson, R.A. (2017) Implicit assumptions underlying simple harvest models of marine bird populations can mislead environmental management decisions. Journal of Environmental Management, 201, 163-171.

1.4 Ecology Offshore – Marine Mammals

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
4.1	Applicant	Please respond to NE's statement in its RR [RR-106] that recent studies have indicated that soft start piling is not significantly less than the noise generated at maximum hammer energy, and that	The dDCO, Schedules 9 and 10 Part 4 Condition 14(f) and Schedules 11 and 12 Part 4 condition 9(f), requires a Marine Mammal Mitigation Protocol (**MMMP**), based on the draft MMMP (document reference 8.13) to be agreed with the Marine Management Organisation (**MMO**) prior to construction. This provides

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		therefore it may no longer be an effective method of mitigating the impact of piling activities.	the framework to identify appropriate marine mammal mitigation based on the best available information at that time. The draft MMMP outlines potential mitigation measures including soft start and Acoustic Deterrent Device (**ADD**). If, soft-start is no longer considered to be effective mitigation by the time of Norfolk Vanguard construction, an alternative could be ADDs, subject to the SNCB guidance at that time. The use of a MMMP to provide the framework for agreeing mitigation has been agreed through the following Statements of Common Ground (**SoCG**)s: • MMO; • The Wildlife Trusts (**TWT**); • Whale and Dolphin Conservation (**WDC**); and • Largely agreed with NE, as noted in NE's SoCG (document reference Rep 1-SOCG-13.1).
4.2	Applicant	Please comment on the revisions to condition 19(3) of Schedules 10 and 11 of the dDCO that NE and the MMO have recommended [RR-106 and RR-186 respectively].	The Applicant is required to submit a construction programme and monitoring plan to the MMO for approval at least four months prior to commencement of any licensed activities (condition 14(1)(b) of the Generation Deemed Marine Licences (**DMLs**) (Schedule 9-10), and Condition 9(1)(b) of the Transmission DMLs (Schedule 11-12)). In discharging this condition, and before the MMO can approve the construction programme and monitoring plan, the Applicant must submit details (which accord with the offshore in principle monitoring plan), for approval by the MMO in consultation with relevant statutory bodies, of the proposed monitoring for the construction of the authorised scheme. The timings, methodologies, and details of further actions in the event of unacceptable levels of noise would therefore be included in the final plan provided for approval by the MMO, pursuant to Condition 14(1)(b) or Condition 9(1)(b) of the DMLs. The Applicant therefore does not believe that it is necessary to amend the wording of the dDCO.
4.3	Applicant	In its RR [RR-013] WDC has recommended that no pile driving at all takes place during the offshore	Section 5.4.3 of ES Chapter 5 Project Description presents the possible foundation types currently available or under design and which have been

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		construction operations. Please comment on what such a restriction would mean on the construction operations and the overall design and viability of the project.	considered in the Norfolk Vanguard envelope. Based on current technology and market availability, a monopile solution is likely to be the most economical solution available for the size of wind turbines proposed and water depths within the Norfolk Vanguard offshore wind farm sites. Removing piled foundations from the consent envelope for Norfolk Vanguard would therefore increase the cost of energy to the consumer and significantly affect the commercial viability of the project.
4.4	Applicant	Please provide evidence of the measures that would be put in place to ensure that no more than two concurrent piling events would take place, and set out how this would be secured in the dDCO.	Condition 14(1)(c) (Generation DML, Schedules 9-10) and Condition 9(1)(c) (Transmission DML, Schedules 11-12) stipulate that the licensed activities must not commence until a Construction Method Statement (**CMS**) has been submitted to and approved by the MMO. The CMS must include details of the foundation installation methodology, including drilling methods. The CMS will therefore include measures to govern the piling activities and it is through Condition 14(1)(c) and Condition 9(1)(c) that this will be secured in the dDCO.
4.5	Applicant	Table 8.9 of the Information for the Habitats Regulations Assessment [APP-045] indicates worst case scenarios for hammer energies of 2,700 kJ for a 9MW to 20MW pin pile structure and 5,000 kJ for a monopile structure. However, these are not specified within the dDCO/DMLs. Please comment on this omission.	The Applicant agrees that hammer energy should be referred to within the conditions in the DMLs. The Applicant is reviewing the proposed wording and will submit a revised dDCO at Deadline 2 of the Examination timetable which will include reference to hammer energy.
4.6	Applicant	Please respond to the comments made in the RR's of WDC [RR-013] and TWT [RR-172] in regard to noise limits for construction activities within the marine environment.	Reduction of noise at source is included as a potential mitigation measure in the In-Principle Site Integrity Plan (**SIP**) (document reference 8.17). The SIP, required under dDCO Schedules 9 and 10 Part 4 condition 14(m) and Schedules 11 and 12 Part 4 condition 9(l), provides the framework for agreeing mitigation measures with the MMO prior to construction based on the best available information at that time. This is agreed with Natural England as shown in the SoCG (Rep 1-SOCG-13.1).
4.7	Applicant	Please comment on the opinion of NE [RR-106] that a Marine Mammal Mitigation Plan would not	NE [RR- 106] states "*The provision of a Marine Mammal Mitigation Plan is designed to protect a marine mammal from the risk of physical injury and*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		remove the risk of disturbance to marine mammals.	*relates to at source protection. And whilst those mitigation measures for physical injury may also help reduce the overall scale of disturbance it doesn't remove the risk*." The Applicant agrees with this statement as the aim of the MMMP is to mitigate injury and not disturbance, as stated in section 3 of the draft MMMP (document 8.13) and section 12.7.1.2.1 of ES Chapter 12 Marine Mammals. As discussed in response to Q4.1, the use of a MMMP to provide the framework to agree mitigation has been agreed through SoCGs with the MMO, TWT, WDC and NE. As outlined in Section 12.7.1.2.3 of ES Chapter 12 and discussed in response to Q4.6, the SIP provides the framework for agreeing mitigation relating to disturbance of harbour porpoise from the southern North Sea candidate Special Area of Conservation (**cSAC**)/Site of Community Importance (**SCI**), in accordance with the In Principle SIP (document reference 8.17).

1.5 Ecology Offshore - Other

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
5.1	Applicant	Please clarify the uncertainty regarding the dredge corridor that is specified in Appendix 7.1 ABPmer Sandwave Study [APP-048] which NE has referred to in its RR [RR-106]	NE [RR- 106] states "*it is unclear whether the dredge corridor is 7m per cable – so 28m in total or 7m per pair so 14m in total.*" In relation to pg5 of Appendix 7.1 of the Information to Support Habitats Regulations Assessment (**HRA**) report (document reference 5.3). A width of approximately 7m is required at the base of the dredge profile in order to install each cable pair (up to two cable pairs will be installed for Norfolk Vanguard). Taking account of the sloping sides of the dredge profile, the disturbance width on the seabed surface would be approximately 20m for each cable pair (see figure below, also provided as Figure 7 of ES Appendix 5.1 Export Cable Installation Study)

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			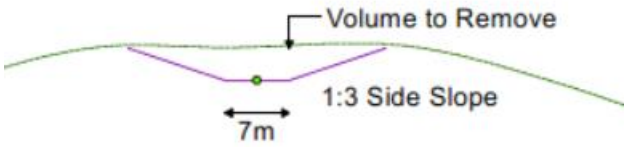 **Indicative Cross Section** N.B. A maximum seabed disturbance width of 30m per cable pair (i.e. 60m in total for the two cable pairs) has been assessed in the ES (e.g. Chapter 10 Benthic Ecology). This is based on the worst case disturbance associated with potential ploughing to install cables. The footprint of dredging would therefore be encompassed within this 30m disturbance width. The dredge profile shown above has been used in ES Appendix 5.1 to calculate the volumes that may arise from dredging within the offshore cable corridor. These volumes have been used in Appendix 7.1 of the Information to Support HRA report in assessing the effects of dredging and disposal on sandwaves.
5.2	Applicant	Please justify your assertion in Appendix 7.1 [APP-048] that there is no difference in deposition following surface or near bed release of disposal material.	The comment relates to the second paragraph in Section 4.3.3 of Appendix 7.1 of the Information to Support HRA Report, where it is stated that "*Theoretically there is very little difference in the potential deposition thickness associated with either [a surface release or disposal at the bed via a downpipe] disposal method*". The same paragraph (also discussed in more detail in the preceding Section 4.3.2 of Appendix 7.1) notes that the shape of individual deposits (including the area, shape and thickness) is likely to be naturally variable and cannot be reliably predicted. The shape will be dependent on several factors, including the disposal method, but also the ambient current conditions at the time of the release, the local water depth, and the pattern in which the main deposit spreads as it settles to the seabed. During surface release disposal, the majority of material descends to the seabed rapidly as a single mass and so is only subject to limited additional advection or dispersion, in comparison to near bed release methods. The dimensions of any resulting sediment deposit are in any case limited by the finite volume of sediment being released (which is the same for either surface or

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			near bed release methods). The full range of realistic worst case scenarios (from maximum thickness and minimum area, to minimum potentially significant thickness and maximum area) are provided in Table 8 of Appendix 7.21 (Document Reference 5.3.7.1) and are considered in the Information to Support HRA report. Therefore, although individual deposits are realistically expected to vary in shape and thickness, the assessed range of potential deposition thicknesses applies equally to either a surface release or near bed release of disposal material.
5.3	Applicant	Please set out your methodology for ascertaining whether one dredge spoil disposal zone will be sufficient or whether multiple zones will be needed, and set out how this is to be secured in the dDCO.	Indicative spoil zones were identified by CWind (ES Appendix 5.1 Export Cable Installation Study) and analysed by ABPmer (Appendix 7.1 of the Information to Support HRA report) to determine the effects of disposal on sandwaves. Analysis based on disposal in one indicative location provides a worst case scenario (as stated in Section 3.3.2 of Appendix 7.1). Should sediment disposal be spread more widely or in multiple locations, the sediment would re-enter the natural system more rapidly. The final approach to cable installation, including the methodology for pre-sweeping must be agreed with the MMO (in consultation with the relevant statutory bodies) through the Cable Specification and Monitoring Plan, as required under dDCO Schedules 11 and 12, Part 4 condition 9(1)(g). The methodology for the cable installation strategy and sediment disposal (if required) will be determined following pre-construction surveys (required under dDCO Schedules 11 and 12 condition 13(2)(b)). The method and location for sediment disposal will be dependent on the installation strategy and cable route, taking into account the location of *Sabellaria* reef at that time (as established by pre construction surveys), in order to provide the required buffer between disposal and reef.
5.4	Applicant	Please respond to NE's concerns in its RR [RR-106] regarding your assessment in Tables 8.21, 8.22 and 8.29 of Chapter 8 of the ES [APP-332] for the Near-field effects being classified as 'low' in scale.	NE [RR-106] sets out the following comments: • Table 8.21 – "*Natural England does not agree that near field effects are low in scale due to the large volume of proposed dredging and material released*". ○ The Applicant acknowledges that the scale of suspended sediment should be classified as high. This results in a medium magnitude of

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			effect, taking into account the duration, frequency and reversibility which are classified as negligible. This has no change to the resulting negligible impact significance concluded for Marine Geology, Oceanography and Physical Processes receptors. ○ This revised position is agreed in the Natural England SoCG (document Rep 1 – SOCG – 13.1) • Table 8.22 & 8.29 – "*Natural England does not agree that the scale is low – what is the justification for this given the large volumes dredged?*" ○ The Applicant acknowledges that the scale of changes to seabed level should be classified as medium in response to this comment by Natural England. This has no change to the overall magnitude classification which remains low, taking into account the duration, frequency and reversibility which are classified as negligible based on the analysis presented in Appendix 7.1 of the Information to Support HRA report which shows that Sandwaves are expected to recover within approximately 1 year. As a result, the Applicant proposes that there is no change to the impact significance presented in the ES.
5.5	Applicant	Paragraph 144 of Chapter 10 of the ES [APP-334] identifies seven out-of-service cables in the offshore cable corridor. Please set out the measures that would be taken should agreement to cross these cables not be agreed with the cable owners, and please respond to NE's view that all of these out-of-service cables should be cut rather than being covered.	Vattenfall is a member of European Subsea Cables Association (**ESCA**). Most cable owners (telecoms, power and renewables) have representation within this association and therefore Vattenfall anticipate that most owners, as per Vattenfall, will be aware of and adhere to the codes of practice established by this body and the International Cable Protection Committee (**ICPC**) in relation to cable installation (including clearance of route corridors - notably Recommendation 01 - Management of redundant and out of service Cables). Vattenfall are currently in the process of identifying and making contact with all cable owners of both in service and out of service cables in order to progress proximity agreements. In the event that Vattenfall fail to obtain written approval to clear the offshore cable corridor of an out of service cable, either from a documented owner or via other official process then the cable would be treated in the same way as an in-service cable and crossed with similar engineering to other in service crossings. In these circumstances, whilst it would be Vattenfall's preference to cut and

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			recover out-of-service cables so as to avoid the need for unnecessary crossings and associated surface protection, it would not be possible do so. A scour protection and cable protection plan, providing details of the need, type, sources, quantity and installation methods is secured under Schedules 9 and 10 Part 4 Condition 14(1)(e), and Schedules 11 and 12 Part 4 Condition 9(1)(e) of the dDCO.
5.6	Applicant and NE	Chapter 10 of the ES [APP-334] states that cable would be micro-sited through areas of *Sabellaria spinulosa* reef, where possible. Please comment on the effectiveness of this micro-siting technique as a mitigation measure.	Micrositing will provide an effective mitigation technique to avoid disturbance to *Sabellaria* reef, provided there is sufficient space to route the cables around areas of reef. As stated by NE (comment 194, section C of Appendix 2 in RR-106), based on available data to date, micrositing around *S. spinulosa* reef is likely to be possible. Section 7.3.1.2.1 of the Information to Support HRA report (document 5.3) shows that there is approximately 1.05km to 3.75km available for micrositing within the offshore cable corridor, taking account of Norfolk Vanguard and Norfolk Boreas cables. In addition, low to medium 'reefiness' (based on Gubbay, 2007) was recorded in the Norfolk Vanguard offshore project area. This level of reefiness is characterised by 10-30% coverage (Gubbay, 2007) which further supports the likelihood that micrositing will be possible. The Applicant acknowledges that *S. spinulosa* reef extent may change prior to construction of Norfolk Vanguard and therefore pre-construction surveys are required under dDCO Schedules 11 and 12 Part 4 condition 13(2)(a) to determine the extent of *S. spinulosa* reef at that time. In the unlikely event that micrositing around *S. spinulosa* reef is not possible during cable installation, a small proportion of *S. spinulosa* reef may be temporarily disturbed. *S. spinulosa* reef is known to be ephemeral and opportunistic and can be expected to recover/recolonise within the range of natural variation (e.g. Tillin and Marshall[4], 2015; OSPAR Commission[5], 2010;

[4] Tillin, H.M. & Marshall, C.M. (2015) *Sabellaria spinulosa* on stable circalittoral mixed sediment. In Tyler-Walters H. and Hiscock K. (eds) Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [online]. Plymouth: Marine Biological Association of the United Kingdom. Available from: http://www.marlin.ac.uk/habitats/detail/377

[5] Ospar Commission (2010) Quality Status Report 2010: Case Reports for the OSPAR List of threatened and/or declining species and habitats – Update. *Sabellaria spinulosa* reefs.

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			Holt[6], 1998; Cooper[7] *et al*., 2007; Pearce[8] *et al*., 2007). If it is determined through the pre-construction surveys that *S. spinulosa* reef has developed to such an extent that it does not allow micrositing around the reef within the 2 to 4km width of the offshore cable corridor, a small proportion of temporary disturbance to *S. spinulosa* reef would not cause an adverse effect on the restoration objective of the Haisborough, Hammond and Winterton Special Area of Conservation (**SAC**). The magnitude would be low if micrositing is not possible due to the small proportion of temporary disturbance to reef. There would be no temporary habitat loss of *S. spinulosa* reef if micro-siting is possible. The dDCO, Schedules 9 and 10 Part 4 condition 14(g) and Schedules 11 and 12 Part 4 condition 9(g), states that a cable specification, installation and monitoring plan, must be agreed with the MMO. This includes a detailed cable laying plan. This gives the MMO and their advisors the opportunity to input to the cable laying plan including the cable route and potential for micrositing.
5.7	Applicant	Please set out your methodology and criteria for assessing the type of cable protection that is to be selected.	At locations where surface protection is required, the following criteria will be applied to select the most appropriate solution for cable protection. • The solution must afford an adequate degree of protection for the cables against potential threats at the location in question. • The solution must minimise hazards to other seabed users (e.g. potential for snagging). • The solution must minimise scour and other adverse impacts on seabed stability.

[6] Holt, T.J., Rees, E.I., Hawkins, S.J., & Reed, R. (1998) Biogenic reefs: An overview of dynamic and sensitivity characteristics for conservation management of marine SACs. Scottish Association of Marine Sciences (UK Marine SACs Project), Oban.

[7] Cooper, K., Boyd, S., Eggleton, J., Limpenny, D., Rees, H. & Vanstaen, K. (2007) Recovery of the seabed following marine aggregate dredging on the Hastings Shingle Bank off the southeast coast of England. *Estuarine, Coastal and Shelf Science* 75:547-558.

[8] Pearce, B., Hill, J.M., Wilson, C., Griffin, R., Earnshaw, S. & Pitts, J. (2011a) *Sabellaria spinulosa* Reef Ecology and Ecosystem Services. The Crown Estate 120 pages ISBN 978-1-906410-27-8. First Published 2013. This report is available on The Crown Estate website at www.thecrownestate.co.uk

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			Cable protection requirements will be ascertained through studies related to potential threats to the cable and/or to other seabed users, alongside an assessment of the prevailing conditions at a particular site in view of seabed stability, scour potential, sub-surface wave energy and other factors, to determine the most appropriate form of cable protection in a given location. Where applicable, i.e. at crossing locations, such engineering will be shared with and agreed with the owner of the infrastructure to be crossed. A scour protection and cable protection plan, providing details of the need, type, sources, quantity and installation methods is secured under Schedules 9 and 10 Part 4 Condition 14(1)(e), and Schedules 11 and 12 Part 4 Condition 9(1)(e) of the dDCO.
5.8	Applicant	Please account for NE's assertion that paragraph 159 of Chapter 10 of the ES [APP-334] does not account for cable repairs for stretches that are under any of the cable protection options.	The process and associated impact of cable repairs under cable protection is comparable with that described in ES Chapter 5 Project Description (section 5.4.18.3, paragraphs 254-256) and assessed in the relevant technical chapters. The cable would be cut and a new segment of cable inserted. The replacement section of cable will be deployed by the installation vessel and jointed to the existing cable, laid in a bight to one side of the original cable route, by-passing the failed section. Additional cable protection would be installed where necessary (not exceeding the total values included in the dDCO or assessed in the ES). The worst case scenario for the relevant impact assessments (e.g. ES Chapter 10 Benthic Ecology, Table 10.12 includes the permanent loss of habitat as a result of the maximum amounts of cable protection (Operation, Impact 1A and 1B) and the temporary disturbance associated with cable repairs (Operation, Impact 2A and 2B).
5.9	Applicant	Chapter 8, paragraph 169, of the ES [APP-332], provides a contingency estimate of 20 km of cable protection within the whole offshore cable corridor, of which 8km of cable would be within the Haisborough, Hammond and Winterton SAC (HHW SAC), being required due to cable burial not being possible to achieve.	a) It is the Applicant's preference to use surface protection only where necessary at crossings and at locations where cable burial is not possible due to the presence of hard substrate close to the surface. The assessment presented in the Information to Support HRA report provides a conservative assessment of potential habitat loss: • Section 7.4.1.1.2 of the Information to Support HRA report provides an assessment of permanent habitat loss of Annex 1 Sandbank, showing that

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		Please comment on the view expressed in NE's RR [RR-106] in regard to the following matters: a) cable protection should not be permitted within the HHW SAC unless a method can be found that does not lead to habitat loss; b) a justification of why the amount of cable protection proposed is realistic; c) an estimation of the amount of cable protection to be used for each benthic habitat type; d) an analysis of the types of cable protection to be used on each benthic habitat type and an assessment of the impacts on each feature in terms of habitat loss or change, increase in suspended sediment/siltation and the interruption to physical transport processes; e) an assessment of the likelihood and associated impacts of secondary scouring around cable protection; f) an estimate of the likelihood of exceeding the proposed amount of cable protection, with an assessment of any impacts that may arise as a result.	the potential loss equates to less than 0.002% of the area of sandbanks within the SAC. The assessment therefore concludes that there would be no adverse effect on the integrity of the HHW SAC in relation to the conservation objectives for Annex I Sandbanks and therefore the Applicant proposes that the proposed cable protection should be permitted. • It was agreed with Natural England in the Expert Topic Group on 31 January 2018 (Appendix 25.6 of the Consultation Report) that there would be no permanent loss of Annex I Reef due to the embedded mitigation to microsite where possible to avoid reef and the fact that *S. spinulosa* is ephemeral and can be expected to recover/recolonise. Therefore there would be no adverse effect on integrity (**AEoI**) of the Haisborough, Hammond and Winterton SAC in relation to the conservation objectives for Annex I Reef and therefore the Applicant considers that the proposed cable protection should be permitted. The Scour Protection and Cable Protection Plan required under dDCO Schedules 11 and 12 Part 4 condition 9(e), in accordance with the Outline Scour Protection and Cable Protection Plan (document reference 8.16), provides the mechanism to agree cable protection requirements prior to construction. This document will be updated as the final design of the project develops and will include justification of the location, type, volume and area of cable protection, based on crossing agreements and pre-construction survey data to ensure only essential cable protection can be installed in the HHW SAC and to confirm there will be no AEoI. b) The maximum total volume of cable protection in the Haisborough Hammond and Winterton SAC is 0.003% of the SAC area, as shown in Table 7.4 of the Information to Support HRA report. Pre-construction surveys will inform the detailed design, including the need for cable protection, therefore, at this stage, the resolution of seabed data cannot confirm that there are no areas of hard substrate in the offshore cable corridor. As a result, a contingency of 10% of the cable length requiring cable protection has been included in order to provide a conservative assessment following advice

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			from Natural England regarding lessons learned from other offshore wind farms (reported in Natural England[9], 2018). c) This detail would be determined in the final Scour Protection and Cable Protection Plan as part of agreeing the need, type, sources, quantity and installation methods of cable protection. As outlined in response to point b above, the contingency has been identified in order to take a conservative approach to uncertainty therefore the locations of potential cable protection are not yet known. d) As per response to point c. e) Secondary scour has the potential to arise where tidal flows accelerate over a structure and then decelerate on the 'down-flow' side, returning to baseline values a short distance from the structure. The interruption to flows due to the presence of a structure could induce local turbulence in the flow field which could cause secondary scour in a 'down-flow' direction. Cable protection proposed for Norfolk Vanguard would be a maximum of 0.5m high for unburied cable and 0.9m high for cable crossings. The changes to tidal current flows caused by a structure that is only 0.5-0.9m high above the surrounding seabed, in the context of sandwaves of approximately 3m height, would be minimal. In addition, tidal flows in this area are of relatively low velocity, as the project is close to the amphidromic point. In relation to scour protection, which is of greater dimensions to cable protection, it was agreed with Cefas during the Expert Topic Group on the 5 July 2017, that secondary scour is unlikely to be an issue. f) The Applicant has identified a contingency that is expected to be appropriately conservative in response to advice from Natural England with regards to

[9] Natural England (2018) Offshore wind cabling: ten years experience and recommendations

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			experience from other offshore wind farms. Having incorporated a contingency into the Norfolk Vanguard project design, no further cable protection requirement is expected.
5.10	Applicant	Please comment on NE's disagreement in its RR [RR-106] with your finding in paragraph 278 of Chapter 8 of the ES [APP-332] of a negligible impact for the Haisborough, Hammond and Winterton SAC	The RR response refers to potential changes to volume, extent and morphology of the SAC caused by the disposal of sediment from levelling of sand waves along the cable corridor. **Volume** Norfolk Vanguard is committed to disposing of all the sediment excavated from the SAC during sand wave levelling back into the SAC, so that no sediment is lost from the sand bank system associated with the SAC. The total volume of sediment in the SAC would therefore not change. This meets the target in the Supplementary Advice which is to 'Maintain the existing or best-known volume of sediment in the sandbank, allowing for natural change'. **Extent** Even though dredging of sediment from the SAC would take place, the overall area of the sand bank habitat would not change. This is because the sea bed composition would not change and so the spatial distribution and integrity of the feature would be unaffected. This meets the target in the Supplementary Advice which is to 'Restore the total extent and spatial distribution of subtidal sandbanks to ensure no loss of integrity, while allowing for natural change and succession'. **Morphology** The Supplementary Advice indicates that the total sand bank volume within the SAC is likely to be at least 1,113 x $10^6 m^3$ (the combined volumes estimated for Hewitt Ridge, Winterton Ridge, Hammond Knoll, Haisborough Sand, North and Middle Cross Sand, South Cross Sand). The excavated sediment amounts to a volume of 0.5 x $10^6 m^3$, which is only 0.05% of the total sand bank volume. The sand wave study provided in Appendix 7.1 of the Information to Support HRA report concluded that, although the absolute changes in morphology of the sea bed due to disposal cannot be predicted with certainty, they are likely to be within the existing elevation range already at the disposal area (sand waves up

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			to 3m high with wavelengths of about 100m). The technical assessment also indicated that any disposal mounds that may be created that are higher than the natural elevation variation would be re-distributed and lowered by tidal currents to levels like the existing bedforms, within a period of days to a year. The re-distribution of the disposal mounds to bedforms like those existing at present meets the target in the Supplementary Advice which is to 'Maintain the presence of topographic features, while allowing for natural responses to hydrodynamic regime, by preventing erosion or deposition through human-induced activity'. **Summary** The overall impact of sand wave levelling activities under a worst case scenario on bed level changes (volume, extent and morphology) in the SAC due to sediment disposal is considered to be negligible.
5.11	Applicant	Please can you confirm that the figures you have quoted in paragraph 387 of ES Chapter 8 [APP-332] are correct.	NE [RR-106] states "*If there is 4km cable protection per cable pair should this not be 8km in total as there are 2 pairs? So the overall amounts presented here are wrong? Also if 20% as quoted in other chapters (not 10%) is to be protected would that not be 8km per cable?*" Para 387 of ES Chapter 8 is correct which includes reference to: "*A contingency of up to 4km of cable protection per cable pair, resulting in a footprint of 40,000m^2 (0.04km^2) based on 5m wide cable protection*". There would be 8km in total (2 x 4km) and this has been used in the calculation described in para 387 i.e.: 2 cable pairs x 4000m length x 5m width = 40,000m^2.
5.12	Applicant	Please comment on NE's contention in its RR [RR-106] that as cable protection has not been assessed for cable repairs or reburial, no such cable protection in this regard should be permitted to take place.	Cable protection may either be installed during installation or maintenance, up to the total volume. This has been assessed in ES Chapter 10 Section 10.7.5 Potential Impacts during Operation (including Section 10.7.5.1, Permanent loss of seabed habitat through the presence of seabed infrastructure in the Offshore Windfarm (**OWF**) sites and Section 10.7.5.2, Permanent loss of seabed habitat through the presence of seabed infrastructure in the offshore cable corridor). Therefore, the Applicant proposes that cable protection for cable repairs and reburial should be permitted up to the maximum values in the dDCO and does

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			not agree that cable protection has not been assessed for cable repairs or reburial. This is the approach that has been taken on other consented offshore wind farms, e.g. East Anglia THREE.
5.13	Applicant	In light of NE's comments in its RR [RR-106], please comment on how you consider the Scour Protection and Cable Prevention Plan should be updated to take account of any additional requirements post-consent once the project parameters are more clearly defined, and how this would be secured in the dDCO.	The Scour Protection and Cable Protection Plan is required under dDCO Schedules 9 and 10 Part 4 condition 14(e) and Schedules 11 and 12 Part 4 condition 9(e). This will be updated as the final design of the project develops and must be agreed with the MMO prior to construction. The Scour Protection and Cable Protection Plan will include details of the need, type, sources, quantity and installation methods for cable protection based on crossing agreements and preconstruction surveys.
5.14	Applicant	Please explain how you have arrived at a worst case scenario of cable protection/scour prevention being required for 10% of the export able, array and interconnector cables.	When installing subsea cables, it is important to ensure that the cables are protected from mechanical damage (e.g. beam trawling) and from the long-term effects of sediment mobility. Failure to do this will tend to result in higher rates of cable failure, and consequential cable repair operations. Where the sea-bed is sedimentary, burial of cables within the sedimentary layer is the preferred way to achieve the required degree of protection. Surface protection will only be used in areas where cable burial cannot be achieved - typically where hard substrates or obstructions (natural or man-made) are present at, or close to, the surface of the sea-bed. At present, survey data collected by the Applicant for the wind farm site and the export cable corridor indicates that the seabed in these areas is predominantly overlain with sands and silts and therefore burial of cables will be largely possible. However, it is possible that more detailed surveys undertaken post-consent will reveal the presence of hard substrates in some limited areas; it is therefore not possible to rule out the option of using surface protection where cables cross these areas at this stage. The 10% figure for cable protection contained in the application is therefore a realistic worst case, given the limited survey data available at present.
5.15	Applicant	Having regard to the variable spatial and temporal distribution of *Sabellaria spinulosa* reef, please clarify the methodological approach you have used with	The data review has been undertaken to better understand the distribution of Sabellaria reefs within the area, maps have been produced using geophysical data sets and associated sample data from the Norfolk Vanguard 2016 survey

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		regard to mapping *Sabellaria spinulosa* as opposed to the methods as described in Limpenny *et al* 2010, that NE has referred to in its RR [RR-106].	(reported in ES Appendix 10.1) but as mentioned, this a snapshot in time and the methods employed did not distinguish Sabellaria biotopes (which could include individuals and reef) from Sabellaria reefs. The review provided in Appendix 7.2 of the Information to Support HRA report examines the data from the 2016 survey and also incorporates sample data from other data sources, with the aim being to show a consensus. Where Sabellaria reef is consistently found within sample data and maps derived from this bottom up approach there is greater confidence. *S. spinulosa* reef is variable in space and time and using an ensemble approach aims to combine multiple 'snapshots', some of which are produced using methods which were developed after Limpenny *et al* 2010 to produce a combined spatial and temporal map. The process does not ignore Limpenny *et al* but aims to build on this approach to provide more confidence in a map rather than relying on individual 'snapshot' maps which can be contradictory or inconsistent. Despite the comments from Natural England regarding the methodology used to derive the maps, it is agreed that the resulting maps of potential *S. spinulosa* reef by Envision on behalf of the Applicant (presented in Appendix 7.2 of the Information to Support HRA report) identify potential reef areas which are largely consistent with areas Natural England has identified as outlined in the Natural England SoCG (document reference Rep1-SOCG-13.1).
5.16	Applicant	Please clarify whether NE's query regarding the extent of *Sabellaria spinulosa* at the time of the pre-construction surveys and its view that *Sabellaria spinulosa* has a medium sensitivity to heavy smothering would alter the conclusions you have reached.	As discussed in response to Q5.6, based on available data, micrositing around *S. spinulosa* reef is likely to be possible. However, it is acknowledged that *S. spinulosa* reef extent may change prior to construction of Norfolk Vanguard and therefore pre-construction surveys are required under dDCO Schedules 11 and 12 Part 4 condition 13(2)(a) to determine the extent of *S. spinulosa* reef at that time. As requested by Natural England during the Expert Topic Group (**ETG**) meeting on 31 January 2018 (Appendix 25.6 of the Consultation Report, document reference 5.1), an assessment of potential impacts on *Sabellaria* reef, should it not be possible to microsite around all reef, has been undertaken (section 7.4.2.1.1 of the Information to Support HRA report). Therefore, an increase in the extent of *Sabellaria* reef compared with the baseline conditions would not alter the assessment conclusions.

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			As stated in ES Chapter 10 Benthic Ecology, Tables 10.14 and 10.16 *S. spinulosa* reef has been identified as having medium sensitivity in accordance with the Marine Life Information Network (**MarLIN**) Marine Evidence based Sensitivity Assessments (**MarESA**). Therefore there is no change to the conclusions of the assessment as this information has already been incorporated.
5.17	Applicant	Please explain why you have not considered the potential effects on *Sabellaria spinulosa* due to cable repairs.	Section 7.4.2.1.2 of the Information to Support HRA report (document reference 5.3) considers impacts on *Sabellaria spinulosa* during operation and maintenance based on the worst case scenario outlined in Table 7.4 which includes cable repairs.
5.18	Applicant	Please address the comments made by NE in its RR [RR-106] that a single ground truthing sample, compared to a map, is not sufficient to determine whether an area will support Sabellaria spinulosa reef in the future	See response to Q5.15 and Q5.20.
5.19	Applicant	Having regard to the Gubbay criteria, please explain why areas with 'low reefiness' have been mapped as sediment rather than reef.	Areas with low 'reefiness' have not been mapped as sediment. Figure 7.2 of the Information to Support HRA report presents a map of potential *Sabellaria* reef extent based on medium to high confidence of reef presence (N.B. this includes reef of any reefiness score, including low reefiness). This map is based on the data analysis presented in Appendix 7.2 of the Information to Support HRA report. *Sabellaria* reef identified during the Norfolk Vanguard benthic surveys in 2016 (reported in ES Appendix 10.1) was found to be of low or medium reefiness as shown in section 5.1.1 of ES Appendix 10.1 Benthic Characterisation Report based on the reefiness characteristics from Gubbay, 2007 outlined in section 3.1.1 of ES Appendix 10.1. It should be noted that *Sabellaria* reef is rarely continuous and is characteristically patchy; low reefiness is characterised by only 10-20% coverage (Gubbay, 2007) and therefore increases the potential for micrositing. Medium reefiness also has high potential for micrositing, being classified by 20-30% coverage.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
5.20	Applicant	Please respond to the issues NE has raised in its RR [RR-106] in relation to the datasets and maps that are described in Section 2.7 of Appendix 7.2 Sabellaria reef mapping [APP-049].	Within the mapping process the data which were collected as part of the Fugro 2016 survey (reported in ES Appendix 10.1) are used as the primary driver within the data analysis (Figure 13 of Appendix 7.2 of the Information to Support HRA report), other sample data which are separated either temporally or spatially are incorporated by using probability images which refine the mapping process and add prior knowledge in to the mapping process (Figure 14 of Appendix 7.2 of the Information to Support HRA report). This means the non-contemporary sample data and geophysical data are not compared or related to directly but only used to influence the likelihood of a habitat occurring. Using an ensemble mapping method aims to address this temporal distribution of habitats by incorporating maps produced from different sample data it attempts to show where a habitat is consistently found or where there may be variability within a habitats distributions, hence Figure 16 of Appendix 7.2 shows a confidence map which indicates where habitats are consistently mapped or where there is variability.
5.21	Applicant	Please confirm whether the sensitivity definitions in Table 10.3 of ES Chapter 10 [APP-334] are taken from Marlin sensitivity or are bespoke for the ES.	The sensitivity definitions presented in Table 10.3 of ES Chapter 10 Benthic Ecology are more refined and conservative than those presented in the latest MarLIN Marine Evidence based Sensitivity Assessment.[10] Appendix 5.1 (document reference ExA; WQApp5.1; 10.D1.3) provides an overview of the approach used by MarLIN[10] to define sensitivity along with a comparison of the Norfolk Vanguard definitions presented in Table 10.3 of ES Chapter 10.
5.22	Applicant	Comment on NE's view [RR-106] that the boulder clearance figure cited in Table 10.21 of ES Chapter 10 [APP-334] does not take account of disturbance elsewhere arising from the placement of cleared boulders.	The Applicant has reviewed the site specific geophysical survey data collected by Fugro in 2016 and, given the low proportion of boulders in the area, it is likely that micrositing around boulders would be possible. However, as requested by Natural England and the MMO in their respective Preliminary Environmental Information Report (**PEIR**) responses, the impact assessment includes the potential for boulder clearance in order to be highly conservative. A conservative allowance for clearing up to 75 boulders (53 in the offshore wind farm sites and 22 in the offshore cable corridor) of up to 5m in diameter has been included in the assessment. Boulders would be relocated within the offshore project area, outside the route of cable installation or the location of

[10] https://www.marlin.ac.uk/sensitivity/sensitivity_rationale#toc_marine-evidence-based-sensitivity-assessment-maresa-approach

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			foundations. The area vacated by the boulder is highly likely to become consistent with the wider area and that lost by the new boulder location and therefore there is no net change in habitat availability resulting in a temporary effect. The area of temporary disturbance as a result of boulder clearance in the offshore wind farm sites assessed in the ES based on these assumptions is 0.001km^2, which the Applicant deems to be conservative. However, if this were to be 0.002km^2 as suggested by Natural England, to reflect the area vacated plus the area on which each boulder is placement, the total overall temporary disturbance footprint would be 16.120km^2 rather than 16.119km^2 (either way, rounded to 16.1km^2 as per ES Chapter 10 Benthic Ecology, Table 10.12 Impact 1A). Likewise, the area of boulder clearance in the offshore cable corridor assessed in the ES is 0.0004km^2. However, if this were to be 0.0008km^2 as suggested by Natural England, the total overall footprint in the offshore cable corridor would be 6.0729km^2 rather than 6.0724km^2 (either way, rounded to 6.1km^2 as per ES Chapter 10 Benthic Ecology, Table 10.12 Impact 1B). There would therefore be no change to the conclusions of the assessment as the temporary effect associated with boulders is negligible. Pre-construction surveys required under dDCO Schedules 9 and 10 Part 4 condition 20(2)(b) and Schedules 11 and 12 Part 4 condition 13(2)(b) would identify any requirement for boulder clearance within the offshore project area.
5.23	Applicant	Please justify why you consider the 11% figure as quoted in paragraph 317 of ES Chapter 10 [APP-334] would give rise to a low impact magnitude.	The footprint of Norfolk Vanguard temporary disturbance within the Haisborough, Hammond and Winterton SAC would be up to 4.86km^2 as shown in Table 10.12 of ES Chapter 10. The footprint for Norfolk Boreas in the SAC would also be 4.86km^2. It should be noted that recovery is likely to have occurred, or at least commenced, following the first cable installation before subsequent phases of temporary disturbance from cable installation occur. The total area of the Haisborough Hammond and Winterton SAC is 1,468km^2. Given the temporary nature of impacts associated with cable installation the ES concludes that the effect would be of low magnitude.

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			Paragraph 317 of ES Chapter 10 refers to the proportion (11%) of the area within the Order limits of the offshore cable corridor, where it overlaps the SAC, that could potentially be subject to temporary disturbance, noting that the offshore cable corridor is 2 to 4km wide to provide space for micrositing and therefore a significant proportion of the area within the offshore cable corridor would remain undisturbed.

1.6 Construction - Offshore

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
6.1	Applicant	Part 3, 1(d) of Schedules 11 and 12 of the dDCO for Norfolk Vanguard refers to the disposal of up to 39,732,566m^3 of inert material of natural origin within the offshore Order limits. Please explain any significant differences between this figure and the corresponding figures proposed for other similar offshore windfarm projects that have either been consented or are currently proceeding through the examination process. For example, the made DCO for East Anglia THREE, Part 1, 2(d) of Schedules 10 and 11 respectively, refers to the disposal of a total of 1,646,347m^3 of inert material of natural origin.	The Applicant has taken a conservative approach to calculating potential sediment disposal by assuming that 100% of the array cable length and foundation locations could require pre-sweeping/sandwave levelling, up to a sediment depth of 5m. It is acknowledged that other projects (e.g. Hornsea Project Three and East Anglia THREE) have lesser disposal volumes, however the Applicant cannot comment on the approach taken by other projects.
6.2	Applicant	Requirement 4 of the dDCO proposes a 400km length for the export cable and an associated 119,836m^3 of cable protection. Please explain any significant differences between this figure and the corresponding figures proposed for other similar offshore windfarm projects that have either been	The Applicant suggests that the proposed 119,836m^3 of export cable protection (equivalent of 300m^3 per km of cable) is not materially different to that presented in other projects. For example the cable protection proposed for Norfolk Vanguard lies within the range of that proposed for East Anglia THREE and Hornsea Project Three: • Hornsea Project Three (as presented in the application documents)

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		consented or are currently proceeding through the examination process.	○ Length of export cable: 1,146km. ○ Cable protection volume: 1,146,000m^3 (equivalent of 1000m^3 per km of cable) • East Anglia THREE ○ Length of export cable: 664km ○ Cable protection volume: 81,260m^3 (equivalent of 122m^3 per km of cable)
6.3	Applicant	Condition 8(1)(g) of the DMLs contained in both Schedules 9 and 10 of the dDCO [APP-005] refers to 53,198,398m^3 of scour protection for the WTGs, accommodation platform, meteorological masts and measurement buoys. Please explain any significant differences between this figure and the corresponding figures proposed for other similar offshore windfarm projects that have either been consented or are currently proceeding through the examination process.	The Applicant has taken a conservative approach to calculating potential scour protection by assuming that 100% of the foundation locations could require scour protection and that the area of scour protection could be up to five times the foundation diameter. The volume is also calculated based on a conservative height of scour protection of 5m. It is acknowledged that other projects (e.g. Hornsea Project Three and East Anglia THREE) have lesser scour protection volumes, however the Applicant cannot comment on the approach taken by other projects.
6.4	Applicant	Condition 8(1)(h) of the DMLs contained in both Schedules 9 and 10 of the dDCO [APP-005] states that the total amount of inert material of natural origin disposed within the offshore Order limits as part of the authorised scheme must not exceed 39,732,566.73m^3. In addition, Condition 3(1)(c) of the DMLs contained in Schedules 11 and 12 of the dDCO states that the total amount of inert material of natural origin disposed of within the offshore Order limits as part of the authorised scheme must not exceed 11,475,000m^3. Therefore please confirm whether the maximum amount of inert material of natural origin that could	39,732,566m^3 reflects the disposal volumes associated with the generation assets. 11,475,000m^3 reflects the disposal volumes associated with the transmission assets. Therefore, it is correct that the total for the entire offshore Order limits would be 51,207,566.73m^3. The Applicant will update the dDCO accordingly for submission at Deadline 2. This total has been assessed in the ES (e.g. ES Chapter 10 Benthic Ecology, Table 10.12 which includes 50,607,566m^3 disposal in the offshore wind farm sites and 600,000m^3 disposal in the offshore cable corridor, totalling 51,207,566m^3).

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		be disposed of within the entire offshore Order limits would be a combination of these two figures, ie a maximum of 51,207,566.73m^3.	
6.5	Applicant and MMO	Please set out the methodology for calculating the amount of inert material of natural origin that is to be disposed within the offshore Order limits, the measures to monitor this disposal, and how this is to be secured in the dDCO.	The calculation of disposal volumes is presented in relevant worst case scenario tables of the ES (e.g. ES Chapter 10 Benthic Ecology, Table 10.12) which includes: • 50,607,566m^3 disposal in the offshore wind farm (OWF) sites based on: ○ 90 x 20MW turbines on floating tension leg platforms with gravity anchors (based on a preparation area of approximately 90 x 90m and levelling depth of up to 5m) = 3,645,000m^3. ○ Two offshore electrical platforms based on a preparation area of approximately 75m x 100m per platform and 5m depth = 75,000m^3 ○ Two accommodation platforms based on a preparation area of approximately 75m x 100m per platform and 5m depth = 75,000m^3 ○ Two met masts with a preparation area of 40m diameter and 5m depth = 12,566m^3 ○ Array cable trench of 600km length with an average 20m pre-sweeping width and 3m depth = 36,000,000m^3 ○ Interconnector cable trench of 150km length with an average 20m pre-sweeping width and 3m depth = 9,000,000m^3 ○ Export cable of 30km length in the OWF sites with an average 20m pre-sweeping width and 3m depth = 1,800,000m^3 • 600,000m^3 disposal in the offshore cable corridor has been informed by the Cable installation study provided in ES Appendix 5.1. A construction programme and monitoring plan, in accordance with the In Principle Monitoring Plan (document reference 8.12) is required under dDCO Schedules 9 and 10 Part 4 condition 14(1)(b) and Schedules 11 and 12 Part 4 condition 9(1)(b) and must be agreed with the MMO prior to construction.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			It is agreed in the MMO SoCG (document reference Rep 1-SOCG-11.1) that the In Principle Monitoring Plan (**IPMP**) provides an appropriate framework to agree monitoring of changes in seabed topography, including any changes as a result of sand wave levelling.
6.6	Applicant	Please comment on the concern raised by NE in its RR [RR-106] that some of the volumes and figures presented in the dDCO are not always represented in the ES project description and please provide evidence to demonstrate that the figures as presented in the dDCO have been fully considered.	Appendix 6.1 of this submission (document reference ExA; WQApp6.1; 10.D1.3) provides an explanation of the relationship between design parameters in the draft DCO and ES
6.7	Applicant	Please comment on NE's request to be named as a formal consultee in regard to the design plan that is referenced in Condition 14(1)(a) of the DMLs contained in Schedules 9 and 10 of the dDCO.	In accordance with DML Condition 14(1)(a) (Generation DMLs (Schedule 9-10) and Condition 9(1)a) (Transmission DMLs (Schedule 11-12), the Design Plan will be agreed in writing with the MMO in consultation with Trinity House (**TH**) and the Maritime and Coastguard Agency (**MCA**). NE have requested to be listed as a consultee for the Design Plan in relation to micrositing requirements, however it is considered that micrositing requirements of relevance to NE (i.e. the offshore cable corridor) will be detailed in the Cable Specification, Installation and Monitoring Plan (dDCO, Schedules 9 and 10 Part 4 condition 14(g) and Schedules 11 and 12 Part 4 condition 9(g)) which includes a detailed cable laying plan. This condition gives the MMO and their advisors (i.e. NE) the opportunity to input to the cable laying plan including on the cable route and potential for micrositing.
6.8	Applicant	In relation to Condition 14 of the DMLs contained in Schedules 9 and 10 of the dDCO [APP-005] please comment on NE's request in its RR [RR-106] for the pre-construction monitoring to be agreed more than 4 months prior to the first survey, and for a discussion on monitoring timelines to take place.	The Applicant notes NE's comment. The Applicant, however, believes that the four month time frame conditioned within the DMLs is appropriate and proportionate to allow the MMO, in consultation with NE where relevant, sufficient time for stakeholder consultation and the provision of comments, whilst ensuring no unnecessary delay to the commencement of development. This four month time period is contained on a number of other offshore wind farm DCOs (including The East Anglia Three Offshore Wind Farm Order 2017 and Hornsea Two Offshore Wind Farm Order 2016); it is established as an appropriate time frame and one that ensures the expedient discharge of the relevant conditions attached to the DML. In any event, the Applicant will

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			endeavour to submit plans, programmes, protocols, schemes and/or statements to the MMO in good time and in advance of the four month minimum period. It should also be noted that Condition 15(2) (Generation DMLs) and Condition 10(2) (Transmission DMLs) allows for the determination period to be extended if agreed between the parties.
6.9	Applicant	Can you clarify whether a separate marine license would be required for UXO clearance, and the mechanism through which the production of a MMMP for UXO clearance would be secured in the dDCO.	Unexploded Ordnance (**UXO**) clearance is not included within the dDCO, it would be licenced separately once the nature and extent of UXO clearance is known following preconstruction surveys. A UXO MMMP would be a condition of the UXO clearance Marine Licence. This is the approach that has been taken on other offshore wind farms to date.
6.10	Applicant	Please respond to NE's contention in its RR [RR-106] that it is not possible to mitigate against the effects of the largest UXOs, and that you will therefore need to identify appropriate mitigation in order to rely on your assessment.	As outlined in Section 12.7.1.2.2 Chapter 12 of the ES: *The MMMP for UXO clearance will ensure there are adequate mitigation measures to minimise the risk of any physical or permanent auditory injury to marine mammals as a result of UXO clearance. The MMMP for UXO clearance will be developed in the pre-construction period, when there is more detailed information on the UXO clearance which could be required and the most suitable mitigation measures, based upon best available information and methodologies at that time*.
6.11	Applicant	Please clarify whether the figures given in paragraph 225 of ES Chapter 5 [APP-329] represent a worst-case estimate of cable that it would not be able to bury at the construction stage, or cable that would become unburied at some time of the project and thus would require protection. Explain how the figures cited in paragraph 225 relate to those contained in paragraph 21 and Table 2 of the Outline Scour Protection and Cable Protection Plan [APP-040]	Section 5.4.14 refers to the total cable protection for the project, this could be installed during the construction or maintenance phases of the project and therefore paragraph 225 covers both the unlikely event that cables cannot be buried during construction and that cables become unburied during the life of the project. The following values of cable protection are assessed in ES Chapters 8, 10, 11 and 14: • Array cable protection based on: ○ 60km length based on up to 10% of the total length potentially being unburied (as stated in para 225 of ES Chapter 5) x 5m cable protection width; plus ○ 100m length unburied per turbine x 200 turbines (as stated in para 225 of ES Chapter 5) x 5m cable protection width; plus

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			○ 10 crossings with 250m^3 of protection per crossing • Interconnector cable protection based on: ○ 15km length based on up to 10% of the total length (as stated in para 225 of ES Chapter 5) x 5m cable protection width; plus ○ 100m length unburied per offshore electrical platform x 2 platforms (as stated in para 225 of ES Chapter 5) x 5m cable protection width • Export cable protection based on: ○ 28km length potentially being unburied x 5m cable protection width; plus ○ 22 crossings (11 per cable pair) with 250m^3 of protection per crossing; plus ○ 36m^2 cable protection at the landfall exit points However the export cable protection parameters should be: ○ 20km length (based on 10km length per cable pair potentially being unburied) x 5m cable protection width; plus ○ 22 crossings (11 per cable pair) with 250m^3 of protection per crossing; plus ○ 36m^2 cable protection at the landfall exit points The impacts would therefore be slightly less than shown in these ES chapters, however with no change to the ES conclusions. It is acknowledged that there is also an error in the draft DCO, Table 5.23 of ES Chapter 5 and in the Outline Scour Protection and Cable Protection Plan which refer to 40km length of export cable protection. The draft DCO will be updated and submitted at Deadline 2.
6.12	MMO and NE	Do you agree with the contingency estimate of 10% of the total cabling for unburied cables that the Applicant has applied?	

1.7 Offshore Archaeology and Cultural Heritage

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
7.1	Applicant	In your Outline Written Scheme of Investigation (Offshore) (OWSI Offshore) [APP-030] you state that the final Offshore WSI would be reviewed and updated as necessary prior to the construction based on the final design of the project. Please clarify how this is to be secured in the final OWSI and the dDCO?	The requirement for this is set out in dDCO Schedules 9 and 10 condition 14(1)(h) and Schedules 11 and 12 condition 9(1)(h). This states: *A written scheme of archaeological investigation in relation to the offshore Order limits seaward of mean low water, which must be submitted at least four months prior to commencement of the licensed activities and must accord with the outline written scheme of investigation (offshore) and industry good practice, in consultation with the statutory historic body to include—* *(i) details of responsibilities of the undertaker, archaeological consultant and contractor;* *(ii) a methodology for further site investigation including any specifications for geophysical, geotechnical and diver or remotely operated vehicle investigations;* *(iii) archaeological analysis of survey data, and timetable for reporting, which is to be submitted to the MMO within four months of any survey being completed;* *(iv) delivery of any mitigation including, where necessary, identification and modification of archaeological exclusion zones;* *(v) monitoring of archaeological exclusion zones during and post construction;* *(vi) a requirement for the undertaker to ensure that a copy of any agreed archaeological report is deposited with the National Record of the Historic Environment, by submitting a Historic England OASIS (Online Access to the Index of archaeological investigations') form with a digital copy of the report within six months of completion of construction of the authorised scheme, and to notify the MMO that the OASIS form has been submitted to the National Record of the Historic Environment within two weeks of submission;* *(vii) a reporting and recording protocol, including reporting of any wreck or wreck material during construction, operation and decommissioning of the authorised scheme; and* *(viii) a timetable for all further site investigations, which must allow sufficient opportunity to establish a full understanding of the historic environment within*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			the offshore Order Limits and the approval of any necessary mitigation required as a result of the further site investigations prior to commencement of licensed activities.
7.2	Applicant	Please clarify what you mean by the 'statutory historic body' in the OWSI Offshore [APP-030], as this is not defined in the dDCO.	This is defined in dDCO Schedules 9, 10, 11 and 12 Part 1 1(1): *"statutory historic body" means Historic England or its successor in function*
7.3	Applicant	Please clarify whether the 'written scheme of archaeological investigation' that is referred to in Condition 14 of Schedules 9 and 10 and condition 9 of Schedules 11 and 12 is the same as the 'final Offshore WSI' that is referenced in the Outline WSI Offshore [APP-030].	Confirmed. Condition 14(1)(h) and Condition 14(2) of Schedules 9 and 10 both refer to an archaeological written scheme of investigation (**WSI**) which must be prepared in accordance with the outline written scheme of investigation (offshore). The outline written scheme of Investigation (offshore) is certified under Article 37(1)(k). The 'final Offshore WSI' will be the WSI prepared in accordance with the outline written scheme of investigation (offshore) (Document reference: 8.6) . Condition 9(1)(h) and Condition 9(2) of Schedules 11 and 12 are drafted in the same way.
7.4	MMO and Historic England	Are you content that the requirement to submit a 'written scheme of archaeological investigation' four months prior to commencement of licensed activities would provide a sufficient amount of time to review and approve the proposed arrangements?	
7.5	MMO and Historic England	Are you satisfied with the proposed 50m archaeological exclusion zone around A1sites and magnetic only anomalies?	

1.8 Fishing and Navigation

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
8.1	Applicant	Please comment on the view expressed by the Royal Yachting Association in its RR [RR-019] in which it	The Applicant is not proposing to apply for operational safety zones for any of the wind turbine foundation types. As stated in Section 4.6 of ES Chapter 15

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		does not consider there to be a need for safety zones during the operational stage of a wind farm development.	Shipping and Navigation, an application will be made for the following standard safety zones (to be submitted post consent and as detailed in the Safety Zone Statement (document reference 7.2)) which may comprise the following: • A 500 metre radius around individual Offshore Renewable Energy Infrastructure (**OREI**) and their foundations whilst work is being performed as indicated by the presence of construction vessels; • A 500 metre radius around all major maintenance works being undertaken around the wind turbines and their foundations, and • A 50 metre radius around individual OREI and associated foundation structures whether they be installed and operational, or complete or incomplete but awaiting commissioning. As stated in the SoCG with the Royal Yachting Association (**RYA**) (Rep1 - SOCG - 14.1), the Applicant may also include the provision within the safety zone application for 500m operational safety zones around accommodation platforms. As per the SoCG, the RYA does not generally support operational safety zones, however they do not object to their use around permanently manned accommodation platforms. No other operational safety zones are being considered once the wind farm is operational.
8.2	Royal Yachting Association	Please provide further justification for your view in your RR [RR-019] regarding the need for safety zones during the operational stages of a wind farm development.	The Applicant understands the RYA does not object to operational safety zones around manned platforms. The safety zones are required to mitigate the risk of a vessel alliding with platforms which will house a number of personnel on board.
8.3	Applicant	Please advise on the progress of a SoCG with the National Federation of Fishermen's Organisations that is referred to in its RR [RR-051].	A draft SoCG was produced by the Applicant and sent via e-mail to the National Federation of Fishermen's Organisations (**NFFO**) for review on 2nd November 2018. The positions of both parties were discussed on 16th November 2018 during a meeting held between the NFFO and the Applicant at the NFFO's offices in York. Taking account of the outcomes of the aforementioned meeting, the SoCG was updated by both parties. The SoCG with the NFFO, including progress to date,

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			has been submitted by the Applicant as part of its submissions for Deadline 1 (document reference Rep1 - SOCG - 26.1).
8.4	Maritime and Coastguard Agency	In relation to the need for lighting and marking arrangements, are your concerns satisfied with the wording of the 'aids to navigation' condition 10 of Schedules 9 and 10 and condition 5 of Schedules 11 and 12 of the dDCO [APP-005]?	
8.5	Applicant	Should floating turbines be used please state how agreement would be reached regarding the exact details of the associated mooring arrangements, including but not limited to the anchor and line spread, monitoring arrangements during construction and operation, recovery of turbines and Third Party Verification, and set out how this is to be secured in the dDCO.	In the event that floating turbines are to be used, the Applicant will appoint a third party verifier post-consent to assess and approve any mooring arrangements in line with the Health and Safety Executive and Maritime and Coastguard Agency Guidance 'Regulatory Expectations on Moorings For Floating Wind and Marine Devices 'August 2017. ES Chapter 15 Shipping and Navigation section 15.7.2 references this guidance as proposed monitoring and notes that the arrangement will be agreed with the MCA prior to the commencement of construction. This process is secured as part of the Design Plan requiring agreement in writing with the MMO (and in consultation with the MCA and Trinity House) in accordance with DML Condition 14(1)(a) (Generation DMLs (Schedule 9-10) and Condition 9(1)a) (Transmission DMLs (Schedule 11-12) and as agreed in the SoCG with the MCA (Rep1 - SOCG - 31.1).
8.6	Applicant	Please comment on the MCA's request in its RR [RR-187] for an agreed set of design principles to be incorporated into the DCO.	The Applicant is in the process of drafting a set of development rules to facilitate post-consent discussions regarding layouts. The rules are being created in consultation with MCA and TH (see Rep1-SoCG-30.1 and Rep1-SoCG-31.1) and will provide a framework within which the layouts can be designed and agreed. These principles will ensure that post-consent the layout chosen satisfactorily meets both navigational safety and Search and Rescue (**SAR**) safety requirements (referencing MCA Marine Guidance Note (**MGN**) 543 where applicable) whilst enabling the design of a viable project.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
8.7	Applicant, MMO, MCA and Trinity House	Condition 14(1)(a) of the DMLs contained in Schedules 9 and 10 and Condition 9(1)(a) of the DMLs contained in Schedules 11 and 12 inclusive of the dDCO [APP-005] refers to the MMO, in consultation with Trinity House and the MCA, agreeing a design plan. Are you content with the arbitration procedures in this regard as set out in Article 38 and Schedule 14 of the dDCO?	The Applicant is content that the arbitration procedure applies to any dispute or difference under the DMLs, as would have been the case under the previous Model Article 42. The Applicant would point to its response to Q20.110 below, which outlines reasons why the arbitration process is, and should be, binding on all parties.

1.9 Marine Geology, Oceanography and Physical Processes, Marine Water and Sediment Quality

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
9.1	Applicant	In light of concerns raised at the Open Floor Hearing, please comment on the robustness of the coastal erosion predictions for the Happisburgh area. Please clarify whether you have used the most up to date information regarding the current rates of coastal erosion, and if not then please provide such information, if available.	The Coastal Erosion Study (ES Appendix 4.3) takes account of various available data and information sources, including local knowledge and the Shoreline Management Plan; modelling of the longshore interactions; consideration of a range of coastal management scenarios, including a scenario that matches current intentions, both locally and in neighbouring frontages; and the most recent upper end estimate of sea level rise from the Environment Agency's Guidance (Environment Agency, 2011). Future erosion rates at Happisburgh are predicted to be between 50m to 110m by 2065 (ES Appendix 4.3). The Horizontal Directional Drilling (**HDD**) entry point will be set back from the existing cliff-line by at least 125m. Furthermore, the landfall compound zone extends a further 200m inland, to allow further flexibility in the siting of the landfall post consent, using the most up to date information and forecasts. This is considered embedded mitigation by design to ensure that the landfall cable ducts do not become exposed under a worst case scenario during the project lifetime. The Applicant has, and will continue to consult with North Norfolk District Council throughout the development of the project design, including taking account of coastal erosion. A SoCG has been prepared with North Norfolk

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			District Council (document reference Rep1 - SOCG - 17.1) which includes matters of agreement relating to coastal erosion.
9.2	Applicant	North Norfolk District Council [RR-258] commented that there has been a significant loss of cliff in recent years for this part of the coast. Therefore please set out how you have considered how the project could contribute towards, or be affected by, coastal change.	The response to Q9.1 shows the consideration that has been given to how the project could be affected by coastal change. With regards to the consideration the Applicant has given to the potential for the project to impact the coast, the project design will avoid impacts on coastal erosion. This is summarised in ES Chapter 8 and further in North Norfolk District Council's position stated in the SoCG (document reference Rep1 - SOCG - 17.1): "*NNDC welcome the position set out by Vattenfall at paragraph 384 of Chapter 8 of the Environmental Statement which states:* *'The HDD will be secured beneath the surface of the shore platform and the base of the cliff, drilled from a location greater than 150m landward of the cliff edge. The material through which the HDD will pass, and through which the cables will ultimately be located, is consolidated and will have sufficient strength to maintain its integrity during the construction process and during operation. Also, the cable will be located at sufficient depth to account for shore platform steepening (downcutting) as cliff erosion progresses, and so will not become exposed during the design life of the project (approximately 30 years). Hence, the continued integrity of the geological materials and the continued depth of burial of the cables mean that they will have no impact on coastal erosion during both construction and operation'.* *This represents the best option for North Norfolk District Council (**NNDC**)*."
9.3	Applicant	Please comment on the view expressed by Natural England [RR-106] that the best practice would be to deposit any dredged material immediately upstream of where it is removed, and that material from the offshore cable site should be deposited in that area rather than being removed. Would there be any implications for the conclusions reached in the ES if this approach was taken?	As discussed in response to Q5.3, analysis based on disposal in one indicative location provides a conservative worst case scenario, therefore any further spreading of sediment disposal would represent a lesser impact on the sandbank system and would remain within the envelope of the impact assessment and would not alter the conclusions. The Applicant is open to the possibility of disposal close to the area of removal, however the separation would have to be sufficient to ensure that infilling does not take place prior to cable installation.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			The final approach to cable installation, including the methodology for pre-sweeping and sediment disposal must be agreed with the MMO (in consultation with the relevant statutory bodies) prior to construction through the mechanism of the Cable Specification and Monitoring Plan, as required under dDCO Schedules 11 and 12, Part 4 condition 9(1)(g).

1.10 Construction Onshore

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
10.1	Applicant	A number of concerns have been raised by interested parties regarding light pollution during the construction phase and during periods of maintenance. Could the applicant provide details of proposed lighting during the construction phase and that required during maintenance periods. What impact would this have on local residents and how would this be mitigated and secured within the dDCO?	Proposed lighting and assessed impacts during the construction phase are outlined at the following locations: **Mobilisation areas.** As detailed in para 370 of ES Chapter 5 Project Description, site lighting and secure fencing around the perimeter of the mobilisation areas would be utilised for safety and security purposes. Bat Conservation Trust's (**BCT**) Artificial lighting and wildlife guidance (2014) will be adhered to when designing temporary lighting for the construction works. This will include minimising the height of lighting rigs and directing lighting at the area of works to avoid light spillage. **Onshore Project Substation.** As detailed in para 398 of ES Chapter 5, perimeter and site lighting would be required during working hours in the winter months and a lower level of lighting would remain overnight for security purposes. The impacts of construction lighting at this location are considered and explicitly noted for the most impacted viewpoints as detailed in Table 29.11 of ES Chapter 29 which states that construction lighting would add to the prominence of the project in winter months when working days would extend into hours of darkness. **National Grid Substation Extension.** As detailed in para 425 ES Chapter 5, perimeter and site lighting would be required during working hours and a lower level of lighting would remain overnight for security purposes.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Proposed lighting and assessed impacts during the operation phase (i.e. maintenance) are outlined at the following locations: **Onshore Project Substation.** As detailed in para 400 of ES Chapter 5, normal operating conditions would not require lighting at the onshore project substation, although low level movement detecting security lighting may be utilised for health and safety purposes. Temporary lighting during working hours will be provided during maintenance activities only. With reference to Table 29.7 of ES Chapter 29, the lighting requirements detailed within Chapter 5, are referenced as an embedded mitigation measure such that the onshore project substation has been designed so that it does not require permanent lighting and this has been noted as part of the visual impact assessment. **National Grid Substation Extension.** As detailed in para 427 of Chapter 5, the Necton National Grid substation would be unmanned and not normally illuminated. However, lighting would be used when conducting inspection and maintenance activities (during working hours only) typically involving monthly visual inspections and maintenance activities every three years. As detailed in Section 3.7 of Document 8.1 Outline Code of Construction Practice (**CoCP**), an Artificial Light Emissions Management Plan will be prepared in accordance with Requirement 20(2)(c) of the DCO. The plan will detail the mitigation measures to be taken to manage emissions from artificial light in accordance with good practice, such as the use of directional beams, non-reflective surfaces and barriers and screens, to avoid light nuisance whilst maintaining safety and security obligations. Details of the location, height, design and luminance of all floodlighting to be used during the construction of the project, together with measures to limit obtrusive glare to nearby residential properties, will be set out in the Artificial Light Emissions Management Plan which will be submitted to the local authorities for approval prior to construction commencing. The approved scheme will be maintained throughout the construction of the relevant works.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Site lighting will be positioned and directed to minimise nuisance to footpath users and residents, to minimise distractions to passing drivers on adjoining public highways and to minimise skyglow, so far as reasonably practicable. Lighting spillage will also avoid or minimise impacts on ecological resources, including nocturnal species.

1.11 Traffic, Transport and Highway Safety

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
11.1	Norfolk County Council All District Councils Highways England	i. Do you agree with the methodology, baseline data, assumptions and predicted traffic movements used to assess traffic and transport impacts in Chapter 24 of the ES [APP-348]? ii. Are you content with all mitigation and management measures set out in the Outline Traffic Management Plan [APP-032], the Outline Access Management Plan [APP-034], the Outline Travel Plan [APP-033] and the Outline Code of Construction Practice [APP-025]? ii. Please identify any outstanding issues. v. Please indicate where a single HGV movement is defined or provide a definition of a single HGV movement.	
11.2	Norfolk County Council All District Councils Highways England	i. Are the existing traffic flows in ES chapter 24 table 24.8 agreed? Ii. Are the link-based sensitivity receptors in table 24.9 agreed?	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
11.3	Applicant	Table 24.21 of the ES sets out existing and proposed daily traffic flows over the 79 links identified. (i) It is noted that the worst case scenario assumes that all employee trips would overlap with the network peak hour. For each of the 'sensitive' links please provide an estimate of how vehicle movements would be spread throughout the day. (ii) What measures (for example relating to the timing of works and routing) could be introduced to minimise impacts from HGV movements during the peak tourist season? Particular reference should be made to Happisburgh Beach and the Blickling estate.	During stakeholder consultation Norfolk County Council expressed a wish to see extended morning network peaks assessed (i.e. 7:30 am to 9am) as discussed in ES Chapter 24 Traffic and Transport, Table 24.3. This was duly assessed in Section 24.7.7.4. of Chapter 24 Traffic and Transport, for the sensitive junctions identified by Norfolk County Council and Highways England. This assessment represents a worst case scenario when hourly network flows and development flows would be at their highest and therefore the potential for driver delays would be a risk. The assessment confirms no significant impacts. A more typical arrival and departure profile would involve employees arriving/departing outside of the network peaks in the hour preceding/following a single shift (typically 7am to 7pm). However, during winter months there may be some earlier departures (4:30pm to 5:00pm) due to limited daylight hours and this scenario is assessed in *Section* 24.7.7.4. of Chapter 24 Traffic and Transport. An Outline Traffic Management Plan (**OTMP**) (document reference 8.8) is submitted as part of the DCO application. The OTMP sets out the standards and procedures for managing the impact of Heavy Goods Vehicles (**HGV**) traffic during the onshore construction period, including localised road improvements necessary to facilitate the safe use of the existing road network. The purpose of the OTMP is to capture and secure the mitigation principles for the construction phase of the onshore elements of the project. No stage of the onshore transmission works may commence until for that stage a final Traffic Management Plan (**TMP**) has been submitted to and approved by the relevant planning authority in consultation with the highway authority. This is secured through Requirement 21. The traffic and transport assessment is predicated on a TMP being implemented to manage the daily delivery profiles and control movements and routing. Section 1.6 of the OTMP sets out the full range of 'Environmental Controls', to be implemented and includes: • Control of HGV numbers - a booking system for deliveries will be established by the contractor. The booking system will enable a daily profile of deliveries to be maintained within the assessment thresholds and allow the contractor to ensure that the required deliveries are regularly forecast and planned.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:

			• Delivery Route Compliance:
			  ○ An information pack will be distributed to all individuals involved in the transport of materials and will include key information on delivery routes.
			  ○ Appropriate traffic signage would be installed to direct supplier's and contractor's vehicles along appropriate delivery routes;
			  ○ Information signs will also be erected which will include a telephone number for the public to report concerns; and
			  ○ Supply chain vehicles will display a unique identifier in the cab of the vehicle.
			• Delivery Management:
			  ○ The Contractor will ensure that a stockpile of materials is maintained to allow HGV movements to be reduced during planned major events whilst not impacting upon the construction programme.
			  ○ The Contractor will also work closely with the local liaison groups to identify the dates of local planned events, that could impact upon the project and seek to effectively manage deliveries during these events.
			
			With specific reference to a) Happisburgh Beach and b) the Blickling estate:
			a) In addition to setting out the Environmental Controls, Section 1.7.3. of the OTMP identifies a number of highway routes (links) for which the daily HGV traffic generation must be 'capped' to avoid significant amenity and severance impacts. **Error! Reference source not found.** of the OTMP details t he capped routes and the recommended maximum daily construction HGVs. This includes link 49, B1159, Coast Road which is capped at a maximum of 72 HGV movements per day. This cap would ensure that the local roads serving Happisburgh Beach will not be subject to significant traffic impacts.
			b) With respect to the Blickling Estate, Appendix 24.38 of ES Chapter 24 Traffic and Transport, contains a summary of the environmental assessment for the highway link serving the attraction (link 75, B1354.). It can be noted that no significant impacts are anticipated for link 75 and therefore the Environmental Controls set out in Section 1.6 of the OTMP and the supporting

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			community liaison strategy are sufficient to manage the project's peak HGV demand of 149 HGV movements per day.
11.4	Applicant	ES Chapter 24.7.2.2.1 [APP-348] and appendix 24.7 [APP-262] refer to the disaggregation of traffic demand from components of the onshore project area. This appears to relate to the 20 onshore cable route sections. Please confirm how HGV movements (as distinct from employee movements) associated with the construction of the substation and substation extension works are taken into account in reaching your findings.	ES Chapter 24 Traffic and Transport, Appendix 24.7 contains the disaggregation of HGV movements for all components of the Onshore project area, for the duration of the construction programme. This includes HGV demand for: • Cable route sections; • Trenchless crossings; • Landfall; • Onshore Project Substation; and • National Grid substation extension. For ease of reference all HGV movements are summarised at the end of ES Appendix 24 and red colour coding is adopted to denote peak demand.
11.5	Applicant	(i) ES 24.7.7.1 tables 24.26, 24.30, 24.32: please confirm what the figures for peak construction vehicle deliveries and peak construction vehicle movements relate to, ie are they HGV only movements or do they include all construction traffic? (ii) The HGV traffic movements in ES Chapter 24 table 24.21 have been disaggregated into the 3 component parts of infrastructure development in table 24.25. Please explain how the figure of 240 vehicle movements in table 24.25 has been disaggregated to 96, 144 and 144 for the three elements. (iii) Would a sequential approach to development of the 3 elements in Table 24.25 effectively increase the total number of movements for the 3 elements?	(i) ES Chapter 24 Traffic and Transport, Tables 24.26, 24.30 and 24.32 all refer to HGV movements only. (ii) ES Chapter 24 Traffic and Transport, Table 24.25 contains a footnote that indicates that a trenchless crossing (TC) gang can only work on one site at any time. Therefore the 144 HGV movements associated with TC activities is only counted once. Thus, the HGV movement disaggregation is 96 (Section 16a Duct Installation Gang) + 144 (TC 14 Gang 3 or TC 15 Gang 3). (iii) No. See response to (ii), a sequential approach has been adopted to reduce the HGV demand associated with TC activity. One gang can only work at one site at a time so the total traffic could only occur sequentially.
11.6	Highways England	ES 24.7.7.3.3 i. What is the current position (and likely timescale) of the A47 corridor improvement works? It is noted that it was anticipated that a DCO application would be	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		submitted in summer 2018 (ES24.8.1.3, paragraph 388) ii. The A47 improvement works are outside the Applicant's control. If they do not take place, or are significantly delayed beyond the construction period for this project, what do you consider the impacts would be on the various receptors?	
11.7	Highways England	i. With regard to the road improvement scheme involving dualling of the A47 south of Lingwood Lane junction and the construction of a new junction at the B1140 what are the implications of the increased construction traffic on link 5? Ii. Would the provision of a 'Queuing Ahead' sign be sufficient mitigation in relation to the potential for construction traffic to escalate the identified pattern of rear end shunts at the A47/B1140 junction?	
11.8	Applicant	Please provide a plan depicting the extent of the A47 road improvement scheme including its 6 component parts as detailed at ES 24.6.1.1, paragraph 82.	Of the six A47 schemes listed only two are relevant to the Norfolk Vanguard onshore study area due to their proximity to identified construction traffic road links: • A47 Blofield to North Burlingham dualling; and • A47 Great Yarmouth junction improvements including reconstruction of the Vauxhall Roundabout, and introduction of traffic lights at Gapton roundabout. Details of these schemes can be located at https://highwaysengland.citizenspace.com/he/a47-blofield-to-north-burlingham-dualling/ ;and https://highwaysengland.citizenspace.com/he/a47-and-a12-junction-enhancement/
11.9	Highways England	ES 24.7.7.3.7 Does the recently completed North Norfolk	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Distributor Road alleviate traffic congestion and problems at the A140/B1149 roundabout junction to the extent that a 147.5% increase in HGV traffic along links 36, 38 and 39 would not have a material effect upon highway safety and/or congestion?	
11.10	Applicant/Orsted/Norfolk County Council/Other Councils	ES 24.8.1 and paragraph 385 Cumulative Impacts during construction (i) The Hornsea Project Three study area was divided into 183 highway links and 34 onshore cable route sections. The maximum HGV traffic demand has been presented for each of the 34 sections but the Hornsea Project Three Preliminary Environmental Information Report (PEIR) did not include an assignment of daily HGV movements to the 183 highway links. (ii) Is the necessary data now available for the Applicant to undertake a full cumulative impact assessment of both projects?	As explained in answer to Question 12.5, the data necessary for Norfolk Vanguard to undertake a cumulative assessment of traffic impacts taking into account Hornsea Project Three construction traffic was not publicly available at the time the Norfolk Vanguard DCO application was submitted. The Applicant is working closely with Ørsted to identify potential cumulative impacts with Hornsea Project Three. Should additional mitigation measures be required these will be discussed and agreed with the relevant planning authorities. As outputs from this exercise become available, the Applicant will provide an update to the examination. Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent, as secured through Requirement 21 and in line with the OTMP. This workstream is ongoing but material headway has been made and both projects are confident that agreement can be reached.
11.11	Applicant/Orsted/Norfolk County Council/Other Councils	The on-shore cable route would cross with the proposed Hornsea Project Three cable route to the north of Reepham. (i) Please provide an assessment of the potential traffic and highway impacts arising from the simultaneous construction of both projects in the same vicinity and outline any measures which may be required to mitigate any impacts. (ii) Would it be possible to secure appropriate sequencing of construction activities? If so, how could this be achieved in the dDCO?	As explained in answer to Question 12.5, the data necessary for Norfolk Vanguard to undertake a cumulative assessment of traffic impacts taking into account Hornsea Project Three construction traffic was not publicly available at the time the Norfolk Vanguard DCO application was submitted. The Applicant is working closely with Ørsted to identify potential cumulative impacts with Hornsea Project Three. Should additional mitigation measures be required these will be discussed and agreed with the relevant planning authorities. As outputs from this exercise become available, the Applicant will provide an update to the examination. Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent, as secured through Requirement 21 and in line with the OTMP. This workstream is ongoing but material headway has been made and both projects are confident that agreement can be reached.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
11.12	Applicant	The written representations of Broadland District Council [RR-175] and Oulton Parish Council [RR-141] note that the Hornsea Three project main compound is to be located on the former airfield east of Oulton and the Norfolk Vanguard project has 2 construction compounds planned in Oulton which would utilise the same access road (B1149/The Street). What are the traffic implications of these arrangements and have the cumulative impacts of all three compounds been assessed? In particular Oulton Parish Council contends that the Applicant has used Hornsea Three PEIR documents to assess cumulative impacts but the main compound did not appear in those PEIR documents.	ES Chapter 24 Traffic and Transport, paragraph 386 confirms it was not possible to undertake a detailed cumulative impact assessment of Norfolk Vanguard/Hornsea Project Three traffic at time of submission of the Norfolk Vanguard DCO application. The response to Q11.10 and Q12.5, sets out the Applicant's approach to address this matter.
11.13	Applicant	Oulton Parish Council notes that Hornsea Three are using horizontal direct drilling techniques to cross the B1149 but Norfolk Vanguard does not proposed to utilise such techniques. Is this correct? If so what is the justification for this and what are the potential implications?	The Applicant does not propose to cross the B1149 with trenchless installation methods. The Applicant has committed to trenchless installation methods underneath a number of key sensitive features along the onshore cable route, however the application of trenchless methods has been carefully considered as it can have a number of disadvantages. With reference to the Cable Route Info Sheet provide in Appendix 11.1 of this submission (document reference ExA; WQApp11.1; 10.D1.3) and the Project website[11], these considerations include that trenchless installation methods: • Can be more time consuming due to the requirement to establish and demobilise drilling rigs, extending the installation programme, including the potential need to work outside of normal working hours and generating impacts in a single location for a prolonged period • Requires specialist equipment and services • Typically requires additional land take and additional materials to accommodate temporary drilling rig works areas

[11] https://corporate.vattenfall.co.uk/contentassets/bf0e5e31bbab467eaf02040c7b17513a/180-vattenfall-cable-route-info-sheet.pdf

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			• Typically requires additional site investigations to understand deeper geology which introduces further pre-construction works and deeper installation can also introduce additional risks associated with groundwater and require increased cable sizes. The proposed trenched road crossing method and associated implications is detailed within Section 5.5.3.3 of ES Chapter 5 Project Description. In compliance with Traffic Safety Measures and Signs for Road Works and Temporary Situations Part 1: Design 2009, Department for Transport (**DfT**); single lane closures by means of portable traffic signals are considered an appropriate solution for the onshore cable crossing of the B1149 via trenched techniques (Plan SC7 of the publication details a typical layout) that would mitigate significant impacts associated with traffic delay. To minimise disruption to the travelling public the timing and duration of the closure would be agreed with Norfolk County Council Highways via formal notification under the New Roads and Street Works Act powers.
11.14	Highways England	ES 24.7.7.3.8 Would the mitigation measures proposed by way of enhanced Traffic Management Plan measures to increase driver awareness be sufficient to mitigate the impact of development traffic in the form of a projected HGV increase of up to 50% along link 64?	
11.15	Applicant/Norfolk County Council and other relevant District and Parish Councils	ES 24.7.7 details severance as one of the potential impacts. Link 69 (Little London Road) is identified as being susceptible to severance. It is noted that this is a narrow lane lined with no footway and fronted by private residences. The background flow rates indicate some 22 HGV movements per day projected to increase to a peak daily flow of 240 HGV movements, which after mitigation would reduce to some 48 movements of smaller 10 tonne vehicles.	ES Chapter 24 Traffic and Transport, paragraph 215 notes that community engagement is key to ensuring the severance impacts are managed on Little London Lane and this is reinforced in Section 1.9.2 of the OTMP (document reference 8.8) which sets out the strategy for Local Community Liaison as follows: *Norfolk Vanguard Limited will ensure effective and open communication with local residents and businesses that may be affected by noise or other amenity aspects caused by the construction works. Communications will be co-ordinated on site by a designated member of the construction management team. A proactive public relations campaign will be maintained, keeping local residents informed of the type and timing of works involved, the transport routes associated*

<table>
<tr><th>PINS Question Number</th><th>Question is addressed to:</th><th>Question:</th><th>Applicant's Response:</th></tr>
<tr><td></td><td></td><td>How can the living conditions of adjoining residents be protected during the construction period?</td><td>with the works, the hours of likely construction traffic movements and key traffic management measures that would be provided.

Section 1.7.3. of the OTMP identifies a number of highway routes (links) for which the daily HGV traffic generation must be capped to avoid significant amenity and severance impacts. Table 1.7 details the capped routes and the recommended maximum daily construction HGVs. This includes link 69, Little London Lane, which is capped at a maximum of 48 HGV movements per day. Paragraph 88 of the OTMP states Specific to link 69, Little London Road, the proposed HGV cap must be achieved using smaller payload vehicles (~10tonne) to traverse the constrained highway corridor.

The purpose of the OTMP is to capture and secure the mitigation principles that, for the construction phase of the onshore elements of the project, are to be included in the final TMP to be submitted pursuant to the discharge of Requirement 21(a) of the draft DCO.</td></tr>
<tr><td>11.16</td><td>Applicant</td><td>Cawston Parish Council [RR-098] has expressed concerns about the impact of HGV movements through Cawston and its impact on residential properties adjacent to the B1145. Please explain the nature and likely duration of potential impacts and any proposed mitigation measures.</td><td>ES Chapter 24 Traffic and Transport, Table 24.21 identifies the forecast peak construction traffic daily demand for the B1145 through Cawston (highway link 34) as 394 construction traffic movements per day, of which 240 are HGV movements. The peak construction demand is aggregated from ES Chapter 24 Traffic and Transport, Appendix 24.7, HGV Summary Table and Employee Summary Table. The aggregation is a theoretical maximum, combining all the project elements that generate traffic on highway link 34. The following table lists those elements, and the approximate duration of the peak traffic movements.
<table>
<tr><th>Project Element</th><th>Daily Employee Traffic Movements (HGV)</th><th>Duration of peak in weeks (HGV)</th></tr>
<tr><td>Cable Route Sections 9 and 9a</td><td>40 (48)</td><td>20 weeks</td></tr>
<tr><td>Cable Route Section 10</td><td>40 (48)</td><td>19 weeks</td></tr>
<tr><td>Trenchless Crossing 7</td><td>10 (*72)</td><td>2 weeks</td></tr>
<tr><td>Trenchless Crossing 8</td><td>10 (*72)</td><td>2 weeks</td></tr>
</table></td></tr>
</table>

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:

			*A maximum of 75% of the total trenchless crossing HGV demand of 96 movements is assessed, reflecting the drilling constraints set out in paragraph 210 of Chapter 24 Traffic and Transport.
			
			Chapter 24 Traffic and Transport, Table 24.27 sets out the assessed pedestrian amenity impacts for highway link 34 and predicts significant impacts resulting from the theoretical peak HGV demand. To mitigate the assessed impact, section 24.7.7.2.1 of Chapter 24 Traffic and Transport sets out a series of enhanced traffic management measures, as follows:
			
			• Driver training and toolbox talks.
			• Driver information packs to include:
			  ○ Delivery timing constraints (e.g. school arrival/departure times);
			  ○ HGV delivery routes;
			  ○ Diversion routes; and
			  ○ Identify safe areas to pull over to reduce the effect of slow moving platoons of vehicles.
			• Safety Awareness – Educate drivers to report 'near misses'.
			• Engagement structure – to provide clear governance and reporting (stakeholders) structure.
			• Monitoring and Reporting – To monitor traffic flows at mobilisation areas and the onshore project substation.
			• Contact information at all roadwork sites and robust complaint response standards (7 days).
			
			As explained in answer to Question 12.5 the data necessary for Norfolk Vanguard to undertake a cumulative assessment of traffic impacts taking into account Hornsea Project Three construction traffic was not publicly available at the time the Norfolk Vanguard DCO application was submitted. The Applicant is working closely with Ørsted to identify potential cumulative impacts with Hornsea Project Three including traffic movements through Cawston. Should additional mitigation measures be required these will be discussed and agreed with the relevant planning authorities. As outputs from this exercise become available, the Applicant will provide an update to the examination.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent – secured through Requirement 21.
11.17	District and Parish Councils	i. ES chapter 25, table 24.27: this table sets out an assessment of the effect of HGV flow increase on pedestrian amenity. Do you agree with the assessments which have been made? ii. Some links are assessed as having potentially significant adverse pedestrian amenity impacts and enhanced Traffic Management Plan measures are suggested to mitigate these impacts. Are you satisfied that the suggested measures would be effective? If not, then please explain why?	
11.18	Norfolk County Council	ES 24.7.7.3.9 and A47 Access Technical Note Your relevant representation refers to a holding objection to include the main compound site. (i) Is this holding objection still in place? (ii) What is your position having regard to the proposed access options to the main compound set out in the technical note.	
11.19	Highways England/Norfolk County Council, the District Councils and Parish Councils	ES 24.7.7.3.9 and A47 Access Technical Note (i) What are the implications of leaving confirmation of the onshore project substation access to post-consent consultations on the Outline AMP? (ii) Do you have a preference for option A, A1 or B in highway terms and if so, why?	
11.20	Applicant	Appendix 24.21 A47 Access Technical Note The different access options have differing environmental effects.	(i) Please see the Applicant's response to Q14.22. (ii) The construction traffic assignment to onshore project substation represents a simple 'all movements' access assumption without the traffic demand

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		(i) Access A does not require any significant vegetation clearance whereas A1 requires the removal of 772m^2 of vegetation to allow for widening of the A47 and additional visibility splays. To what extent have these matters been taken into account in the LVIA and ecological effects assessments? (ii) Access A does however require a commitment to employ a 'no right turn traffic management strategy' which would entail 79 HGVs undertaking a diversion route totalling some 15.5 miles. Have the additional vehicle movements along the diverted route been taken into account in the impact assessment on the relevant highway links? If not, please provide an updated assessment including these movements.	associated with the 'no right turn traffic management strategy' diversion. The additional demand would maintain traffic on the same link along the A47 (Link 1a) making a u-turn at the Norwich Road Roundabout (to the west) or A47/A1075 Dereham (to the east). Appendix 24.3 of ES Chapter 24 Traffic and Transport details forecast 2022 baseline HGV flows of 1747 movements, the additional diverted HGV movements would be potentially up to 158 which represents 9.04% of baseline conditions. Levels below 10% are considered indiscernible from day to day fluctuations in traffic and would therefore not change the significance of the impacts assessed. The Applicant has engaged with Highways England on the development of a 'no right turn traffic management strategy' and recognising the relatively low HGV diversion demand, Highways England has requested the HGV movements are quantified rather than further assessed. A SoCG has been prepared between the Applicant and Highways England (Rep1-SOCG- 7.1) which contains the following position statement: *"A Substation Access Briefing Note (**SABN**) related to access proposals off the A47(T) has been submitted to Highways England for review. The SABN clarifies the approach the Applicant will take for subsequent assessment and design work to ensure that the final junction design will be undertaken to the satisfaction of Highways England.* *Requirement 22 of the draft DCO ensures that the siting, design, layout and any access management measures for any new, permanent or temporary means of access to a highway must be approved by the relevant planning authority in consultation with the highway authority. In the case of the A47(T) the relevant authority will be Highways England.* *Following agreement of the SABN (and on the understanding that the work outlined within the document is delivered to the satisfaction of Highways England), and with the inclusion of Requirement 22, this will ensure that that any final junction design will be fit for purpose with regard to safe and efficient operation of the Strategic Road Network."*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
11.21	Norfolk County Council	Your representation makes reference to ensuring that the underground cable route does not fetter any future highway improvement schemes on the A47 trunk road. Having seen the onshore cable route, what is your current position on this matter?	
11.22	Applicant/RNLI	A member of the public has written to confirm that Cart Gap Road in Happisburgh is unsuitable for HGV vehicles and the ramp is used for RNLI lifeboats. (i) What information do you have on this matter? (ii) What provisions are in place to ensure emergency access will remain undisturbed for RNLI rescue and other activities?	The Applicant does not propose to utilise Cart Gap Road to access the Norfolk Vanguard project.
11.23	Applicant	Can you confirm that the proposed HGV routes do not pass through the Norfolk Coast Area of Outstanding Natural Beauty?	Three routes on the strategic road network pass through the Norfolk Coast Area of Outstanding Beauty (**AONB**), including the A140, A148 and A149, which will be required for construction access to the onshore works. These are busy strategic roads that provide connectivity to Cromer and Sheringham from the south and west. These are identified as low sensitivity road links as they can accommodate a high volume of traffic. There is no requirement to use any smaller rural routes, with higher sensitivity, that pass through the AONB.
11.24	Applicant	The impact assessments look at individual links/sections/highways. The landfall site would be in Happisburgh with a compound. One Interested Party contends that the outline traffic management plan confirms that all but one of the roads in the village would be affected. Please set out the combined impacts on Happisburgh road network as a whole, considering the impacts on the individual links in combination.	ES Chapter 24 Traffic and Transport, Table 24.21 identifies the forecast peak construction traffic daily demand for the Happisburgh Area (B1159) for the (worst case traffic demand) Stage 2: Main duct installation works and ES Appendix 24.19 depicts this demand. The combined traffic demand has been assigned to the B1159 highway links and the -in-combination impacts assessed accordingly. The interested party refers to the OTMP (document reference 8.8) which also sets out the traffic demand for Stage 3: Cable pull, joint and commission. Stage 3 traffic demand is significantly lower than the worst case traffic scenario (Stage 2), however, for context Table 1.3 of the OTMP sets out the traffic demand per access point for Stages 2 and 3. Of relevance to Happisburgh, is Stage 3. The maximum in combination demand within the Happisburgh Area would be 31 daily HGV movements.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
11.25	Applicant	What is the purpose of the 'Cable Logistics Areas'? Where would they be and how would they be used?	The cable logistics area is a single location of existing hardstanding and agricultural buildings to allow the storage of cable drums and associated materials and to accommodate a site office, welfare facilities and associated temporary infrastructure to support the cable pulling works. The use of the area is referenced within Para 371 of ES Chapter 5 Project Description, which states that during the cable pull phase, materials will be delivered directly to the joint locations, or through the use of a cable logistics area. The cable logistics area would only be used during the cable pulling phase of the project and would not be used during the duct installation phase or operational phases. The cable logistics area is located to the south east of Oulton, approximately half way along the cable route, and depicted in Sheet 18 of 42 in Document 2.04 Works Plan.
11.26	Applicant	The use of a running track is intended to reduce the impact of construction traffic on the public highway. How would this be secured in the dDCO?	The running track forms the basis of the design of the project as presented in ES Chapter 5 Project Description and is captured as part of the relevant assessments in the ES. The authorised development is defined as the development and associated development in Part 1 of Schedule 1 of the dDCO. Part 1 of Schedule 1 outlines the work packages, as shown on the Works Plans (document reference 2.04), and also captures associated development including "*…(b) temporary access tracks and running tracks both alongside and used for the purpose of constructing Work Nos. 5, 6, 7, and 9*;". The Works Plans and Land Plans (document 2.2) also outline all accesses required to the onshore works areas; access is restricted to those fixed points, and as these access points are limited the Applicant will be required to make use of the running track in order to gain access to all points along the cable route. Schedule 1 of the dDCO, together with the Works Plans are therefore the key controls for securing the use of the running track. Accordingly, the running track is embedded within the design of the works. The running track is also included within the design principles of the Traffic Management Plan (document 8.8), the Access Management Plan (document

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			8.10), and the Access to Works Plan (document 2.5). These documents are secured through Article 37 and Requirement 21 of the dDCO.
11.27	Applicant	How would the mobilisation areas operate? What materials would be stored and what activities would take place within these areas?	Section 5.5.4 of ES Chapter 5 Project Description provides details on the purpose and use of the mobilisation areas. The mobilisation areas provide access from the public highway onto the cable route to serve the workfront(s) installing ducts within the associated cable section(s) assigned to that mobilisation area. Mobilisation areas are required only during the duct installation phase of construction. The mobilisation areas will include temporary site offices, welfare facilities and materials storage. Construction materials to be stockpiled at the mobilisation areas would include ducts, aggregate, cement bound sand (**CBS**), warning tiles and will include construction plant storage and maintenance areas.
11.28	Applicant	Document 8.8. Outline Traffic Management Plan (OTMP): i) Please confirm the implications, in traffic terms, landscape and visual impact terms and ecological terms, of retaining some 20% of the running track of the total onshore cable route to enable cable pull and jointing works. Ii) Given that 75 potential access points have been identified (table 1.3 of the OTMP), are the lengths of running track to be retained known? Iii) How would reinstatement be achieved and secured post commissioning works?	(i) Section 5.5.2.4.1 of Chapter 5 Project Description includes a description of how approximately 20% of the running track will be retained during the cable pulling works and this is captured within the worst case scenario that is assessed in all the onshore chapters, i.e. the assessment of impacts associated with the cable installation does not specify the contribution of each individual element – the assessments (including traffic, landscape and visual and ecology) have been undertaken on the combined worst case activities for cable installation. However, the retention of the running track has specifically been referred in the following sections. The OTMP (document reference 8.8) Table 1.3 includes the traffic demand associated with establishing and decommissioning the running track, disaggregated by Cable Section access point. The visual impact of the presence of the running track is considered in the Applicant's response to question 14.8. ES Chapter 22 Onshore Ecology sets out that the running track will be reduced to 20% during the cable pulling phase within Table 22.23 and the subsequent assessment is based on that understanding.

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			(ii) The estimated lengths of running track to be reinstated or retained for cable pull and jointing activities, with respect to geographical route sections, are detailed in Table 5.31 of Chapter 5 Project Description. (iii) Reinstatement will involve the removal of any ground protection such as matting or aggregate used to from the running track and re-distribution of topsoil. Reinstatement requirements are detailed within the Outline CoCP (document reference 8.1) and secured within DCO Requirement 20.
11.29	Applicant	When is it anticipated that the mobilization areas would be de-commissioned? Would they be required for cable pull-through and jointing?	Section 5.5.4 of ES Chapter 5 Project Description provides details on the purpose and use of the mobilisation areas. The mobilisation areas are required only for the duct installation phase of the construction and are not required for subsequent cable pull through and jointing. Each mobilisation area will be removed, and the land reinstated, when the duct installation works are completed for the associated cable route section. All mobilisation areas will be removed and reinstated by the end of the duct installation phase of construction. Schedule 1 (k) of the dDCO details that working sites and mobilisation areas are included in connection with the construction of Work Nos 4C to 12.
11.30	Applicant/Norfolk County Council and all other District and Parish Councils	It is anticipated that all cable pull and jointing activities would be concentrated in a single year 2024. Such activities generate less traffic than duct installation activities and therefore the assessment has concentrated on the worst case scenario. Are there any potential implications for the traffic generation associated with such activities and other projects in the pipeline in terms of cumulative impacts?	ES Chapter 24 Traffic and Transport, Section 24. 8 considers the other projects that could give rise to cumulative impacts. Of those considered, Hornsea Project Three is identified as having the timescale and scope to have potential cumulative impacts with the activities associated with cable pull and jointing activities. As explained in answer to Question 12.5 the data necessary for Norfolk Vanguard to undertake a cumulative assessment of traffic impacts taking into account Hornsea Project Three construction traffic was not publicly available at the time the Norfolk Vanguard DCO application was submitted. The Applicant is working closely with Ørsted to identify potential cumulative impacts with Hornsea Project Three. Should additional mitigation measures be required these will be discussed and agreed with the relevant planning authorities. As outputs from this exercise become available, the Applicant will provide an update to the examination.

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			Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent – secured through Requirement 21.
11.31	Applicant/ Norfolk County Council and all other Councils	i) OTMP: How could delivery times be more tightly controlled in residential areas/near schools/to ensure deliveries outside peak times and to protect residential amenity? ii) OTMP: How would the recommended arrangements for the transport of Abnormal Indivisible Loads detailed in the Route Access Report (Appendix 2 OTMP) be secured and controlled?	(i) Sections 1.6.3 and 1.6.5 of the OTMP (document reference 8.8) set out the processes for tight control of HGV delivery times by means of a delivery booking system with allocated time slots, and other delivery management measures. These commitments are secured through Requirement 21 of the draft DCO. (ii) Further detail and site specific measures related to Abnormal Indivisible Loads will be developed in the final Traffic Management Plan to be secured through Requirement 21 of the draft DCO.
11.32	Applicant/Relevant Councils	ES24.7.5: Embedded mitigation: this section provides that the Applicant has agreed not to use the beach car park at Happisburgh South. How would this be enforced and monitored?	Outline Travel Plan (**OTP**) (document reference 8.9): The OTP sets out how onshore construction employee traffic would be managed and controlled in accordance with Requirement 21 of the draft DCO. Section 1.8.4 of the OTP identifies that all employees would be required to comply with the security protocol for the Mobilisation Areas and would therefore be required to sign in and identify their mode of transport. Table 1.5 of the OTP establishes a commitment to monitor overspill parking to ensure that employees do not seek to drive direct to site. The contractor will ensure that employees only park in designated bays and on-street parking close to site will be closely monitored. Section 1.11.2 of the OTP identifies overspill parking as a potential breach (of the OTP) to be enforced. In addition, a complaints procedure will be introduced for each stage of the works. Enquiries will be dealt with in an expedient and courteous manner. Any complaints will be logged, investigated and, where appropriate, rectifying action will be taken. This is set out in the Outline CoCP and secured through Requirement 20 of the draft DCO.

1.12 Air Quality and Human Health

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
12.1	NCC, NNDC, BC and BDC	Do you agree with the methodology and baseline data used to assess the potential impacts of dust and road traffic emissions in ES Chapter 26 [APP-350]?	
12.2	Applicant, NCC, NNDC, BC and BDC	The Applicant and Councils will appreciate that the UK Government has come under considerable recent judicial scrutiny over the question of the implementation of and compliance with the Air Quality Directive. Please can you set out your understanding of the current legal position with regard to complying with the Air Quality Directive, particularly in light of the judgement *R (Client Earth (No 3)) v (1) Secretary of State for Environment, Food And Rural Affairs (2) The Secretary of State for Transport and (3) Welsh Ministers [2018] EWHC 315 (Admin)*, and explain its relevance to this application.	The judgment described relates to the declaration of the unlawfulness of the UK Government's 2017 Air Quality Plan, in respect of the Air Quality Directive and relevant domestic Regulations. The judgment required further assessment to be carried out for the 45 local authority areas which experienced exceedances of the Limit Values but were not required to produce a feasibility study in the 2017 Air Quality Plan. A supplementary report was to be produced, detailing measures sufficient to achieve compliance with the EU Limit Values by the quickest means possible, to reduce exposure as quickly as possible and by means in which the outcome is not just possible, but likely. Within ES Chapter 26 Air Quality, the impact of construction phase road traffic emissions associated with Norfolk Vanguard was considered across seven local authority areas, including North Norfolk District Council, Broadland District Council, Breckland Council, Great Yarmouth Borough Council, Kings Lynn and West Norfolk Borough Council, South Norfolk Borough Council and Waveney District Council. None of these authorities are included in the list of 45 described above. The Air Quality Plan for tackling roadside NO_2 concentrations in the Eastern Zone (July 2017)[12] covers the Norfolk Vanguard onshore study area. The document presents the results of Defra modelled roadside annual mean NO_2 concentrations for a reference year of 2015, and annual modelled projections up to 2030, taking into account the impact of measures already implemented and those which the local authority has firmly committed to implement. Figure 5 of the Air Quality Plan shows 2015 NO_2 concentrations at Defra-modelled road links in North Walsham, Great Yarmouth and Lowestoft, which were included in the dispersion

[12] Department for Environment, Food and Rural Affairs (Defra) (2017) Air Quality Plan for tackling roadside nitrogen dioxide concentrations in Eastern (UK0029), London:HMSO

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			modelling carried out for the Norfolk Vanguard air quality assessment and presented within ES Chapter 26 Air Quality. Defra-modelled concentrations for 2015 show that these areas are already compliant with the EU Limit Values, with annual mean NO_2 concentrations no greater than 30µg.m-3, or 75% of the Objective. The impact of pollutant emissions resulting from construction-generated vehicles associated with the Norfolk Vanguard project was predicted to be 'not significant' across the study area. Furthermore, pollutant concentrations will reduce over time, as a result of EU, national and local measures to improve air quality in the Eastern Zone. As such, given that NO_2 concentrations in the Norfolk Vanguard study area are less than 75% of the Objective in the reference year, it is not considered that the project would affect the ability of the Eastern Zone to achieve compliance with the EU Limit Values, or to extend the time in which they can be achieved.
12.3	NCC, NNDC, BC and BDC	Do you have any concerns with regard to the proposed air quality mitigation measures set out within section 26.6.6 of ES Chapter 26 [APP-350] and the proposed control measures set out within Section 10.1 of the Outline CoCP [APP- 025]	
12.4	BC	Section 26.6.1 of ES Chapter 26 [APP-350] states that as the Swaffham Air Quality Management Area (AQMA) is approximately 1km south of the A47 it is not anticipated that there would be any significant increases in pollutant concentrations within the AQMA. Do you agree with this assessment and, if not, please explain why?	
12.5	Applicant	Section 26.8.1 of ES Chapter 26 [APP-350] states that it is not anticipated that any of the projects considered in the Cumulative Impact Assessment would lead to a cumulative impact in conjunction with the project, with the exception of Hornsea Project Three Offshore Wind Farm. The magnitude	The Applicant was unable to undertake a cumulative traffic impact assessment with Hornsea Project Three at the time the Norfolk Vanguard application was submitted as details of how Hornsea Project Three distributed their construction traffic to each of their construction accesses was not included within their application. The Applicant anticipates that there may be cumulative impacts on a small number of shared road links and discussions between Hornsea Project

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		of impacts associated with Hornsea Project Three was not known at the time of writing. Is the necessary information now available to undertake a full cumulative impact assessment of both projects? If so, please provide this. Oulton Parish Council are concerned that there is a lack of information on the cumulative impact on the residents of Oulton. Please explain what the nature and likely cumulative impacts would be and any proposed mitigation.	Three and the Applicant are progressing. Further information is included within a SoCG between the Applicant and Hornsea Project Three (Rep1 - SOCG - 18.1) submitted at deadline 1. To the extent that further information becomes available for Hornsea Project Three, an updated cumulative traffic impact assessment could be submitted to the examination. Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent – secured through Requirement 21. Any additional air quality mitigation measures identified would be secured through an updated OCoCP (document reference 8.1) and through Requirement 20. These would be developed with, and approved by, Norfolk County Council as the relevant planning authority and Highways Authority. The Applicant and Hornsea Project Three are continuing to progress discussions and will engage with Norfolk County Council as the highways authority to reach a shared point of agreement. Whilst discussions are ongoing, material headway has been made and both projects are confident that agreement can be reached. Consideration of these issues are captured within Statements of Common Ground between the Applicant and Orsted (Rep1 - SOCG - 18.1), Norfolk County Council (Rep1 - SOCG - 15.1) and Oulton Parish Council (Rep1 - SOCG - 23.1) submitted at Deadline 1.
12.6	Applicant	Can you please set out how residual effects of dust emissions are to be monitored and how would this be mitigated?	As set out in Section 10 of the OCoCP (document reference 8.1), an air quality management plan will be developed as part of the final CoCP that will be submitted and approved by the relevant planning authority for each stage of the works. The following air quality monitoring measures are identified within the OCoCP (document reference 8.1): • A person responsible for air quality matters will be identified. This would generally be the environment manager/engineer or the site manager. • Daily onsite and offsite inspections shall be conducted where there are nearby receptors. This log book shall also include recordings of regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary (subject to landowners' approval).

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			• If a non-conformity with any of the mitigation measures is identified, it will be recorded during the daily site inspections and appropriate remedial actions will be implemented. • A complaints log will be maintained. Enquiries will be dealt with in an expedient and courteous manner. Any complaints will be logged, investigated and, where appropriate, rectifying action will be taken. Under Requirement 20 of the draft DCO, no stage of the onshore transmission works may commence until for that stage a final code of construction practice has been submitted to and approved by the relevant local planning authority. The final CoCP will be based on the content of the OCoCP (document reference 8.1) and informed by the final design of the project.
12.7	Applicant	Concerns have been raised by a number of interested parties regarding the health impacts of EMFs arising from the apparatus. Section 27.6.5.2 of ES Chapter 27 [APP-351] states that EMF effects have been analysed by the National Grid on behalf of Norfolk Vanguard Limited. Could the applicant please provide a copy of this document?	The analysis of potential electromagnetic field (**EMF**) effects undertaken by National Grid is presented in two documents that are referenced in Chapter 27 Human Health (document reference 6.1.27, footnotes 9 and 10), these are: • Vattenfall emf-information sheet • Vattenfall-orsted emf information sheet A copy of both documents is included as Appendix 12.1 to this submission (document reference ExA; WQApp12.1; 10.D1.3). Since these documents were produced, the Applicant has subsequently committed to HVDC technology. As such only the analysis of potential HVDC EMF levels contained within those documents is relevant to this application. The relevant information contained within these documents is presented in Tables 27.12 to 27.15 of Chapter 27 Human Health (document reference 6.1.27).
12.8	NCC, NNDC, BC and BDC	Section 27.6.5.2 of ES chapter 27 [APP-351] states that EMFs produced are compliant with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and NPS EN-5 public exposure guidelines and that no mitigation measures for the cable design and crossing point with Hornsea Project Three cables are needed.	

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12.9	Applicant	A number of concerns have been raised by interested parties regarding the possible health risk of radioactive substances in connection with the 1996 F16 plane crash within the selected cable run route. What course of action does the applicant intend with regard to this potential issue?	The Applicant received anecdotal information initially in summer 2018 regarding reports of a plane crash within a few hundred metres of the proposed onshore 400 kV cable route, near Necton. Later in 2018 (late August and September), letters were received from Breckland Council raising concerns regarding the potential presence of hydrazine fuel and radioactive materials at a site within this general area. Further documentation has been received from George Freeman MP, which includes reporting produced by the Royal Air Force (**RAF**) immediately following the crash site recovery and clean up exercise. This reporting does not identify radioactive material as a potential contaminant present on site. A copy of the RAF recovery report is included as Appendix 12.2 to this submission (document reference ExA; WQApp12.2; 10.D1.3). As set out within section 6 of the OCoCP (document reference 8.1) the Applicant has committed to producing a Contaminated Land and Groundwater Plan for dealing with contamination post-consent. The plan will follow the Model Procedures for the Management of Land Contamination (CLR11) (Environment Agency, 2004) for evaluating the risk of contamination. Any potential risk of radioactive material would also require the written scheme to take into account procedures set out in CLR13 and CLR14 – The Radioactively Contaminated Land Exposure Methodology (Defra, 2011). The written scheme for dealing with contamination will follow the CLR11 and where relevant CLR13 and CLR14. It will set out the approach for all known sites of potential contamination and would include: • Preliminary risk assessment based on conceptual model and identification of further investigation, where required, e.g. Site Investigation; • Generic or detailed quantitative risk assessment informed by intrusive Site Investigations; • Extent, scale and nature of any contamination; • An assessment of the potential risks to human health based on the proposed construction activities and future use of the site, i.e. potential effects on crops, livestock, groundwater, surface water, etc.; and • Appraisal of remediation options, where required.

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			Any site investigations would be designed to take into account the information identified within the preliminary risk assessment and would be undertaken by appropriately qualified specialists. The written scheme for the management of contamination of any land and groundwater will be submitted and approved by the local authority in consultation with the Environment Agency. This is secured through Requirement 20 of the draft DCO which requires a CoCP to be approved by the local planning authority ahead of each phase of the onshore construction works. This has also been captured within a Statement of Common Ground between the Applicant and the Environment Agency submitted at deadline 1 (Rep1 - SOCG - 6.1).

1.13 Noise and Vibration

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
13.1	Applicant, NCC, NNDC, BC, BDC	The World Health Organisation (WHO) Environmental Noise Guidelines for the European Region 2018 updates and supersedes the WHO Guidelines for Community Noise 1999. In light of the above, does the noise modelling within ES Chapter 25 [APP-349] need to be reviewed? If this is the case, please can the applicant provide an updated assessment.	The World Health Organisation (**WHO**) Guidelines for Community Noise 1999 were used to inform the night time noise levels associated with adverse effects on sleep within the assessment presented in ES Chapter 25 Noise and Vibration. This is defined as 45dB$_{Lnight}$ within the 1999 guidelines. The WHO Environmental Noise Guidelines for the European Region 2018 continue to report that levels associated with adverse effects on sleep are those in excess 45dB$_{Lnight}$. As such, there is no change to the assumptions for night time noise levels and no change to the assessment is required.
13.2	NCC, NNDC, BC, BDC	Do you agree with the methodology within the noise and vibration assessment in ES Chapter 25 [APP-349] including the baseline monitoring and identified noise and vibration receptors?	
13.3	NCC, NNDC, BC, BDC	Please comment on the proposed mitigation measures within ES Chapter 25 [APP-349] and the	

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		control measures set out in Section 9 of the Outline CoCP [APP-025]. In particular, are you satisfied that the enhanced mitigation measures would ensure the required noise reduction at locations that are predicted to experience a moderate to major adverse noise impact without any further mitigation?	
13.4	Applicant	Section 25.9.1.2 of ES Chapter 25 [APP-349] states that with the adoption of Best Practice Mitigation the cumulative impacts on construction noise and vibration are predicted to have no additional impact. Oulton Parish Council is concerned that there is a lack of information on the cumulative noise impact on the residents of Oulton of the Hornsea Project Three Offshore Wind Farm. Can you please respond and justify the conclusion you have reached.	Section 25.9.1.2 of Chapter 25 relates to both the potential cumulative construction noise generated within the works footprint should both Norfolk Vanguard and Hornsea Project Three be under construction at the same time, and the noise associated with cumulative construction traffic from both projects. As explained in answer to Question 12.5 potential impacts to the residents of Oulton are associated with potential cumulative construction traffic on shared road links. The data necessary for Norfolk Vanguard to undertake a cumulative assessment of traffic impacts taking into account Hornsea Project Three construction traffic was not publicly available at the time the Norfolk Vanguard DCO application was submitted. The Applicant is working closely with Ørsted to identify potential cumulative impacts with Hornsea Project Three including traffic related construction noise in the Oulton area. Should additional mitigation measures be required these will be discussed and agreed with the relevant planning authorities. As outputs from this exercise become available, the Applicant will provide an update to the examination.
13.5	Applicant, NCC, NNDC, BC, BDC	A number of interested parties have raised complaints about noise during the construction phase of Dudgeon. The proposed working hours set out in the Outline CoCP [APP-025] are 7am to 7pm Monday to Friday and 7am to 1pm Saturdays. These hours extend above standard hours for construction works.	The proposed working hours are committed to within Requirement 26, which states: "(1) Construction work for the onshore transmission works must only take place between 0700 hours and 1900 hours Monday to Friday, and 0700 hours to 1300 hours Saturday, with no activity on Sundays or bank holidays". British Standard 5228:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise* introduces the 'ABC' method for assessing construction noise.

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		Given the proximity of some of the work sites to residential properties what is the justification for the extended hours? Should the working hours include reduced or no working on Bank Holidays? Do the core working hours include mobilisation periods? If not, 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? Should such measures be incorporated into the Outline CoCP? How will the onshore construction noise impacts be monitored?	The ABC method defines daytime construction hours as Monday to Friday 07:00 to 19:00 and Saturdays 07:00 to 13:00. On this basis, the construction hours proposed in Requirement 26 represent standard daytime working hours for construction sites, and there would be no working on bank holidays. The construction working hours restrict the time that deliveries may be received at site, i.e. no deliveries would be received outside of the stated working hours. The control of deliveries is set out within the Outline Traffic Management Plan (document reference 8.8) which requires contractors to use a booking system to limit deliveries to fixed timeslots. No stage of the onshore transmission works may commence until a Traffic Management Plan for that stage has been submitted to and approved by the relevant planning authority in consultation with the highway authority. This is secured through DCO Requirement 21. No requirement for construction noise monitoring has been identified. However, as part of the communication liaison process set out in the OCoCP a complaints procedure will be established. Any complaints will be logged, investigated and, where appropriate, rectifying action will be taken. Should the complaints be related to construction noise then any investigation would likely include noise monitoring to determine any requirement for rectifying action.
13.6	Applicant, NCC, NNDC, BC, BDC	Section 3 of the Outline CoCP [APP-025] states that evening or Saturday pm/Sunday working may be required. Under what circumstances would this be needed and how frequently is this likely to occur? Under the worst case construction phase noise levels for these hours what impact would this have on local residents? Should the Outline CoCP [APP-025] include further mitigation measures to manage and mitigate the effects of these hours?	Requirement 26 sets out the proposed construction hours and part 26(2) details the circumstances where works may be required to be undertaken outside of these hours. This comprises essential continuous activities including: concrete pour at the substation, the 13 trenchless crossings and the landfall works. These activities would be programmed to be undertaken within the consented hours but may need the flexibility to continue beyond those hours. For example, once drilling has begun it may not be appropriate to stop the drilling process until the installation is complete due to drill head pressures and other technical requirements. Further details of the circumstances whereby flexibility for some out of hours working may be required are provided in response to Q20.59. Any works that are identified as potentially requiring out of hours working will require prior agreement with the relevant planning authority, which is secured

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			through Requirement 26(3). Any application for out of hours working would need to demonstrate expected noise levels at the nearest residential properties and appropriate mitigation as required. An assessment of the predicted construction noise levels at the landfall covering the evening and weekend periods has been included within Chapter 25 Noise and Vibration (section 25.8.5.2). The distance of the noise sensitive receptors to the landfall works are representative of the distance of separation elsewhere along the cable route. Under the worst-case scenario, no residual impacts were predicted at the nearest residential receptors to the landfall during the evening and weekend time period after incorporation of standard and enhanced construction noise mitigation. Standard mitigation (best practicable means) coupled with more site-specific solutions such as the use of screening such as temporary noise barriers and/or temporary spoil bunds, would be applied as appropriate. A Construction Noise Management Plan (**CNMP**) will be produced as part of the final CoCP for each stage of the works. This will include the updated understanding of the expected noise levels (rather than worst case assumptions presented in the ES) and site specific enhanced measures, where required, based on that actual known plant and equipment. This is secured through Requirement 20 (e).
13.7	Applicant	How was the location of the substation influenced by consideration of noise impacts on residential properties and what weighting was given to this in relation to other relevant factors?	In order to characterise the existing noise climate within the Norfolk Vanguard onshore study area a baseline noise survey was undertaken at the nearest noise sensitive receptor as agreed with the relevant local authorities through expert topic group meetings. During consultation with the Environmental Health Officer at Breckland Council, it was identified that there would be a requirement for noise emissions from the onshore project substation installation to comply with the following conditions to ensure that operational noise does not exceed the permitted noise levels of the existing Necton substation: • The noise rating level (defined as set out in BS4142) from the operation of the substation shall not exceed 35 dB LAeq, (5 minutes) at any time at a

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			free field location immediately adjacent to any noise sensitive location; and • Noise from the operation of the substation shall not exceed a limit value of 32dB LLeq (15 minutes) in the 100Hz third octave band, at any time at a free field location immediately adjacent to any noise sensitive location. It should be noted that the requested wording provided by Breckland Council also forms the basis of Requirement 27 "Control of noise during the operational phase". Noise modelling was used to determine a suitable noise buffer that could be applied to residential receptors to ensure that the noise requirements set out by Breckland Council would be achievable. The residential noise buffer is shown on Plate 1 within Appendix 4.9 of ES Chapter 4 Site Selection and Alternatives. The residential noise buffer was one of many environmental constraints that were mapped to assist with identifying suitable sites to accommodate the proposed development. Further details of how the site selection process was undertaken is provided in answer to question 2.1. Subsequent steps included direct comparison of potential substation locations. At this stage detailed noise modelling of each option was undertaken to inform the site selection process. Details of the site selection exercise are presented within ES Chapter 4 Site Selection and Alternatives.
13.8	BC	dDCO Requirement 27 [APP-005] sets out that the noise rating level for the operational phase with regard to Work No. 8A must not exceed 35dB LAeq (5minutes) and 32dB LAeq (15 minutes) in the 100Hz third octave band at anytime at a free field location immediately adjacent to any noise sensitive location. Do you agree with the above limits? Do you agree with the proposed monitoring of operational noise set out in dDCO Requirement 27 (3) [APP-005]?	

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13.9	Applicant	Table 25.36 within ES Chapter 25 [APP-349] identifies a minor adverse impact from operational noise at receptor location SSR10. Please provide further details of the noise mitigation measures that are envisaged to achieve the operational noise limits set out in dDCO Requirement 27 [APP-005]. Would additional mitigation be required during maintenance campaigns which would require 24/7 working every summer?	Table 25.36 of the ES Chapter 25 Noise and Vibration details the Norfolk Vanguard worst case operational impacts prior to mitigation at the nearest noise sensitive receptors. Table 25.37 details the performance of standard available noise mitigation. This mitigation solution was taken from commercially available literature and uses industry standard methods. Table 25.38 details the operational noise levels with the inclusion of this standard mitigation applied, and shows compliance with Requirement 27 of the draft DCO. The mitigation will introduce standard noise mitigation measures to ensure that noise levels attributable to the operational substation do not exceed those limits set out in Requirement 27. The exercise presented in Table 25.37 and Table 25.38 demonstrate that standard commercially available noise mitigation is capable of achieving the noise reduction required. As described within section 5.5.5.7 of ES Chapter 5 Project Description, maintenance at the onshore project substation is estimated to be an average of one visit per week and would be during normal working hours unless in the event of emergency, i.e. no requirement for 24/7 maintenance campaigns. No additional noise mitigation (beyond Best Practicable Measures BPM) is required during maintenance as there will be no significant new noise sources introduced during maintenance.
13.10	BC	Operational noise arising from the modifications to the existing overhead line structure has not been considered further (Table 25.1 in ES Chapter 25) [APP- 349]. Do you agree with this approach?	
13.11	BC	The extension to the existing Necton National Grid substation has not been included as part of the noise modelling presented in ES Chapter 25 [APP-349]. Do you agree with this approach?	

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13.12	Applicant	RR-259 states that the submission fails to take into account the impact on the two campsites and five holiday let businesses within earshot of the proposed substation. Can you please respond and justify the approach you have taken?	Identification of the closest noise sensitive receptors to the onshore project substation was agreed through discussion with the noise and vibration ETG that included the Environmental Health Officer from Breckland Council. The closest noise sensitive receptors that have been used within the assessment are approximately 650m away from the onshore project substation, at Ivy Todd. The Applicant has committed to controlling noise attributable to the operational substation to be no greater than 35dB at the nearest noise sensitive receptors, which is secured through Requirement 27. During Section 42 and Section 47 consultation it was identified that there were holiday lets and campsites at approximately 1km away from the proposed substation site. As the noise sensitive receptors used within the noise impact assessment are closer to the onshore project substation, any noise experienced at the holiday lets and campsites, attributable to the operational substation, would be lower due to an increased separation distance, i.e. below the noise levels already committed to within Requirement 27.

1.14 Landscape and Visual Impact

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
14.1	Applicant	Please explain how the concept of good design as set out in National Policy Statement (NPS) EN-1 has been taken into account in relation to both onshore and offshore components of the project.	The concept of good design as set out in NPS EN-1 emphasises the importance of siting at paragraph 4.5.3. '*Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, landform and vegetation.'* The NPS EN-1 also states that 'good design' should also be *'sensitive to place'* and *'in terms of siting and use of appropriate technologies can help mitigate adverse impacts such as noise'*. ES Chapter 4 Site Selection and Assessment of Alternatives sets out principles and objectives that have been implemented in the site selection process,

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			including those relating to good design. ES Chapter 29 Landscape and Visual Impact Assessment in Section 29.7.1, specifies the embedded mitigation implemented through the siting of the onshore project infrastructure that is of particular relevance to the Landscape and Visual Assessment. This details how sites were selected and layouts developed to optimise the assets of the natural landform and screening of existing vegetation. For example, the proposed location of the onshore project substation is on a relatively level plateau with screening afforded by existing woodland to the north and east. Good design is an ongoing process and a further level of design will be undertaken through preparation of the detailed plans for the construction of the project and implementation of associated landscape works. These will cover issues such as the colour selection for structural components and plant species and mixes for the structural landscaping. These decisions will be captured in a Landscaping Management Scheme secured through DCO Requirements 18 and 19. The seascape assessment of the offshore electrical transmission works has been scoped out of the Landscape and Visual Impact Assessment (**LVIA**) owing to the distance of these works offshore. This approach was agreed with the Secretary of State via the Scoping Opinion in November 2016.
14.2	Applicant	Please provide a smaller scale copy of the photomontage book which is too unwieldy to take on site visits.	The elongated A3 photomontages as submitted with the application are prepared to specific standards regarding dimensions to ensure as accurate a representation as possible is produced for assessment in the field. The standards are set out in Scottish Natural Heritage's guidance 'Visual Representation of Wind Farms' Version 2.2 (February 2017) which at paragraph 107 states; '*It is essential that decision-makers and consultees are provided with, and that members of the public have access to, a colour paper copy of the visualisations, printed at the correct size.'* Whilst a smaller-scale copy will be provided for the site visits, the Applicant would like to note that this would reduce the accuracy of the visualisations, and so these should only be used for reference at site visits and only the correct-

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			scale documents (those supplied within Chapter 29 Landscape and Visual Impact Assessment) may be referred to for accurate representations.
14.3	Applicant	ES 29.6.2 paragraph 67 refers to landscape character areas. Either, please confirm where there are copies of each of the following assessments, or provide copies: • North Norfolk Landscape Character Assessment (June 2009) • Broadland District Landscape Character Assessment (September 2013) • Breckland District Landscape Character Assessment (May 2007) • North and South Brecks Landscape Character Assessment (October 2013)	Copies of each of the assessments can be found via the links provided below: • North Norfolk Landscape Character Assessment (June 2009) https://www.north-norfolk.gov.uk/media/1271/landscape_character_assessment.pdf • Broadland District Landscape Character Assessment (September 2013) https://www.broadland.gov.uk/site_search/results/?q=landscape+character+assessment+2013 • Breckland District Landscape Character Assessment (May 2007) https://www.breckland.gov.uk/media/2069/Landscape-Character-Assessment/pdf/Landscape_Character_Assessment_-_May_2007_Final2.pdf • North and South Brecks Landscape Character Assessment (October 2013) http://www.suffolklandscape.org.uk/userfiles/pdfs/Brecks%20LCA/Part%201%20Brecks%20LCA%20%20-%20Final%20Report%20%5Blow%20res%2023%20Oct%202013%5D.pdf
14.4	Norfolk County Council, North Norfolk District Council, Broadland District Council, Breckland Council	Do you agree with the methodology, baseline data, assumptions and modelling used to assess landscape character and visual amenity impacts in the ES Chapter 29? Do you accept the conclusions reached in tables 29.9, 29.10, 29.11, 29.12 of Chapter 29 of the ES [APP-353]? Do you accept the conclusions reached in relation to the assessment of potential cumulative impacts? Are you content with all mitigation and management measures set out in the Outline Landscape and Ecological Management Strategy (OLEMS), the	

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		Outline Access Management Plan and the Outline Code of Construction Practice? Please identify any outstanding issues.	
14.5	Applicant	Figures 29.9a and b depict the Indicative Onshore Project Substation Mitigation Planting. There is a 10 metre band of woodland mix to the south of the project substation with two further 7 metre bands of woodland planting to the north-east and adjacent to the western boundary of the proposed substation site. It is noted that 5 metres to 7 metres growth would take 20 years and for the nurse species (assuming planting height of 1 metre) 7.25m to 9.75 metres after 25 years. Paragraph 118 confirms that the heights after 20 years would be 6.75metres and 9.05 metres respectively and 9.25metres and 12.55 metres after 30 years. What are the assumed heights of the mitigation planting within the photomontages in figures 29 entitled 'with mitigation planting'? In other words, which year, post completion of construction, do the photomontages represent?	The planting in the visualisations is shown at 20 years post-planting, such that the height is within an approximate range of 6.75m to 9.05m. The growth rates applied are conservative to ensure a worst case scenario is represented and it is considered likely that faster growth rates of all species, but especially the nurse species, would be achieved.
14.6	Applicant	ES 29.7.1.3 refers to the possibility of advance planting (at the start of construction) in some areas so as to achieve 3 years growth prior to the completion of construction. Please identify the areas suitable for such advance planting. Do they include the mitigation planting associated with the substation? How is the advance planting secured in the dDCO and how far in advance would it be?	The opportunities for advanced planting, including mitigation planting areas associated with the onshore project substation, are currently being explored as part of discussions with landowners and will be carried out where practicably possible once detailed design is finalised post-consent. The possibility of advanced planting is noted within section 6.5 of document 8.07 Outline Landscape Ecological Management Strategy and where possible, would be proposed to be implemented at the start of the construction phase, allowing approximately three years of growth prior to completion of construction and commencement of operation. However, the Applicant is not

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			reliant on advanced planting to deliver the described mitigation. It is therefore not the Applicant's intention to specifically secure this aspect of the delivery. The detail of the advanced planting will be presented in the Landscape Management Scheme to be produced in line with Requirement 18 of the DCO and in accordance with the Outline Landscape and Ecological Management Strategy (**OLEMS**).
14.7	Applicant	ES 29.7.1.3 please indicate the location and visual effects of the 2 metre earthwork bunds along the western side of the project substation. Are these works within the redline Order limits? Is the 7 metre woodland planting shown in figure 29.9b on top of this earthwork bund, and, if so, set out the measures you would take to ensure this planting would become properly established?	The potential 2 metre earthwork bund would be created from any surplus of soil. The bund would be located on the western side of the onshore project substation and wholly within the Order limits. Woodland proposed to the west of the substation would be planted on top of the bund. The assessment undertaken is not reliant on the inclusion of the earth bund, but it would help to give an incremental increase to the overall height of screening along this sensitive boundary. To ensure the stability of the earthwork bund, the specification for its construction, to be included in the Landscape Management Plan, would include measures such as constructing it up from 0.8m below ground level, compacting the soil in layers during construction, integrating an effective drainage system to reduce risk of soil slip and restricting slopes to a less than 1 in 3 gradient. Tree whips would be planted individually in pits, as would larger specimens which would be staked with stakes orientated from downslope to upslope. Grass seed would not be used owing to the risks of seeds being washed away. Along edges turf may be used to stabilise the soil. Tree planting would be thinned and tree guards removed at the appropriate stages of development to ensure successful establishment. The detail of the earth bund construction and associated planting will be presented in the Landscape Management Scheme to be produced in line with Requirement 18 of the DCO.
14.8	Applicant	ES table 29.8: Worst case assumptions, the running track is assumed to be 6 metres wide and 60 km in length, to remain in situ for 2 years and the cable route enclosed by stock fencing. Please explain how the visual impacts of such works would be minimised and how it would be controlled	The visual impacts of the running track and stock fencing associated with the onshore cable route have been minimised by the carefully considered siting of the onshore cable route, which sought to form the largest separation distances from settlements, roads and core paths as was practically possible (see Chapter 4 Site Selection and Assessment of Alternatives (document reference 6.1.4)). This approach ensured that the impacts on visual receptors, such as residents,

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		through the dDCO?	road-users and walkers would be minimised. The visual impacts of the running track and stock fencing would be limited by the small scale nature of the components, the cultivated and settled nature of the landscape within which they would occur and the relatively flat and enclosed nature of the landscape which generally limits the extent to which the cable route would be visible from any one location. The presence of a 60km length over a 2 year period has been applied to represent the worst case scenario and it would be likely that sections would be removed within shorter periods of time. On the basis that the siting of the onshore cable route itself has minimised potential visual impacts, no further controls are proposed by way of DCO Requirements.
14.9	Applicant	Worst case assumptions: the worst case in terms of the substation is some 19metres height for the buildings and 25 metres height in relation to the lightning protection masts. The photomontages indicate the Rochdale Envelope for the onshore project substation. Is the height of the box that is depicted set at 19m or 25m? Fences of 3.4metres around the substation are worst case assumptions in relation to the substation. Are these indicated on the photomontages? Are they permanent or temporary?	The height of the box in the photomontages that indicates the Rochdale Envelope around the onshore project substation is set at 25 metres to ensure the worst case scenario is represented. The 3.4m fences around the substation represent the permanent operational security fencing. These are indicated on the photomontages.
14.10	Applicant	The worst case scenario indicates that road widening associated with the A47 access junction would require the removal of existing roadside vegetation over a 300metre length for a construction window of 24 months. Figure 29.11a depicts planting removals on the A47. • The plan depicts areas of Dudgeon planting to be removed, some of which fall outside the onshore red line boundary of this project. How	The area of Dudgeon planting to be removed and replacement planting that is shown on Figures 29.11a and 29.11b of ES Chapter 29 Landscape and Visual Impact, which appear outside of the Order limits, is incorrect. The extent of vegetation clearance required adjacent to the A47 – a sliver of land extending 300m eastwards along the A47 from the proposed new access junction - is fully captured within the Order limits. The majority of this vegetation to be removed is located within an existing 6m wide band of vegetation between the A47 and the Dudgeon planting. Figure 29.11a incorrectly depicts the vegetation clearance occurring within the Dudgeon planting only. As such, the vegetation

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		would these removals be controlled and how would replacement planting be secured? • Have the effects of removal of Dudgeon mitigation planting been assessed in terms of the exposure of the existing substation and potential visual impacts?	that requires removal and the areas of replacement planting are fully captured within the Order limits. An updated copy of Figure 29.11a and 29.11b are provided as Appendix 14.1 to this submission (document reference ExA; WQApp14.1; 10.D1.3). The corrections to Figures 29.11a and 29.11b do not change the assessment findings presented within ES Chapter 29 Landscape and Visual Impact. The effects associated with the removal of Dudgeon mitigation planting within the Order limits have been considered in the visual assessment from the A47, considering the potential visual impacts of the onshore project substation, the National Grid substation extension and the existing substations. The impact assessment therefore remains valid.
14.11	Applicant	The worst case assumptions for the construction of the onshore project substation indicate a construction window of 24 months, with road widening associated with A47 access junction requiring removal of roadside vegetation over 300m in length (see above). Paragraph 126 of ES 29.7.4 indicates that the onshore project substation ground preparation works would be done in one phase anticipated to take two years for pre-construction works and two years for primary works. Please confirm whether the access improvements would need to be in place prior to the commencement of the pre-construction works to facilitate HGV movements? Please also confirm the implications for replacement roadside planting and the likely timescales for such planting.	The new access junction with the A47 at Spicers Corner will not be in place prior to the commencement of the pre-construction works, but will be the first works to be completed within the pre-construction works period, to facilitate access to the onshore project substation site. As outlined in response to question 14.11 the extent of vegetation removal and replacement required along the A47 is fully captured within the Order limits. Figure 29.11a of ES Chapter 29 Landscape and Visual Impact incorrectly depicts some of the vegetation clearance and replacement planting being required outside of the Order limits (within the Dudgeon planting east of the proposed new A47 junction access). The Dudgeon planting outside of the Order limits will in fact be untouched. As such there is no requirement to introduce any replacement planting in that location.
14.12	North Norfolk District Council and Happisburgh Parish Council	See ES Chapter 29, table 29.9: do you agree with the assessment of likely effects relating to the landfall elements of the project?	

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14.13	Applicant	ES 29.7.5.2 refers to the effect on the landscape due to the temporary presence of the onshore cable route to include 4 trenches, construction of a running track and the formation of spoil heaps. Please indicate the likely locations (in broad terms) of the spoil heaps, their likely frequency along the route, their likely duration and whether they would be planted or seeded. Does the dDCO afford any control over such matters, as well as the maximum size and height of any spoil heap?	With reference to Section 5.5.2.3.1 of Chapter 5 Project Description, the onshore cable duct installation strategy is proposed to be conducted in a sectionalised approach in order to minimise impacts. Construction teams would work on a short length (approximately 150m section) at a time. Topsoil would be stripped and temporarily stored within each 150m section and subsoils stored separately also within the same 150m section. A typical cross section of the onshore cable route, including indicative locations of topsoil and subsoil storage, is shown on Plate 5.15 of ES Chapter 5 Project Description (section 5.5.2.2, document reference 6.1.5). As described within ES Chapter 21 Land Use and Agriculture the Soil Management Plan will be developed adhering to the following guidance - Defra (2009) Construction code of practice for the Sustainable Use of Soils on Construction Sites. This sets out that spoil heaps would not exceed 2m in height. Once the ducts have been installed in a 150m section the trenches would be back-filled with subsoils, and the stored topsoil re-distributed over the area of the 150m workfront, with the exception of the running track and any associated drainage. The time from topsoil strip to reinstatement would typically be two weeks in each 150m section. Spoil heaps would only ever store the soil from each 150m section being worked on and soil would be temporarily stored adjacent to the excavated trenches. The temporary nature of spoil heaps does not necessitate any requirement to seed or plant them. The approach to duct installation and commitment to developing a Soil Management Plan are set out in sections 2.5.1 and 8.1 respectively of the OCoCP (document reference 8.1) and secured through Requirement 20.
14.14	Applicant	ES 29.7.5.2. The ES confirms that the reinstatement of ground at the mobilisation areas, trenchless crossing compounds, cable relay easements and haul roads and the reinstatement of hedgerows and trees would take place at the end of construction. This effectively means that earlier construction phases	Please refer to the response to question 14.13. The time from topsoil strip to reinstatement in each 150m section of the onshore cable route would typically be two weeks. The assessments have assumed a worst-case scenario that reinstatement would be conducted at the end of construction as the timing for interim/earlier reinstatement will be dictated by programming, construction progress and

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		could potentially be left un-remediated until the end of all of the construction. It is appreciated that some elements would need to remain pending completion of construction but would it be necessary to leave all elements un-reinstated For example it is noted that the recreational route of the Wensum Way would undergo significant effects over localised areas, would these effects remain until the end of construction or could earlier reinstatement take place? In any event how would such works be secured in the dDCO?	other factors. However, the construction method proposed allows for local reinstatement, where possible, prior to the completion of the overall constriction period. With reference to Section 5.5.2.3.1 of Chapter 5 Project Description, the sectionalised installation of the ducting allows for the land to be reinstated as far as possible (with exception to the running track for access) after each work section is complete (approximately 150m per week). With reference to response to Q11.29, each mobilisation area will be removed, and the land reinstated, when the duct installation works are completed for the associated cable route section. Similarly, with reference to paragraph 291 of Chapter 5 Project Description, trenchless crossing compounds, such as those in the vicinity of the Wensum Way, will be reinstated once the duct has been installed. Hedgerows, which are temporarily removed to enable the project, will also be reinstated as soon as possible. Replanting will be implemented, where possible, in the first winter after completion of the duct installation phase works in the associated cable route section, with the exception of the 6m gap required for the running track, where these need to be retained for cable pulling works. The 6m gap will be replanted following the cable pull phase. The approach to duct installation, including a commitment to reinstate each 150m section at a time, is set out in section 2.5.1 of the OCoCP (document reference 8.1) and secured through the draft DCO Requirement 20.
14.15	Applicant	ES 29.7.5.2: link boxes would be 1.5m x 1.5m per circuit and either buried to ground level or above ground as cabinets set along field boundaries. In the event that the link boxes are above ground; how would the design, colour and location of such infrastructure be controlled in the dDCO.	Link boxes are required approximately every 5km along the onshore cable route and would be positioned for ease of access typically adjacent to field boundaries or roads, in agreement with the relevant landowner. This is captured within the Design and Access Statement (document reference 8.3). The potential impact of the presence of above ground link boxes (as a worst case scenario) upon landscape and visual receptors has been assessed within ES Chapter 29 Landscape and Visual Impact Assessment (document reference 6.1.29). This determined that any impact would be limited by their small scale,

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			their typically discreet locations and the infrequency at which they would occur across the landscape. As no significant impacts were identified, no specific mitigation was identified with regard to their design.
14.16	Applicant	ES table 29.10 identifies the most 'susceptible' hedgerows at highway crossing points near Aylsham (x3), on the crossing at Elsing Road and two crossing points on the B1145. The impact on these hedgerows is assessed as significant. If there are mature hedgerows on both sides of the highway these effects would be exacerbated. Please set out in detail the measures to be taken to mitigate these impacts over the immediate and longer terms. At these crossing points what is the length of hedgerow which would not be replaced due to an inability to replant over cable easements?	Onshore duct installation will be undertaken in a sectionalised manner with workfronts operating from mobilisation areas distributed along the cable route. Each workfront will work on a short length (approximately 150m) each week to excavate, install ducts, backfill and reinstate, i.e. areas can be reinstated within 1-2 weeks of the works occurring. Following completion of the installation of the ducts, the hedgerows would be reinstated to infill the gaps. There is no requirement for a long-term easement to be retained and hedgerows can be planted directly above the buried cables. In some locations, a 6m gap in hedgerows will need to be retained for access for the subsequent cable pull phase. See further details in Section 5.5.3.1 of Chapter 5 Project Description with respect to crossing of hedgerows. Replanting will follow guidance within the Norfolk hedgerow Biodiversity Action Plan (**BAP**), i.e. species composition for north-east Norfolk (if on an existing line, and that line is straight: mostly hawthorn, with blackthorn, field maple; if curving or on a roadside or parish boundary: hawthorn, with blackthorn, field maple and occasional crab apple, hazel, spindle, ash and holly) (NBP, 2009). Guidance on hedgerow reinstatement is set out in the Norfolk Vanguard OLEMS (document reference 8.7) and will be detailed further in the Ecological Management Plan (**EMP**) and Landscape Management Scheme (**LMS**) which are secured under DCO Requirement 18, 19 and 24.
14.17	Applicant	Table 29.10: identifies trees most susceptible to the proposed project at three crossing points and confirms that significant effects would occur: • Colby Road, north of Banningham • Minor road near Hackford Hall • Norwich Road, Swanton Morley In relation to each of these crossing points please provide further details regarding the quantum of	Where the crossing points occur a width of 20m to 25m of tree planting would be removed from the tree belts. The 20m width of removal is indicative, depending on the angle of crossing. This width assumes that the onshore cable route bisects the tree belt in a perpendicular fashion. In reality, some tree belts would be crossed at an angle, therefore increasing the maximum width of the gap required up to a possible 25m in some locations. With reference to Section 5.5.3.1. of Chapter 5 Project Description, the replanting of trees would not be permitted within the 20m to 25m cable easement. The replanting of hedgerows

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		tree planting likely to be affected, the proposed mitigation measures and identify those areas over cable easements where tree replanting would not be permitted.	would be permitted within the cable easement and would follow guidance in the OLEMS and subsequent EMP and LMS as described in response to Q14.16. Mitigation measures are provided in the OLEMS (document reference 8.7) in section 6.8.3, and include measures such as removal of vegetation timed to avoid bird breeding season (March to August inclusive). Where this is unavoidable, a check by the Ecological Clerk of Works would be undertaken immediately prior to habitat removal to confirm there are no occupied nests. Outside of the cable easement, replanting of trees will be on a one for one basis with native species, preferably local origin. If required, drawings will be produced to show where replacements for trees will be provided, including details of species. If any tree or shrub planted within the first five years is removed, dies or becomes damaged or diseased, it will be replaced within the first available planting season. There will be an agreed procedure for joint annual inspection of all the planting areas by representatives of the relevant planning authority and the Applicant at the end of each growing season and for each year of the five year aftercare period. Areas found not to be thriving would be treated with additional works to rectify the situation. The total quantum of woodland that would be felled during the onshore works is 0.15ha of semi natural broadleaved woodland. This includes approximately four trees at each of the three crossing points listed opposite.
14.18	Historic England	Do you concur with the assessment of the effects of construction of the onshore cable route (including mobilisation areas) upon heritage assets Salle Park and Blickling Hall as set out in table 29.10 in ES Chapter 29?	
14.19	Applicant	Localised significant landscape character effects are predicted for visual receptors along highway routes where mobilisation areas would be visible from the roadside. For example road users of a section of approximately 800m of the B1146 would experience localised significant effects due to the open nature	The extent of hedgerow removal would be minimised with removal kept to the specified width of 20m to 25m. This width is reduced from the standard 45m width of the onshore cable corridor by omitting the soil storage areas from where hedgerow crossings occur. The mitigation measures to ameliorate the visual effects of the mobilisation areas during the period of use would relate to the careful planning of these sites, using existing vegetation to screen the larger

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		of the eastern roadside and the proximity of the mobilisation area to the roadside coupled with its extent along the roadside. The Outline Landscape and Ecological Management Strategy (OLEMS) confirms that hedgerows would be reinstated where possible post construction. Please confirm what efforts would be made to minimise the extent of hedgerow removal and any mitigation measures to ameliorate the visual effects of the mobilisation areas during their period of use.	components such as the fenced compounds, site offices, welfare facilities, heavy plant and material stores. The mobilisation areas are currently identified as mobilisation zones within which the mobilisation area will be located, thereby allowing a degree of flexibility to micro-site the final layout. Micro-siting will be used to mitigate visual effects, as well as respond to other environmental and technical constraints.
14.20	Norfolk County Council	Please comment upon the assessment of effects of the onshore cable route as well as mobilisation areas and trenchless drilling compounds upon visual receptors (footpath users) in relation to Wensum Way, Marriott's Way and Paston Way, as well as the cycle routes, as summarised in table 29.10 ES 29. Do you consider that the provisions in the OLEMS and dDCO adequately secure mitigation and replacement planting measures?	
14.21	Applicant/Orsted/ Norfolk County Council	The onshore cable route would cross with the proposed Hornsea Project Three cable route to the north of Reepham. • Please provide an assessment of the potential landscape impacts arising from the simultaneous construction of both projects in the same vicinity with compounds being located in the same vicinity and outline any measures which may be required to mitigate any impacts.	Section 29.8.1 of ES Chapter 29 Landscape and Visual Impact Assessment sets out a detailed assessment of the potential cumulative impacts of the onshore cable route in combination with the Hornsea Project Three onshore cable route. No significant cumulative impacts have been identified related to the construction of both Norfolk Vanguard and Hornsea Project Three. As such, the Applicant has not identified any necessity to control the sequencing of the two projects in relation to landscape and visual impacts.

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		• Would it be possible to secure appropriate sequencing of construction activities? If so, how could this be achieved in the dDCO?	
14.22	Applicant	See question 11.19 earlier Appendix 24.21 A47 Access Technical Note The different access options have differing environmental effects. Access A does not require any significant vegetation clearance whereas A1 requires the removal of 772m2 of vegetation to allow for widening of the A47 and additional visibility splays. Access B requires vegetation clearance of the visibility envelope and A47 widening works. (i) To what extent have these matters, and the different options, been taken into account in the LVIA and ecological effects assessments? (ii) Figure 29.11a depicts planting removals on the A47- to which option do these removals relate?	Option B has been considered in the LVIA in order to represent the worst case scenario. Option B would give rise to the most notable magnitude of change as a new junction would be created and this would involve the loss of an area of the Dudgeon mitigation planting as well as areas of the longer established road-side planting. Furthermore, it would create an opening which would increase visibility of the onshore project substation in the views of road-users on the A47, although closer range mitigation planting associated with the Norfolk Vanguard project would mitigate these effects within the first ten years post planting. The planting removals on Figure 29.11a relate to Option B, however, as outlined in response to question 14.11 the extent of vegetation removal and replacement required along the A47 is fully captured within the Order limits. Figure 29.11a of ES Chapter 29 Landscape and Visual Impact incorrectly depicts some of the vegetation clearance and replacement being required outside of the Order limits (within the Dudgeon planting east of the proposed new A47 junction access). The Dudgeon planting outside of the Order limits will in fact be untouched. Updated versions of Figure 29.11a and Figure 29.11b are included as Appendix 14.1 to this submission (document reference ExA; WQApp14.1; 10.D1.3).
14.23	Norfolk County Council, Breckland District Council, Necton Parish Council	Table 29.12 in Chapter 29 sets out the impacts of the onshore project substation and the National Grid extension during the operational phase. The effects are assessed upon the landscape and upon visual receptors from a number of viewpoints. Do you agree with the assessments? In particular please provide your comments upon the assessment of the effects upon viewpoint 2 Lodge Lane South and viewpoint 3 Lodge Lane North	

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		where localised significant effects lasting for 20 years have been identified. Similarly please comment upon the assessment of effects on viewpoint 4 A47 Necton substation and viewpoint 5 A47 Spicer's Corner.	
14.24	Norfolk County Council, Breckland District Council, Necton Parish Council, The Applicant	A cumulative impact assessment has been undertaken - Tables 29.15, 29.16 The potential for cumulative impacts has been assessed. Please comment on the conclusions in the following instances: • Onshore project substation and national Grid substation extension with Norfolk Boreas- impacts on visual receptors at viewpoints 1, 2, 3, 5 and 6. • Onshore Cable Route: impacts on visual receptors on Marriott's Way at the intersection of the cable route with the Hornsea Project Three.	The Applicant has undertaken a cumulative impact assessment in accordance with guidelines set out in GLVIA3 and is confident that the reported findings are robust. Impacts associated with the onshore project substation and National Grid substation extension with Norfolk Boreas are presented in section 29.8.2 of ES Chapter 29 Landscape and Visual Impact. The assessment identifies significant cumulative effects from Viewpoint 1 – Ivy Todd Road west over an approximate 10m section and Viewpoint 2 – Lodge Lane south over an approximate 550m southern section. These effects would all occur within 1.2km of the onshore project substation, making them localised. Embedded mitigation planting for Norfolk Boreas and Norfolk Vanguard would reduce the cumulative visual effects to not significant over the first 20 years of operation. Cumulative effects associated with Viewpoint 3 – Lodge Lane north, Viewpoint 5 Spicers Corners and Viewpoint 6 - A47 Top Farm are considered not significant. Mitigation measures associated with the onshore project substation are outlined in section 29.7.1 of Chapter 29 Landscape and Visual Impact Assessment (document reference 6.1.29) and in Figures 29.9a, 29.10b and 29.11b. Cumulative landscape and visual effects on the Marriott's Way are presented in section 29.8.1 of ES Chapter 29 Landscape and Visual Impact. If both projects are in construction at the same time it would lead to a short term significant cumulative effect on the views of walkers on an approximate 200m section of Marriott's Way, but would not have significant effects on the remaining parts of the route. The Norfolk Vanguard onshore duct installation process will be undertaken in a sectionalised method with workfronts operating from mobilisation areas distributed along the cable route. Each workfront will work

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			on a short length (approximately 150m) each week to excavate, install ducts, backfill and reinstate. As such a construction presence in any one location along the cable route will be limited to a small number of weeks. Mitigation measures associated with the onshore cable route are outlined in section 29.7.1 of Chapter 29 Landscape and Visual Impact Assessment (document reference 6.1.29) and in the OLEMS (document reference 8.7).
14.25	North Norfolk District Council, Broadlands District Council and Breckland District Council	Please confirm whether or not you agree that Table 29.10 setting out the potential significant effects for landscape and visual receptors contains all of the relevant significant effects. If you do not agree please state why and which other elements would give rise to significant effects.	

1.15 Onshore Archaeology and Cultural Heritage

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
15.1	Applicant	Please respond to Norfolk County Council's comment in its RR [RR-123] that a revised Outline Written Scheme of Investigation: Archaeology and Cultural Heritage (Onshore) should be produced which states that work will be carried out in accordance with the Council's Standards for Development-led Archaeological Projects in Norfolk (2018).	The Applicant is committed to carrying out all archaeological works post-consent in accordance with current legislation, policy, guidance and good practice, including the Norfolk County Council Standards for Development-led Archaeological Projects in Norfolk (2018). These commitments are secured through the Outline Written Scheme of Investigation: Archaeology and Cultural Heritage (Onshore) (document reference 8.5) and DCO Requirement 23. The County Council's standards document had not been formally issued prior to the drafting of the Outline WSI: Archaeology and Cultural Heritage (Onshore) (document reference 8.5), hence it has not been noted. The Applicant does not propose revising the Outline WSI at this stage. Requirement 23 of the dDCO requires that a final WSI must be produced and approved prior to the commencement of each stage of the onshore transmission works, in consultation with Historic England and Norfolk County

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			Council. This will ensure that all post-consent survey-specific WSIs and pre-construction and construction related WSIs will be produced in ongoing consultation and agreement with Norfolk County Council's Historic Environment Team and will include reference to the Council's Standards for Development-led Archaeological Projects in Norfolk (2018).
15.2	Norfolk County Council and Historic England	Are you satisfied that all necessary intensive evaluation, such as trial trenching, would take place post-consent and that any mitigation required as a result of this is adequately secured in the dDCO.	
15.3	Norfolk County Council and Historic England	Are you satisfied with the wording of Requirement 23 of the dDCO?	
15.4	Applicant, Norfolk County Council and Historic England	Section 28.7.2.2 of Chapter 28 of the ES [APP-352] refers to additional mitigation including the temporary suspension of works in the event of an archaeological discovery. Please comment on the likely effectiveness of this approach, particularly if intrusive groundworks are to be carried out when an appropriately qualified archaeologist is not present.	The approach to archaeological mitigation is based on the potential for archaeology to be present and its anticipated level of importance. A desk based assessment (including aerial photographic and Light imaging, Detection and Ranging (**LiDAR**) data assessment); a targeted geophysical survey programme; and two phases of geoarchaeological watching briefs have informed the assessment to date. Further evaluation work (to be referred to as initial informative stages of mitigation) will be undertaken post-consent, including: • Additional project-wide geophysical survey; • Targeted metal detecting and field walking; • Earthwork condition survey; and • Archaeological trial-trenching. For areas of established archaeological potential, the following measures may be subsequently proposed: • Set-piece (open-area) excavation; • Strip, map and sample excavation; • Archaeological Monitoring/Watching Brief during ground works; and/or

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			• Preservation In-Situ (where opportunities remain). The mitigation referred to within this question (temporary suspension of works in the event of an archaeological discovery) would only be employed at sites with low archaeological potential, i.e. it is not a primary mitigation measure for areas of medium or high archaeological potential. For areas of lesser potential, tool-box talks will be used to ensure construction crews are aware of the potential for chance finds and to ensure that unexpected remains are not missed, and where identified are dealt with appropriately. This ensures there is wider awareness of the requirement to deal with archaeological remains or potential archaeological remains in a sensitive manner and through an established approach and reporting protocol. Further information regarding the approach to archaeological mitigation is provided in the Outline WSI: Archaeology and Cultural Heritage (Onshore) (document reference 8.5).
15.5	Norfolk County Council and Historic England	Please comment on the applicability of the Offshore Renewable Protocol for Archaeological Discoveries (ORPAD) to onshore construction activities and archaeology.	
15.6	Applicant	Please respond to the comments made by the National Trust in its RR [RR-202] in regard to the potential impact on the archaeology of the Blickling Estate, and its request to be added to the list of consultees for the discussion of 'next steps' should previously unknown archaeological remains be encountered.	The Applicant has engaged with the National Trust on archaeological matters, and in specific respect to the onshore archaeology and cultural heritage assessment through-out the application process and continues to do so. Both Chapter 28 Onshore Archaeology and Cultural Heritage and the Outline WSI: Archaeology and Cultural Heritage (Onshore) (document reference 8.5) discuss the National Trust's Blickling Estate and its archaeological potential. Post-consent approaches and requirements are set out within the outline WSI (document reference 8.5). See sections 5.2; 5.3; 6.8; and Appendix 3 of that document; and secured through Requirement 23 of the draft DCO. Requirement 23 of the dDCO secures approval of the Outline WSI by the relevant planning authority following consultation with Historic England and Norfolk County Council, as the relevant statutory consultees for heritage and archaeological matters. It is not considered necessary or appropriate for the relevant planning authority to consult with landowners on the content of the

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			Outline WSI and therefore, in this particular case, with the National Trust as landowner of the Blickling Estate.
15.7	Applicant	Please explain what mitigation measures would be provided in regard to the Blickling Conservation Area if the onshore cable works were to be constructed in two phases.	The two phases of construction work relate to the cable pulling process only during which cables would be pulled through the pre-installed ducts from jointing pits located along the onshore cable route. Works activity would be limited to each cable joint (spaced approximately 800m apart along the onshore cable route). Further information on this is contained in ES Chapter 5 Project Description (DCO document 6.1.5). In the one phase scenario both circuits (to reflect the two trenches) would get pulled at each joint in a single 5 week effort. However, any one joint pit could be open for up to 10 weeks to allow the neighbouring joint pit to be opened and the cables pulled from one pit to the next. In the two phase scenario one circuit would get pulled in 2024 (5 weeks) and then the second circuit would get pulled in 2025 (5 weeks). The mitigation for the one-phase and the two-phase scenarios are the same, i.e. sensitive backfilling and reinstatement would be undertaken following construction, and field boundaries and hedgerows returned to their pre-construction condition, as detailed in the Outline WSI: Archaeology and Cultural Heritage (Onshore) (document reference 8.5). As such, no adverse significant impacts are anticipated to occur following the implementation of the proposed mitigation stated above.
15.8	Applicant	Please state what other factors apart from visual considerations have been taken into account in determining the predicted effects upon the settings of heritage assets.	The primary guidance document - *The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3* (Second Edition) (2017) - and its suggested staged approach to assessing the setting of heritage assets was followed within Environmental Statement Chapter 28 Onshore Archaeology and Cultural Heritage. The approach to heritage setting and which heritage assets to consider was discussed and agreed through the Evidence Plan Process Expert Topic Group meetings with the relevant primary heritage consultees; Historic England and Norfolk County Council.

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			Visual factors are often the initial primary driver to assessing whether there will be setting effects on heritage assets, drawing upon heritage significance and the ability to appreciate significance. Other factors that have been considered in respect to predicted effects on the settings of heritage assets, have included: noise and vibration, dust, spatial associations and a consideration of historic relationships between places. See for example the following sections within Chapter 28 Onshore Archaeology and Cultural Heritage (document reference 6.1.28): 28.5.1; 28.6; 28.6.2.2; Table 28.9; 28.6.3.3; 28.7.1.2; 28.7.6.3; 28.7.7.1; 28.7.7.1.4; Table 28.22; 28.7.8.2; 28.8.1.2; 28.8.2.1; 28.9; and 28.11.
15.9	Applicant	Please explain why you consider that the proposed landfall compound would not have any significant effect on the setting of the Grade II listed lighthouse and cottages.	Consideration of the setting of the Grade II listed lighthouse and cottages is presented within ES Chapter 28 Onshore Archaeology and Cultural Heritage (document reference 6.1.28), Section 28.7.6.3.1. Any effects on the setting of the assets are assessed as temporary and short-term in nature during the construction phase only, and represent an impact of minor significance (up to 20 weeks at the landfall as a worst case scenario). This short-term impact will not constitute harm to the Lighthouse's heritage significance or the ability to appreciate its heritage significance. The approach to the heritage setting assessment was discussed and agreed through the Evidence Plan Process Expert Topic Group meetings with the primary heritage consultees, Historic England and Norfolk County Council.
15.10	Applicant	In reaching your conclusions in regard to the settings of heritage assets have you taken into account the installation of any lighting that may be required for the proposed substation or elsewhere?	The onshore project substation will be unmanned with no requirement for lighting during normal operation. During planned maintenance periods lighting may be required for health and safety purposes. However, maintenance activities would be programmed during normal working hours, reducing the time any lighting may be required. During construction of both the onshore cable route and the onshore project substation, task lighting may be required. However, works are restricted to 07.00 to 19.00 during weekdays and 07.00 to 13.00 on Saturdays. Any task lighting required will adhere to the lighting requirements set out in the OCoCP and secured through Requirement 20. An Artificial Light Emissions

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			Management Plan will be prepared for each stage of the works, and mitigation measures include use of directional beams, non-reflective surfaces and barriers and screens to avoid light nuisance whilst maintaining safety and security obligations. No designated heritage assets or relevant non-designated heritage assets are located in close enough proximity to the onshore project substation to be affected (in any significant way) by the low-level lighting proposed, in terms of considering and assessing effects on their setting. The approach to heritage setting was discussed and agreed through the Evidence Plan Process Expert Topic Group meetings with the primary heritage consultees, Historic England and Norfolk County Council.
15.11	Norfolk County Council, North Norfolk District Council, Breckland Council, Broadland District Council	Having regard to the information contained in the ES [APP-352], Change Report [AS-009] and Errata document [AS-010] please confirm whether you agree with the Applicant's conclusions and if not, comment on, any implications for archaeology, designated heritage assets and their settings in light of this new information, having particular regard to the Church of St Andrew, Bradenham.	

1.16 Geology, Ground Conditions, Drainage, Pollution and Flood Risk

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
16.1	Applicant	On 26 November 2018 the UK Climate Projections 2018 (UKCP18) was published and is the first major update of climate projections in nearly 10 years, illustrating a range of future climate scenarios. How do the updated projections affect your flood risk assessment [APP-344]?	The approach adopted within Appendix 20.1 Flood Risk Assessment (**FRA**) of ES Chapter 20 Water Resources and Flood Risk follows the guidance within the National Planning Policy Framework (**NPPF**) on how climate change implications should be assessed. The NPPF guidance is not directly linked to the approach used by UK Climate Projections. The update to UKCP18 does not therefore affect the approach set out in the NPPF nor the results of the assessment presented in the FRA.

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16.2	Applicant	Do you agree with the Environment Agency's comments [RR-117] that prior approval should be obtained for soil management, construction method statements, site and excavated waste management, and surface water drainage plans?	These elements are secured within the OCoCP (document reference 8.1) and secured through Requirement 20 of draft DCO. The wording of Requirement 20 will be updated to reflect this request from the Environment Agency. The Applicant will submit a revised dDCO at Deadline 2. The new wording will read: "20.—(1) No stage of the onshore transmission works may commence until for that stage a code of construction practice has been submitted to and approved by the relevant planning authority, in consultation with the Environment Agency."
16.3	Applicant	The Outline CoCP [APP-025] at paragraph 45 sets out measures for working in Flood Zones 2 or 3, including a proposal to leave gaps in stored spoil. Please review this proposal and comment in light of the response of the Environment Agency [RR-117] that spoil stored in a functional floodplain will take away the flood storage capacity for that area and so increase flood risk elsewhere.	Duct installation works will be undertaken in a sectionalised approach to excavate, lay and reinstate approximately 150m every 1-2 weeks. As such, spoil will be present alongside that 150m section being worked on and only in place for approximately 1-2 weeks along any section. The Applicant acknowledges the comments provided by the Environment Agency [RR-117] regarding the functional floodplain (flood zone 3b) and will ensure that locations for spoil storage within each 150m section are located at least 8m away from surface watercourses and, wherever possible, outside Flood Zone 3b. Where short-term (1 week) spoil storage within Flood Zone 3b is unavoidable gaps will be left in the stored spoil to ensure that there is no loss of flood storage capacity within the functional floodplain. The wording of the OCoCP will be updated to clarify this and an updated version will be submitted at a future deadline during the examination process. This is currently under discussion between the Applicant and the Environment Agency and captured within a Statement of Common Ground (Rep-SOCG-6.1) submitted at Deadline 1.
16.4	Environment Agency	Please explain what further consideration should be given to the impacts of mobilising existing contamination on excavation, how contaminants and sediments involved can be judged of 'high reversibility' or otherwise and what further measures to the embedded mitigation measures referred to in paragraph 114 of Chapter 19, ES	

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		[APP-343] you consider to be necessary.	
16.5	Applicant	In light of comments by the Environment Agency [RR-117] concerning oil and petroleum tanks in Happisburgh village and other industrial activity, do you consider a more detailed assessment is needed of the potential for petroleum hydrocarbon pollution within the landfall working area at Happisburgh and potential contamination at the brick works at north east of North Walsham, and the infilled clay and shale pit at Necton?	Appendix 19.1 Preliminary Risk Assessment of ES Chapter 19 Ground Conditions and Contamination recommended that the potential risk posed by off-site sources of contamination (including oil and petroleum tanks in Happisburgh, the brick works near North Walsham and the infilled clay and shale pit near Necton) will be established through further desk-based assessment undertaken post-consent. If this further assessment concludes that there is a potential contaminant link, an investigation to establish the risk to construction from petroleum hydrocarbons (including leachates and gas migration) would be undertaken. The Applicant will establish protocols for the management of unexpected contamination prior to construction to ensure that procedures are known and agreed with the Environment Agency should contaminated materials be encountered. This is captured within a written scheme dealing with contamination of any land and groundwater within the OCoCP, and secured by Requirement 20.
16.6	Applicant	Do you agree that the choice of drilling fluid and HDD methodology should be agreed with the Environment Agency prior to the start of trenchless crossing works, including specific mitigation measures in addition to the 'embedded' measures presented. [APP-343]?	Detailed Construction Method Statements will be developed by the Principal Contractor for relevant construction operations (including HDD), and will be included as part of the final CoCP for each stage of the works (secured under Requirement 20). In addition to the CoCP, the Applicant will develop a scheme and programme for each watercourse crossing. This is secured through Requirement 25 of the draft DCO. The CoCP (and where relevant watercourse crossing scheme) will include site specific detailed design information for each trenchless crossing location, including proposed methodology (e.g. HDD) and drilling fluid (e.g. inert clay based fluids such as bentonite), and will also include appropriate pollution control plans, including measures for managing breakout of drilling fluid. The final CoCP for each stage of the works will be submitted by the Applicant to the relevant planning authority for approval, in consultation with the Environment Agency, prior to works on that stage commencing.

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16.7	Applicant	Section 19.7.5.8 [APP-343] suggests that works should have little effect on the hydraulic regime in shallow aquifers and therefore, little risk to local groundwater abstractors. Have all abstractions within the study area been assessed in detail to ensure that local water supplies are not compromised?	The impact assessment presented in Chapter 20 Water Resources and Flood Risk has considered the potential for impact on licensed and unlicensed abstractions during construction and operation. Abstractions are not assessed individually, but are instead considered as an integral part of the groundwater receptor and assigned a high value and high sensitivity to ensure that they are adequately safeguarded (Section 20.7.5.3.5 of ES Chapter 20 Water Resources and Flood Risk). This approach was agreed following consultation with the Environment Agency and is captured within the Statement of Common Ground submitted at Deadline 1 (Rep1 - SOCG - 6.1). Landowners and local residents will be consulted post-consent to identify the location of private water supplies during the detailed design process to ensure the proper protection of any shallow wells in proximity to the works. This will form part of the surface water drainage plan undertaken by specialist drainage contractors. This is captured within the OCoCP and secured through Requirement 20. The Applicant notes the offer made by the Environment Agency [RR-117] to provide any data holdings on unlicensed abstractions and confirms that this data will also be considered alongside the outcomes of landowner consultation.
16.8	Applicant Environment Agency	Would the Applicant please supply the ground investigation reports by Terra Consult (2017) and GHD (2018) referred to in [APP-343]. Please comment on whether a protocol could be agreed between the Environment Agency and the Applicant for the use of HDD at each sensitive location to include site and ground investigations, risk assessment, appropriate mitigation and remediation?	A copy of Terra Consult (2017) and GHD (2018) reports quoted in APP-343 are provided as Appendices 16.1-16.7 to this submission and have also been provided separately to the Environment Agency. The Applicant has committed to undertake a hydrogeological risk assessment which meets the requirements of Groundwater Protection Principles and Practice (GP3) (Environment Agency, 2017) for any trenchless crossing locations in SPZ1 or SPZ2. If significant risks are identified, alternatives including alternative trenchless drilling techniques (other than HDD) to cross the SPZ will be considered. This is captured within the OCoCP (section 6) and secured through Requirement 20. The detailed design of trenchless crossing techniques at each sensitive location will be included as part of the final CoCP. The final CoCP for each stage of the works will be submitted to and approved by the relevant planning authority, in consultation with the Environment Agency, prior to works on that phase

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			commencing. This has been agreed between the Applicant and the Environment Agency and is presented with a statement of Common Ground submitted at deadline 1 (Rep1 - SOCG - 6.1).
16.9	Applicant	Section 19.6.2.4 [APP-343] notes that no information can be obtained on private groundwater abstractions. Have you taken up the Environment Agency's offer to provide information on aquifer geology and borehole depth for most groundwater abstractions licensed until 2002? If so, how does this information affect your assessment of groundwater vulnerability and consequential impact assessment and proposed mitigation for the construction, operation and decommissioning phases of the project?	Detailed borehole information from the Environment Agency was not available prior to submission of the DCO application, and has not therefore been considered in the assessment. However, the impact assessment presented in ES Chapter 20 Water Resources and Flood Risk has considered the potential for impacts on licensed and unlicensed abstractions during construction and operation. Abstractions were not considered individually, but were instead considered as an integral part of the groundwater receptor and assigned a high value and high sensitivity to ensure that they are adequately safeguarded. This ensures that the assessment presented has taken a precautionary approach based on a worst case scenario. This approach was agreed following consultation with the Environment Agency and is captured within the Statement of Common Ground between the Applicant and the Environment Agency submitted at deadline 1 (Rep1 - SOCG - 6.1). As stated in the response to Q16.7, the location of private water supplies will be identified during the detailed design process through consultation with landowners, local residents and analysis of data from the Environment Agency.
16.10	Applicant	[AS-001] With regard to the Whitewater River which is to be crossed by using open trench techniques, please describe as precisely as possible where drilling will start and end and whether or not it will be within the floodplain of the river in question.	As described in Appendix 20.4 Crossing Schedule of ES Chapter 20 Water Resources and Flood Risk, the Whitewater River will be crossed using an open cut trenching technique downstream of Reservoir Wood. During open cut trenching there is no drilling. The trench will traverse the river channel and its floodplain (including Flood Zones 2 and 3), which has been assessed in ES Chapter 20 Water Resources and Flood Risk. Under Requirement 25 of Draft DCO, the Applicant has committed to producing a scheme for crossing all watercourses in advance of construction. This will include a detailed programme and methods for each watercourse crossing, as well as details of reinstatement.
16.11	Applicant	Do you agree the Environment Agency should be consulted on any proposed monitoring schemes associated with river crossing and pollution remediation	The approach to sediment management and water quality has been identified and described in Section 11.1 of the OCoCP (document reference 8.1). Requirement 20 of the dDCO sets out that no stage of the onshore transmission

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		works (to ensure the protection of the Wensum SAC and Southern North Sea SAC)?	works may commence until for that stage a final CoCP has been submitted to and approved by the relevant planning authority. The final CoCP would provide site specific details for sediment management, based on the principles agreed in the OCoCP and informed by the detailed design and appointment of the Principal Contractor. The final CoCP for each stage of the works will be submitted by the Applicant to the relevant planning authority for approval, in consultation with the Environment Agency prior to works on that stage commencing. The addition of the Environment Agency to Requirement 20 will be included in an updated dDCO submitted at Deadline 2.
16.12	Applicant	[APP-229] Should the Southern North Sea cSAC be noted on Map Sheet 1 of 27?	The maps referred to are Figure 19.1 "Bedrock Geology" and 19.4 "Aquifers", both within ES Chapter 19 Ground Conditions and Contamination and specifically in relation to the onshore environment. The Southern North Sea cSAC is an offshore site designated for harbour porpoise. Potential impacts associated with the Southern North Sea cSAC are discussed within the Information for the Habitats Regulation Assessment (document reference 5.3) and relevant offshore chapters of the ES. The location of the cSAC is presented on figures within that submission document.
16.13	Applicant	Please review the maps in [APP-537] in light of comments of the Environment Agency [RR-117] suggesting that the classification of bedrock as Neogene to Quaternary Rocks (Undifferentiated) should be replaced with Crag.	The terminology used in the mapping was taken directly from the British Geological Survey source data. However, the Applicant recognises that these deposits make up the Crag Formation and considered these deposits as such in the impact assessment presented in ES Chapter 20 Water Resources and Flood Risk. Further information is provided in the Applicant's response to question 16.14.
16.14	Applicant	[APP-538] Do you agree that although Crag is referred to as a superficial deposit, it is a principal aquifer? Please comment on the suggestion [RR-117] that as a principal aquifer it must be accorded the protection warranted for such an important groundwater resources unit.	The Crag is classified as a superficial deposit in the British Geological Survey dataset, and was therefore referred to as such in Chapter 20 Water Resources and Flood Risk. However, the Applicant acknowledges that the Crag is also a Principal Aquifer and was assigned a high value and high sensitivity in Section 20.6.4.2 of ES Chapter 20 Water Resources and Flood Risk to ensure that it was accorded the requisite level of protection. On this basis the assessment of this groundwater resource has been undertaken appropriately.
16.15	Applicant	[APP-227] Do you agree that in table 20.2 'WFD water bodies screened into the WFD compliance assessment'	The Applicant acknowledges that Blakeney Spit Lagoon is an artificial water body and as such the current status should be Good Ecological Potential rather than

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		Blakeney Spit Lagoon although at Good Ecological Status, can only achieve Good Ecological Potential and should be designated as such?	Good Ecological Status as reported in Table 20.2 of Appendix 20.2 Water Framework Directive (**WFD**) Compliance Assessment of ES Chapter 20 Water Resources and Flood Risk. This would not affect the assessment presented in ES Chapter 20.
16.16	Norfolk County Council	Please include in your submissions to the Examining Authority the Guidance Document Version 3, April 2017 published by you as Lead Local Flood Authority (LLFA) or any updated version thereof.	
16.17	Applicant	Please review NCC's requirements as LLFA in [RR-123] in the section "Flood and Drainage Issues and Comments" and respond to the matters requested to be clarified to ensure a deliverable surface water drainage strategy prior to the end of the Examination.	Norfolk County Council (**NCC**) request that ideally the infiltration testing and drainage design should be agreed prior to determination. Infiltration testing and drainage design will be undertaken when the project progresses to detailed design post-consent. The Applicant has committed to produce a Surface Water Drainage Plan (**SWDP**), which will be designed to meet the requirements of the NPPF) and the NPS EN-1. The drainage strategy will be developed according to the principles of the Sustainable Drainage Systems (**SuDS**) discharge hierarchy. The appropriate greenfield runoff rate will be agreed through consultation with the Lead Local Flood Authority and the Environment Agency during the detailed design stage. The Applicant has committed to the process outlined above to develop the SWDP, which will form part of the final CoCP and is secured through Requirement 20. No stage of the onshore transmission works may commence until for that stage a CoCP has been submitted to and approved by the relevant local planning authority, in consultation with the Environment Agency.
16.18	Applicant	Several Relevant Representations for example [RR-011], [RR-015] and [RR-130] express concerns relating to flooding of roads around Ivy Todd, Chapel Road and West End. What land drains are proposed to be removed and what specific assessment been made of the effects of existing infrastructure such as Dudgeon substation on surface run-off?	The location of existing land drains along the onshore cable route and at the onshore project substation will be confirmed post-consent during the detailed design process. This will include any drainage associated with Dudgeon, where relevant. A local specialised drainage contractor will undertake surveys to locate drains and create drawings both pre- and post-construction, and ensure appropriate reinstatement. The pre-construction drainage plan will include provisions to minimise water within the working area and ensure ongoing drainage of surrounding land. Existing land drains along the onshore cable route and at the onshore project substation will be reinstated following construction.

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		What assessment has been made of the tributaries and drains in this vicinity, and how is it proposed to ensure that the construction and operation of the substation and associated infrastructure does not worsen the flooding in this area?	This will form part of the SWDP and is captured within the OCoCP and secured through Requirement 20. Surface water runoff from the areas affected by the proposed development will be collected within the site drainage network and discharged in accordance with the requirements of the NPPF and NPS EN-1 (see response to Q16.17 for further details). This means that there will be no net change in surface water flood risk as a result of the proposed development.
16.19	Applicant	Do you take responsibility for maintaining the drainage for the lifetime of development and if so how is this secured and enforceable through the DCO?	The final SWDP will identify responsibilities for the ongoing maintenance of the operational drainage systems. The surface water drainage plan would be submitted to, and approved by, the relevant planning authority and is secured through Requirement 20 of the draft DCO.
16.20	Applicant	Referring to Appendix 20.4 [APP-229] Table 20.1, it appears that the majority of ordinary watercourses are proposed to be crossed by open cut rather than Horizontal Directional Drilling for permanent works. Do you agree the County Council should have early consultation on the number of such crossings of Ordinary Watercourses and the required timeframes for approval?	Under Requirement 25 of the draft DCO, the Applicant is committed to producing a final scheme for crossing all watercourses in advance of construction. This will include a detailed programme and confirmation of methods for all watercourse crossings, which will be developed through consultation with the Environment Agency for Main Rivers and Norfolk County Council as Lead Local Flood Authority (and, where appropriate, the Internal Drainage Board) for ordinary watercourses.
16.21	Applicant	Comment on NCC's statement that it seeks to avoid culverting, and its consent for such works will not normally be granted except as a means of access.	Permanent culvert crossings will be considered only for watercourse crossings where the drainage channels are deeper than 1.5m. A cable route walkover survey conducted by Norfolk Vanguard in October 2018 noted that the likelihood of any permanent culverted crossings is low with the majority of the drainage channels being less than 1.5m in depth or already part of a committed trenchless crossing method, i.e. the majority of culverts proposed are temporary and for construction access only. The Applicant will avoid the use of permanent culverts where possible and instead use the alternative dam and divert crossing techniques. If permanent culverts are required, however, their impacts would be mitigated by: • Ensuring that the culvert is adequately sized to avoid impounding flows (including an allowance for potential increases in winter flows as a result of projected climate change); and

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			• Installing the culvert below the active bed of the channel, so that sediment continuity and movement of fish and aquatic invertebrates can be maintained. With reference to Requirement 25 of the dDCO, a watercourse crossing schemes will be submitted to and approved by the relevant planning authority in consultation with NE, prior to the onshore transmission works commencing.
16.22	Applicant	Please comment on NCC's requirements for infiltration testing [RR-123] and how they would be incorporated within the Surface Water Drainage Plan.	As stated in the response to Q16.17, a SWDP will be developed prior to construction (secured under Requirement 20 (2)(i) of the draft DCO). The SWDP will be designed to meet the requirements of the NPPF and NPS EN-1, with runoff limited, where feasible, through the use of infiltration techniques. Infiltration will be undertaken to inform the development of the SWDP and detailed drainage design.
16.23	Applicant	Do you agree that greenfield run-off rates will need to be agreed with the LLFA at detailed design stage?	Table 20.13 of Chapter 20 Water Resources and Flood Risk states that runoff from the development will be limited to the greenfield runoff rate. The greenfield runoff rate, alongside other surface water drainage requirements for operational onshore project infrastructure, will be presented in the final SWDP (Requirement 20 (2)(i) of the draft DCO). The appropriate greenfield runoff rate will be agreed through consultation with the Lead Local Flood Authority and the Environment Agency during the detailed design stage.
16.24	Applicant	Where water enters the trenches during duct installation, this would be pumped via settling tanks or ponds to remove sediment and discharged into local ditches or drains. What contingency plan is there for any significant rainfall event that may prevent the effective drainage of water from the trenches? Confirm how exceedance routes for flows in excess of a 1 in 100 year rainfall event will be provided at detailed design stage.	With reference to Section 11.1.4 of the OCoCP (document reference 8.1), the sectionalised duct installation method (excavate, lay and reinstate approximately 150m/week) is designed to minimise water ingress to the trenches. Pre-construction, a specialised drainage contractor, in consultation with landowners, will undertake surveys to locate drains and create drawings. The pre-construction drainage plan will include provisions to minimise water within the working area and ensure ongoing drainage of surrounding land. Any pumps, flumes or channels will be designed to have sufficient capacity to convey the required range of flows at each location. The SWDP secured under Requirement 20 (2)(i) of the dDCO will be submitted to and approved by the relevant planning authority prior to the onshore transmission works commencing. Modelling of exceedance flow routes in excess

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			of a 1 in 100 year rainfall event will be undertaken during the detailed drainage design to ensure that there is no increase in surface water flood risk to downstream receptors as a result of the proposed development.
16.25	Applicant	Please comment on the requirements for a maintenance plan for all drainage features over the lifetime of the development as suggested by NCC in its RR [RR-123]	Temporary drainage features along the onshore cable route will be removed and original drainage reinstated once construction is complete, therefore no ongoing maintenance plan is required. The final SWDP will identify responsibilities for the ongoing maintenance of the operational drainage system at the onshore project substation. The surface water drainage plan would be submitted to, and approved by, the relevant planning authority and is secured through Requirement 20 of the dDCO.
16.26	Applicant	NCC [RR-123] has identified omissions from the Flood Risk Assessment (S7, S8, S9). Please comment on whether these matters should be included and at what stage in the design process?	As stated in the Applicant's response to Q16.17, a SWDP will be developed during the detailed design process (secured under Requirement 20 (2)(i) of the dDCO). This will include calculations to demonstrate that there will be no flooding on site from the proposed drainage scheme during the 1 in 30 year plus climate change rainfall event. The Applicant acknowledges the comments made by Norfolk County Council regarding the design of the site drainage system and the need to locate infrastructure such that it does not flood during the 1 in 100 year rainfall event. This will be confirmed as part of the detailed design process and demonstrated within the SWDP. As stated in the Applicant's response to Q16.24, the SWDP will be informed by modelling of exceedance flow routes (including flow depth and velocity where appropriate) to ensure that there is no increase in surface water flood risk to downstream receptors as a result of the proposed development. The approach to the design of the SWDP taking into account the flood risk assessment is captured within a Statement of Common Ground between the Applicant and the Environment Agency submitted at deadline 1 (Rep1 - SOCG - 6.1).
16.27	Applicant	Use of the horizontal directional drill (HDD) method to bring the offshore cables onshore is understood to reduce potential significant adverse impacts from open	The Kelling to Lowestoft Ness Shoreline Management Plan (**SMP**) predicts up to 110m of erosion by 2065 which is deemed to be conservative, as outlined in the Coastal Erosion Study (ES Appendix 4.3). As discussed in response to Q9.1, the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		trench construction on the stability of cliffs in the Happisburgh area. Please identify, with reference to the SMP and the coastal erosion study [APP-195] where the parameters have been calculated and set for the length, depth and angles of drilling that are compatible with the assessments that have been made in the study.	HDD entry point on the coast will be set back from the existing cliff-line by at least 125m, with the landfall compound zone extending an additional 200m inland to allow flexibility in the siting of the landfall post-consent. The final siting of the landfall and the associated drill length, depth and angle would be determined prior to construction, using the most up-to-date information with respect to coastal erosion in the area. The dDCO, Schedules 11 and 12, Part 4 Condition 9(1)(c) requires a construction method statement including cable landfall, in accordance with the construction methods assessed in the ES, to be agreed with the MMO prior to construction. Ground investigations (boreholes) within the landfall compound zone, conducted in 2017, to a depth of 20m below ground level, have shown that the land is primarily dense sands and clay soils, which are suitable for the HDD installation method. The drill profile would be deep enough below the cliff and beach to ensure the ducts will not become exposed during the operational lifetime of the wind farm and will not impact on the stability of the cliff or beach.
16.28	Applicant	What level of confidence exists that the Coastal Study's total expected erosion from 2016 to 2065 at approximately 50 metres is more robust than the Shoreline Management Plan estimate of the total expected erosion from 2016 to 2065 of approximately 110 metres? Given the "high" level of uncertainty due to dependence on processes and management elsewhere, have the drilling parameters taken account of the worst case scenario of coastal erosion rates in the SMP and if not why?	As discussed in response to Q9.1, the Norfolk Vanguard Coastal Erosion Study (ES Appendix 4.3) takes account of various available data and information sources, including the SMP. The Coastal Erosion Study also takes into account the fact that coastal management in this area of the Norfolk coast has varied strongly over the years; both locally at Happisburgh and in the neighbouring frontage which acts as a control. As outlined in response to Q16.27, a conservative approach to landfall design has been taken, based on the worst case scenario of 110m of erosion as stated in the SMP, with the HDD entry point on the coast set back from the existing cliff-line by at least 125m, with the landfall compound zone extending an additional 200m inland to allow flexibility in the siting of the landfall post-consent. The final siting of the landfall would be determined prior to construction, using the most up-to-date information with respect to coastal erosion in the area. The dDCO, Schedules 11 and 12, Part 4 Condition 9(1)(c) requires a construction method statement including cable landfall, in accordance with the construction methods assessed in the ES, to be agreed with the MMO prior to construction.

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16.29	Applicant	Please comment on the feasibility of the suggested use of spoil from cable construction to infill at the western end return of the Cart Gap sea wall set out in NCC's RR [RR-123].	The Applicant believes the question is referring to the following position raised by North Norfolk District Council in their relevant representation [RR-258]: *"Use of spoil from cable construction - A further opportunity for community benefit exists at the western end return of the Cart Gap sea wall. This end section of seawall has suffered from cliff scour and a significant void between the cliff and defence is now present. Should appropriate locally generated clean spoil requiring disposal be generated during construction, it could be considered beneficial to reuse these materials to infill behind this sea wall. This would be subject to necessary licences but could prevent otherwise locally useful materials being transported longer distances for disposal and provide additional erosion protection in this location."* The Applicant is open to discussing the feasibility of providing spoil to NNDC, should NNDC wish to proceed with seeking a licence to infill the Cart Gap seawall.

1.17 Aviation and Radar

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
17.1	Ministry of Defence (MoD)	The Project comprises up to 200 wind turbines, up to 350m in height (to blade tip) to be located in the North Sea potentially in two distinct development zones (Vanguard East and Vanguard West) the latter approximately 47km east of the Norfolk- coast. You state in your letter of 4 October 2018 [AS-005] that the turbines and some of the tall ancillary offshore structures will affect military low flying training activities conducted in this area and these structures should be fitted with appropriate aviation warning lighting to maintain the safety of military air traffic. Please specify which offshore ancillary structures you consider will affect training	

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		activities and how? Have specifications for the desired warning lighting been agreed with the Applicant?	
17.2	Applicant	How do you propose to meet the requirements of MoD concerning the fitting of aviation warning lighting to (i) turbines and (ii) specified structures?	Lighting and marking will be agreed post-consent with the Civil Aviation Authority (**CAA**), MCA, TH and the Defence Infrastructure Organisation (MOD) and will be in line with Condition 10(1) Generation DMLs (Schedule 9-10) and Condition 5(1)(a) Transmission DMLs (Schedule 11-12), CAA CAP Guidance 393, 764 and 437, MGN 543 and IALA)-139. Requirement 12 of the dDCO requires that the undertaker must exhibit lights, with such shape, colour and character as are required in writing by the Air Navigation Order 2016 and determined necessary for aviation safety in consultation with the Defence Infrastructure Organisation Safeguarding (**DIOS**) and as directed by the Civil Aviation Authority. Requirement 12 also sets out a mechanism for prior notification to the DIOS for events such as commencement of works and the date any wind turbine generators are brought into use. The notification must also cover the maximum heights of construction equipment and information on operational apparatus including the height and positioning of the wind turbines, meteorological mast, offshore electrical platform(s) and accommodation platform(s) that are to be constructed.
17.3	MoD	You state in your letter of 4 October 2018 that the potential scale and location of turbines may be in line of sight and detectable to the air defence radar at RAF Trimingham; turbine proliferation in a specific locality can result in unacceptable degradation of the radar's operational integrity, and the proposed wind farm *"will cause unacceptable and unmanageable interference to the effective operation of this air defence radar."* Explain, with reference also to your letter of 6 December 2018, what is the basis of the mitigation measures contemplated that may enable you to agree a Requirement and/or condition to be	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		included in any DCO/DML issued. Please state how this would differ from Requirements 12 and 13 in the dDCO and whether any DML condition (or Requirement) contemplated would replace or be additional to those Requirements.	
17.4	MoD	Explain why Requirement 13(1) would not be an adequate safeguard to the continued effective operation of Remote Radar Head (RRH) Trimingham.	
17.5	MoD	Do you agree with the methodology for the assessment of impacts in Environmental Statement Chapter 16, Aviation and Radar [APP-340] and if not why not?	
17.6	MoD	[APP-340] at Paragraph 6 states that no onshore construction infrastructure is expected to breach aviation stakeholder radar or airfield safeguarded surfaces. Do you agree, having regard to the 3rd paragraph of your letter of 4 October 2018, or if not why?	
17.7	MoD	Paragraph 19 of ES Chapter 16 [APP-340] refers to an MoD assessment of Operational Impact. Can this be made available to the Examining Authority or a redacted version?	
17.8	MoD	Paragraphs 98 and 99 deal with the capability of the Trimingham TPS77. Do you agree with this assessment and please explain in particular the enhanced signal processing capability and how this might, if at all, mitigate unwanted tracks on the radar at Trimingham in relation to the proposed turbines when in	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		operation?	
17.9	Applicant	[APP-340] paragraph 22 refers to clutter created to NATS radar systems that is the subject of an agreed mitigation scheme. Please specify where the scheme is to be found and explain how it is to be enforced.	During September 2017, Vattenfall and NATS entered into an agreement to seek to establish a mitigation solution for impacts created by Norfolk Vanguard on the NATS Cromer Primary Surveillance Radar (**PSR**). A mitigation solution has been identified by NATS through a technical radar solution and submission of an application to the CAA of an Airspace Change Proposal (**ACP**). Subsequently, The Applicant has submitted a Statement of Need to the CAA which is the first step within the ACP, as detailed in CAA Civil Aviation Publication (**CAP**) 1616- Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements. The ACP will follow a defined seven stage process, and could take up to 110 weeks to complete, with the conclusion being a regulatory decision by the CAA. The CAA has a dedicated online portal which provides communities and interested stakeholders with information about designs of UK airspace that might impact them. Details of the Norfolk Vanguard application and progress made can be found online at https://airspacechange.caa.co.uk/PublicProposalArea?pID=86 NATS preferred option to mitigate the Cromer PSR is to blank the area of the radar over the Norfolk Vanguard sites to ensure no radar clutter created by radar detectability of the operational wind turbines would be displayed on radar screens. A radar blanking area involves a technical configuration of the PSR to inhibit targets being displayed within a bounded area; it prevents clutter from wind turbines on the controllers' display by inhibiting their radar returns and subsequently nulls the effects that wind turbines have on radar. To maintain identification of aircraft flying within the volume of airspace blanked on the radar system, NATS requires an associated adjustment to the airspace encompassing the blanked area. The mechanism for establishing a change to the airspace is the CAA ACP Process. The technical radar mitigation solution together with regulatory approval of the ACP by the CAA would successfully mitigate the impact created by Norfolk Vanguard. Changes to airspace regulations have successfully been implemented within the UK to mitigate a number of offshore windfarm

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			developments; the London Array Transponder Mandatory Zone (**TMZ**) is in place to mitigate impact created to Southend Airport whilst TMZ solutions have been agreed to mitigate offshore windfarms in the Irish Sea and the North Sea. It is agreed by both parties that there are no construction impacts from Norfolk Vanguard on the Cromer PSR radar which require mitigation, and this is also noted in the SoCG with NATS. The Applicant is currently in discussions with NATS as to the need for and form of a suitable Requirement to be included in the draft DCO to secure the mitigation solution described. This is noted in the SoCG with NATS (Rep1 - SOCG - 29.1). Based on the ACP process outlined above, and the status of the on-going discussions between the Applicant and NATS, it is considered that a suitable mitigation for operational impacts of Norfolk Vanguard on the NATS Cromer PSR system is available within the required timeframes for the Project through blanking of the Cromer PSR and regulatory acceptance of the ACP.
17.10	NATS	Document [APP-340] at paragraph 13 suggests that following modelling, you indicated that there would be no effect to the Cromer Primary Surveillance Radar (PSR) from Norfolk Vanguard East (NV East); however, there would be a predicted effect to the Cromer PSR from Norfolk Vanguard West (NV West). Mitigation is proposed to remove impacts created to the Cromer PSR at a maximum blade tip height of 350 m above HAT subject to regulatory approval of the Airspace Change Proposal (which will provide the mitigation solution) by the CAA. Please clarify details of the proposed mitigation submitted to you, to what extent this has been agreed and how it would be secured in the DCO.	
17.11	Applicant	How will the mitigation agreed with NATS be secured in the DCO?	The Applicant is currently in discussions with NATS as to the need for and form of a suitable Requirement to be included in the draft DCO to secure the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			mitigation solution described in Q17.9. This is noted in the SoCG with NATS (Rep1 - SOCG - 29.1).
17.12	CAA	With regard to your requirements for the lighting and charting of wind turbines can the required lighting be integrated with the requirements of MoD and if so how?	
17.13	Inspectie Leefomgeving en Transport (ILT) (Netherlands CAA)	You recommend, for consistency of obstruction lighting, that those wind turbines that are within the Amsterdam Flight Information Region (FIR) are lit in accordance with United Kingdom (UK) requirements. Please identify which areas are within the FIR. What is your understanding of the material differences between the UK requirements and any different requirements that operate within the FIR? Please assess the compatibility of UK requirements with those requirements.	
17.14	MoD	Relevant representation [RR-261] dated 16 September 2018 from Susannah Spain states that in 1996 there was an F16 plane crash that contaminated the cable run route selected by Vattenfall to the National Grid substation at Necton, referring to "MoD documentation" that the alleged contamination contains radioactive substances. Please comment, providing information available to you, in redacted form if necessary, that describes the incident and identifies the exact location of the crash and the actual or assumed position of all potentially contaminated substances and what action has been taken as a result.	
17.15	Environment Agency	Please comment on [RR-261] referred to above, providing documentation in your possession	

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		regarding investigations you undertook as a result of the incident and with what results. Please provide your assessment of whether there are areas of land in the Order Limits that should not be disturbed pending further investigation and what remediation and/or precautionary measures, if any, are appropriate to consider including in the DCO if consent is granted.	
17.16	Necton Parish Council	Regarding your comments in [RR-113] and the representations of Mr Hayton at the first Open Floor Hearing, please supply any documentary evidence in your possession pertinent to the 1996 Danish air force F16 crash site; the claimed associated radiation substance risk; and the warning alleged to have been given to MAFF in 1996. Please include any evidence relating to the alleged presence of hydrazine, carbon fibre, and depleted uranium at the crash site.	

1.18 Land Use and Recreation

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
18.1	National Farmers Union (NFU)	You state [APP-355] Table 31.4 that some farms will not be able to lose a strip of land for the full 6 year duration of the construction. Please specify which farms would be affected, where they are located with reference to the Plots described in the Book of Reference, and justify this assertion.	

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18.2	NFU	Has the Applicant satisfied your demand referred to in [APP-355] for more information on reinstatement/construction, with a view to enabling land owners to put land back to use as quickly as possible?	
18.3	Applicant	Please comment on progress to date in relation to the provision of information referred to in the preceding question.	Section 5.5.2 of ES Chapter 5 Project Description provides details on the installation methods associated with the onshore cable route, including the duct installation process, running track, cable pulling process, joint pits and link boxes. The Applicant's written response to relevant representations provides further references relevant to the National Farmers' Union (NFU). Provision of information and consultation with the NFU is also captured in the SoCG with the NFU (Rep1 - SOCG - 5.1).
18.4	Applicant	The treatment and reinstatement of soil during and after construction is one of the main issues of concern for land owners. Please explain (i) how would soil reinstatement and aftercare be dealt with in negotiations for option agreements with land owners; (ii) how would soil be reinstated or what measures would be put in place to bring the soil back to its condition and quality before the works took place; and (iii) do you agree that an after care plan should be included in a code of construction or soil management plan, and if so please provide a specification?	(i) A commitment will be made within the private agreements between The Applicant and relevant landowners/occupiers to compensate for crop loss incurred as a consequence of the project construction. The Heads of Terms (**HoTs**) for an Option Agreement include a clause relating to reinstatement of land. The principles of which are based around a) a schedule of condition prior to entry to be agreed between the parties, b) reinstatement of the land following works to the landowner's reasonable satisfaction and c) compliance with the requirements of the Code of Construction Practice (Document 8.01 Outline Code of Construction Practice, secured under Requirement 20 of the DCO), which requires a Soil Management Plan. (ii) Potential impacts on soils as a resource are discussed in Chapter 21 Land Use and Agriculture, section 21.7.5.3 (document 6.1.21). Table 21.14 and paragraph 153 detail embedded and additional mitigation measures to reduce the effect of construction activities on the soil resource. These measures include adherence to the 2009 Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, limiting soil handling in wet weather, restricting heavy plant and vehicle movement to specific routes, storing topsoil adjacent to where it is extracted and storing subsoil separately. Further control measures are detailed in the Outline

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Code of Construction Practice (document 8.01) and will be finalised in construction method statements for soil handling and a Soils Management Plan which is secured through Requirement 20 of the DCO. As outlined in Chapter 5 Project Description (document 6.1.5), construction teams would work on short lengths of the onshore cable route during trench excavation for the duct installation (approximately 150m sections) and once the ducts are installed, trenches would be back filled with subsoil, and the topsoil replaced, minimising the amount of time trenches are open and minimising the amount of land being worked on at any one time. Topsoil would be stored and capped to minimise wind and water erosion. The HoTs for an Option Agreement include a clause relating to reinstatement of land. An after-care plan is therefore not considered necessary. If required, a rapid reconnaissance at selected locations along the route could be undertaken post construction. Visual indicators of poor crop performance (relative to surrounding areas outside the onshore cable route) can be used to assess potential damage which may then be investigated in further detail. Should potential issues be raised, these would be investigated and remediation strategies agreed and implemented where appropriate. Additional monitoring would then be employed where necessary. A SoCG has been prepared in consultation with the NFU (document reference Rep1-SoCG-5.1) relating to soils and agricultural issues.
18.5	Applicant	Please confirm that all jointing bays would be underground and, once constructed, would not interfere with agricultural operations.	Chapter 5 Project Description (document reference 6.1.5) section 5.5.2.5 and Table 5.33 details joint pit parameters. Joint pits would be buried to a depth of 1.5-2m and would therefore not interfere with agricultural operations.
18.6	Applicant	Where link boxes are to be installed please provide details of their design and location, indicating where they are located within field boundaries, and describe how in each case their siting and design minimises interference with agricultural operations and does not pose a hazard to farm machinery.	Chapter 5 Project Description (document reference 6.1.5) section 5.5.2.6 details link box parameters. The exact number and location would be determined as part of the detailed design stage, however they are typically required approximately every 5km, within 10m of the associated joint pit. As link boxes require periodic access for inspection and testing, where possible they will be located close to field boundaries and in accessible locations, in negotiation with landowners. Link boxes are either buried to ground level or stored in above ground cabinets. The small-scale footprint of 1.5m x 1.5m minimises

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			interference with agricultural operations and proximity to field boundaries minimises any hazards posed to farm machinery.
18.7	Applicant	How would dust be controlled during construction and how could the effect of dust on irrigation be minimised?	Dust management measures are provided in the Outline Code of Construction Practice (document 8.01) section 10.1.1 and will be finalised in the final Code of Construction Practice secured through Requirement 20 of the DCO. Dust management measures include but are not limited to covering, seeding or fencing stockpiled excavated material to prevent wind whipping, daily site inspections, dust suppression using water, controlled storage of sand, aggregates, cement and other fine powder material, placing concrete and cement mixing and washing areas at least 10m away from watercourses and damping of the running track.
18.8	NFU	You refer to issues raised by land owners' agents that some of the proposed access routes are not physically possible on the ground due to differing ground levels. Provide full details of each location where it is said to be not physically possible to provide the access route in question and justify your assertion.	
18.9	NFU	With reference to the preceding question, in light of the Change Report [AS-009] now published which contains some proposed changes to access routes, please comment further as appropriate.	
18.10	Applicant	How would landowners and occupiers access land severed by the construction works and how would such access be secured?	Chapter 21 Land Use and Agriculture (document 6.1.21) assesses potential impacts associated with land being taken out of use for agriculture. Severance of land has been minimised where possible by aligning the onshore cable route with field boundaries. There are anticipated to be small parcels of land that could be temporarily severed by the onshore construction works for small periods of time. Access for farm vehicles to land severed by the works would be maintained wherever practicable (see para 92 of Document 8.01 Outline Code of Construction Practice) in consultation and subject to individual agreements with landowners and occupiers. Where necessary, crossing points would be

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			agreed pre-construction to minimise severed areas of land. These crossing locations will be agreed once entry to land is taken and discussed between the Agricultural Liaison Officer (**ALO**) (to be appointed by the contractor) and the relevant landowner/agent. Adherence to onsite health and safety will be a key consideration for the Applicant and the contractor.
18.11	Applicant	Please refer to where the design and specification for the haul road is located in the application documents. Would landowners be able to access the haul road during construction and would it be possible to use tracking for the haul road laid on the surface of the land and taken up?	Chapter 5 Project Description (document 6.1.5) section 5.5.2.4 details the running track design and specification including the description in Para 317 that "Following topsoil stripping, the running track would be established in stages. It will be formed of protective matting, temporary metal road or permeable gravel aggregate dependant on the ground conditions, vehicle requirements and any necessary protection for underground services." Table 5.31 details the running track requirements for the cable pull and joint phase. For safety and security reasons, the cable easement will be fenced during construction, therefore landowners would not be permitted to use the running track for their own use, however crossing points will be provided where necessary (see response to Q18.10).
18.12	Applicant	Please provide specific detail on the period during which haul roads will be laid down and sever land to which access is required by landowners. (See the Outline Representations made for example in [RR-193]). Clarify whether for example for the construction period of 2 years, the roads would be taken up and then re-laid for a further 2 years if the Norfolk Boreas scheme construction phase is commenced? How would the position differ if the Project is completed in two phases?	Section 5.5.2.3 of Chapter 5 Project Description provides details on the duct installation process and subsequent phased cable pulling activity, including associated installation and reinstatement of the running track during these periods. The onshore duct installation process will be built out in a sectionalised method with workfronts operating from mobilisation areas distributed along the cable route. Each workfront will work on a short length (approximately 150m) each week to excavate, install ducts, backfill and reinstate so far as possible. As the workfront moves forward, the running track back to the mobilisation area will be retained for access, such that the running track would be extended piece-wise in approximate 150m/week lengths as the work front moves outward from the mobilisation area. When the duct installation is complete within that cable length to be served by the mobilisation area, the running track will be taken up and the land fully reinstated. This period could be up to two years. The sectionalised build out of the running track minimises the timescale and impact to landowners in relation to continued access. Please also refer to

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			responses to Q18.10 and Q18.11 with respect to permitting access across the running track so far as possible. With reference to response to Q20.21 and Section 5.5.2.4.1 of Chapter 5 Project Description, during subsequent cable pulling activities which may be phased over two separate years, up to 20% of the running track length may be required to be temporarily laid and reinstated to access cable pulling locations. With reference to response to Q2.3, during the duct installation period, Norfolk Vanguard will install ducts for Norfolk Boreas, such that re-laying of the running track will not be required for Norfolk Boreas to install ducts. During the cable pulling phase, Norfolk Boreas may require to temporarily lay and reinstate up to 20% of the running track length to access cable pulling locations, equivalent to that detailed above for Norfolk Vanguard
18.13	Applicant	Please review ES Chapter 21 paragraph 128 [APP-345] on the potential temporary and permanent loss of Agricultural Land Classification (ALC) land and explain why a detailed assessment of land in individual fields that would become isolated or inaccessible should not be brought forward, rather than being left to the detailed design and construction stage. If not, how would landowners be given certainty over the extent of land to be acquired or subject to acquisition of permanent or temporary rights?	It is not possible to calculate or identify the exact areas of land that would become isolated or inaccessible during construction due to potential for further micrositing of the onshore cable route within the Order limits, therefore a detailed assessment cannot be undertaken at this time. Negotiations are ongoing with landowners regarding specific accesses to individual fields. Option agreements and HoTs are being sought with each landowner based on the Order limits as submitted with the DCO application.
18.14	Applicant	Explain how the use of previously developed land has been prioritised to minimise the loss of agricultural land and the countryside in accordance with Objective 9 of the Joint Core Strategy (Broadland, Norwich and South Norfolk) adopted January 2014.	Due to the type of infrastructure proposed and the linear nature of the onshore cable route it is not considered appropriate for the project to prioritise previously developed or brownfield land. Q2.1 details some of the key site selection factors taken into account when selecting the locations for the project infrastructure. For the onshore project substation, the process undertaken to select the site is detailed in Chapter 4 Site Selection (document 6.1.4). Whilst not on brownfield land, it is deemed more beneficial for the onshore project substation to be sited in proximity to an existing development area of a similar nature i.e. the

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			Dudgeon and Necton National Grid substations. Further information is provided in response to Q2.1 relating to site selection.
18.15	Breckland DC	Please clarify what precisely is meant by "high grade" agricultural land in Policy CP8 Adopted Core Strategy and Development Control Policies DPD with reference to ALC land.	
18.16	Applicant	Do you agree with CPRE's assessment referred to in [APP-345] that the potential temporary and permanent loss of ALC land is 21% of the temporary strip along a 60 km route and comment with regard to 21.7.5.2	Campaign to Protect Rural England (**CPRE**)'s comment as it appears in Chapter 21 Land Use and Agriculture (document 6.1.21) Table 21.3 is related to the assessment at PEIR stage. Land taken out of use both temporarily and permanently has been fully assessed in Chapter 21 Land Use and Agriculture (document 6.1.21), in section 21.7.5.2 and 21.7.6.2 respectively. The majority of the onshore project area (with the exception of roads and tracks) is on agricultural land, meaning that Agricultural Land Classification (**ALC**) grades apply across the entire onshore project area. With the exception of link boxes, all land along the 60km onshore cable route will be fully reinstated with no permanent loss of land. Temporary land take during construction is considered to be 6,000m^2 at the landfall, 2,700,000m^2 for the onshore cable route during duct installation and 447,688m^2 for the cable pull and joint phase. Permanent land take from the onshore project substation is considered to be 7.5ha with a further 3ha for the National Grid substation extension. Further land will be required for mitigation planting, although the exact amount is not known at this stage.
18.17	NFU Land Agents	Do you agree with the statement at 21.7.5.2 of Chapter 21 of the ES [APP-345] that where land is taken out of existing use or isolated due to construction and effectively taken out of use, this would result in loss of a growing season in the area affected for each farmer (plus possible severance) and the loss of associated income and if not why not?	

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18.18	Applicant	How would disturbance of soils resulting in a loss of carbon be compensated for in the reuse of soils moved and stockpiled during the construction process and secured through the CoCP and Soils Management Plan?	Chapter 21 Land Use and Agriculture (document 6.1.21) outlines embedded mitigation measures in Table 21.14 to avoid material change to soil resource. These measures include construction works occurring on short lengths of the onshore cable route at a time during trench excavation for the duct installation (approximately 150m sections per week). Once the ducts are installed, trenches would be back filled with subsoil, and the topsoil replaced, thereby minimising soil handling and associated minerals loss. Adherence to the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009), for example limiting soil handling in wet weather, restricting heavy plant and vehicle movement to specific routes, storing topsoil adjacent to where it is extracted and storing subsoil separately are also embedded within the project mitigation. Further control measures are detailed in the Outline Code of Construction Practice (document 8.1) and will be finalised in construction method statements for soil handling and a Soils Management Plan which is secured through Requirement 20 of the dDCO.
18.20	Applicant	Please provide a draft Soils Management Plan	The OCoCP (document 8.1) contains the principles of soil management in section 8. These principles would be expanded upon within a Soils Management Plan, following further pre-construction work including the appointment of an ALO and a drainage contractor (to undertake surveys and create drawings pre- and post-construction, to locate drains and ensure appropriate reinstatement), therefore further details cannot be provided at this stage. This is secured through Requirement 20 of the dDCO.
18.21	Applicant	Do you agree with the comments of Necton Parish Council [RR-113] that the extent of the area proposed for the substation involves a land take of Grade 3 agricultural land that doesn't comply with the National Planning Policy Framework or local planning policies? Please provide reasoning for your answer.	An assessment of impacts upon agricultural land is provided within ES Chapter 21 Land Use and Agriculture (DCO document 6.1.21) and the coverage of different agricultural land classification types is presented in Figure 21.4. Within ES Chapter 21 Land Use and Agriculture (DCO document 6.1.21) the threshold for the highest effects is identified as the permanent loss of 20ha of the Best and Most Versatile (**BMV**) Land – refer to Table 21.6 in ES Chapter 21 Land Use and Agriculture (DCO document 6.1.21). This threshold was defined using NE guidance. The assessment is therefore undertaken on the basis that the loss of more than 20ha of BMV land would represent the highest magnitude effect.

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			The 2012 National Planning Policy Framework does not set a threshold for the permanent loss of BMV and instead sets out that BMV land is part of the intrinsic value of the countryside and that planning policies should contribute to the natural and local environment by recognising this. Neither the emerging Breckland Local Plan nor the Norfolk Strategic Planning Framework set any threshold for the permanent loss of BMV land. There will be permanent loss of agricultural land at the onshore project substation, which represents approximately 7.5ha (18.5 acres) of Grade 3 agricultural land. There will also be permanent loss of agricultural land at the National Grid substation extension, which represents approximately 3ha (7.4 acres) of Grade 3 agricultural land. The total area of land permanently taken out of production as a result of the proposal is therefore approximately 10ha (24.7 acres), which is not considered significant. The project has minimised impacts on BMV land where possible through embedded mitigation measures in the site selection process. Mitigation measures have also been proposed to minimise impacts on soil quality through the preparation of a Code of Construction Practice and Soils Management Plan (secured through DCO Requirement 20). Additional land is also required for screening/planting, as detailed in ES Chapter 29 Landscape and Visual Impact Assessment (DCO document 6.1.29), subject to detailed design. It is not possible to quantify the exact volume of land required for mitigation planting, however it is not considered to be a significant area (indicative mitigation planting is shown on Figure 29.10b, 29.11b and 29.12). Private agreements (or compensation in line with the compulsory purchase compensation code) will be sought between the Applicant and relevant landowners/occupiers. With this commitment in place the impacts associated with loss of agricultural land will be minimised.
18.22	CPRE	In light of consideration given to soil resources in the context of ecosystem services and natural capital in section 21.6.4.1 [APP-345] and impacts related to biodiversity and ecological networks in Chapter 22 section 22.6.4 [APP-346], please justify your	

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		assertions in ES Chapter 21 Table 21.3 [APP-345] relating to the alleged misuse of the Rochdale Envelope and the NSIP process.	
18.23	NNDC	You refer to previous projects that have resulted in different impacts on farm businesses of compensation payments made to tenant farmers, relative to principal landowners. Given that compensation issues are not directly relevant to the proposed DCO, please explain what concerns you have that require specific amendment to the dDCO, including the bespoke provisions on which the basis of compensation will be assessed.	
18.24	Applicant	What mitigation works including alternative routes, if any, are proposed due to impacts from the cable route development on (i) Paston Way that runs from Cromer to North Walsham (ii) Weavers Way which runs from North Walsham to Great Yarmouth and (iii) other long-distance trails which currently promote circular walks along their length?	The OCoCP (document 8.1) and Public Rights of Way Strategy (document 8.4) outline potential control measures to be applied to public rights of way during construction. The exact management method in relation to specific routes will be agreed in advance with the Local Authority and detailed within the final Code of Construction Practice for that stage of the works (secured through DCO Requirement 20). Methods available include: • Appropriately fenced (unmanned) crossing points; • Manned crossing points; and • Temporary alternative routes. There will be no permanent closures of any public rights of way (**PRoW**s). Any diversions will be temporary (assumed to be required for no more than approximately 1 week) and will be agreed in advance with the PRoW officer. Paston Way, Marriott's Way and the Norfolk Coastal Path are proposed to be crossed using trenchless techniques, therefore no direct impact is anticipated.
18.25	Applicant	Please give the plan references where the small areas of open access land adjacent to the onshore cable route are identified [APP-354] which under the	Please see Appendix 18.1 Countryside and Rights of Way (**CRoW**) Open Access Land Map 1-9 (document reference ExA; WQApp18.1; 10.D1.3).

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		CRoW Act 2000, the public can freely walk.	
18.26	Applicant	There is potential for the cable route that would be constructed as part of this project and the route that would form part of the Orsted Wind Power (H3) project to cross at Reepham. Please describe how you would expect both projects to work together to minimise impacts on PROW FP18 and FP34 and how would this be secured?	The onshore cable duct installation strategy is proposed to be conducted in a sectionalised approach, with construction teams working on short lengths of approximately 150m. Once the ducts are installed, the section would be backfilled and topsoil replaced. This minimises the duration of works on any given section of the route (typically this would be a maximum of two weeks), and enables flexibility in construction to allow for sensitive programming with Hornsea Project Three. Further information is provided in ES Chapter 5 Project Description (DCO document 6.1.5). The OCoCP (document 8.1) and Public Rights of Way Strategy (document 8.4) outlines potential control measures to be applied to public rights of way during construction. A communication plan will be adopted as part of the final Code of Construction Practice (CoCP), secured through DCO Requirement 20. The communication plan will set out the process of continued engagement between the Applicant, the Local Authority and other major projects including Hornsea Project Three. The exact management method in relation to specific routes will be agreed in advance with the Local Authority and detailed within the final Code of Construction Practice for that stage of the works (secured through dDCO Requirement 20).

1.19 Socio-economic, Including Tourism

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
19.1	Applicant	ES Chapter 31 Table 31.39 [APP-355] states that the cumulative residual impact on community infrastructure assets is "minor adverse" yet it is also stated in the table that an assessment cannot be made without further information from interrelated chapters and discussion of	Potential effects on community infrastructure relate to construction noise and other disturbances, particularly related to construction traffic. This is described in Table 31.32 of Chapter 31 Socio-Economics (document reference 6.1.31). The reference to further information required for the cumulative impact assessment relates to Hornsea Project Three. To the extent that further information becomes available for Hornsea Project Three, an updated

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		programming with Norfolk Vanguard Limited". Are you satisfied that this assessment is robust and please clarify the apparent discrepancy?	cumulative traffic impact assessment could be submitted to the examination. Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent – secured through Requirement 21. On this basis, the Applicant is satisfied that the minor adverse residual impact identified for cumulative impacts on community infrastructure is robust.
19.2	Applicant	When will the primary base for the operations and maintenance port facility for the Project be identified?	Paragraph 236, Chapter 5 Project Description (document reference 6.1.5) of the ES states that the final selection of the port facilities required to construct and operate the project has not yet been determined, however local options include Hull, Great Yarmouth or Lowestoft. On the 4 October 2018 Vattenfall and Peel Ports, the infrastructure specialists, agreed to reserve space at Great Yarmouth harbour to site an operations base to service the Norfolk Vanguard and Norfolk Boreas Offshore Wind Farm Projects. More information will be published on the Applicant's approach to operations and maintenance once a number of contributing factors are realised, these include a positive DCO consent decision; contract for difference (**CfD**) award; final investment decision (**FID**); other regulatory or planning considerations and further engagement with the logistics supply chain.
19.3	Applicant	The Third River Crossing (Great Yarmouth) is excluded from the Cumulative Impacts Assessment (CIA) in relation to socio-economic impacts expressly due to its being the subject of a separate DCO. Explain this reasoning further given the inclusion within the CIA of other projects that are subject to separate DCO's.	The Third River Crossing is a road improvement scheme to improve access to Great Yarmouth and particularly the port and enterprise zone. The aim of that scheme is to lead to increased investment in the port and enterprise zone and associated job creation. The reference to a separate DCO process was intended to reflect any future expansion of Great Yarmouth Port and the associated job creation. Whereas the road improvement scheme itself will not generate those jobs and so was excluded from the Norfolk Vanguard CIA.
19.4	Applicant	ES Chapter 5 [APP-329] sets out an indicative programme for the Project. Please review this programme in light of comments from NNDC [RR-258] relating to the dependency of local communities on the agricultural and tourism economy, explaining how if at all the maximum	The indicative construction envelope of six years (see Table 5.36 of Chapter 5 Project Description) is reduced as far as practicable at this time through a number of commitments including:

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		construction envelope could be reduced, including by specifying a maximum gap between the end of the first phase and commencement of the second phase so there would be greater certainty regarding the construction programme.	• The commitment to HVDC technology, which has reduced the onshore construction programme for Norfolk Vanguard by one year compared to a HVAC technology solution. • The ability to install Norfolk Boreas ducts at the same time as Norfolk Vanguard ducts, and in a sectionalised manner, which maximises the efficiency of the onshore cable route installation for Norfolk Vanguard and its sister project, Norfolk Boreas. Further details on the proposed construction methods with respect to duct installation for both Norfolk Vanguard and Norfolk Boreas and subsequent, up to two phases of, cable pulling for Norfolk Vanguard are provided in Section 5.5.2.3 of ES Chapter 5 Project Description. The key reasons for maintaining a two phase installation for the electrical works onshore (cable pulling along the cable route and population of electrical equipment at the onshore project substation) is with respect to uncertainty in CfD auctions and potential supply chain capability, as discussed further in Q20.22. The separation between the first and second phases onshore will be dictated by these aspects and aligned with the offshore construction works.
19.5	NNDC	Please supply copies of the Shoreline Management Plan and the Cromer to Winterton Ness Coastal Management Study (2013).	
19.6	NNDC	You refer in your RR [RR-258] to the potential for the project to be affected by and/or contribute to coastal change. Please explain as precisely as possible what public benefits you consider should be derived from the project that you say should form part of formal mitigation as opposed to any wider community benefits, in order to manage adverse impacts in accordance with the Shoreline Management Plan (SMP). Justify any such formal mitigation/benefits with reference to the plan's focus on managed	

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		realignment in the short, medium and long term in the area where landfall will be made.	
19.7	NNDC	In light of the assessments made in ES Chapters 30 and 31 [APP-354, APP-355] specify what impacts on local communities and businesses close to the landfall and along the onshore cable route you consider to be "significant adverse impacts" as referred to in [APP- 258] that would result from the management and delivery of the project, and why?	
19.8	Applicant	In regard to development at Necton comprised within the project, you state [APP-355] that very preliminary exploration is underway as to strategic local investments that could example contribute to local resilience and sustainability. Please provide an update to this position and detail discussions held with Necton Parish Council.	The Applicant notes that only mitigation which addresses impacts directly associated with the Project should be considered in the planning and DCO process; wider community benefits should not be taken into account. The Applicant is and continues to address these wider benefits, however this will be undertaken separately and outside of the DCO process. Onshore project infrastructure (e.g. the onshore project substation) has been sited outside of Necton and other local communities to avoid, reduce and mitigate against permanent impacts, as described in ES Chapter 4 Site Selection and Assessment of Alternatives. However, the Applicant proposes to explore how living and working in relative proximity to elements of the UK's new generation of clean, green electricity infrastructure may enable appropriate local investment. It is in this context that the Applicant is seeking to facilitate dialogue which enables open and participative visioning of local futures outside of the DCO process. To date preliminary discussions with the Chair (by telephone, mid-December 2018) and Vice-chair (in person, 16th November, 2018) of Necton Parish Council have taken place, outlining proposals for exploratory dialogue on local interests and needs. Representatives of Breckland District Council and Norfolk County Council have also been approached in relation to forming an advisory panel who might guide a dialogue process, ensuring it is relevant and fit for purpose.

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			The Applicant is also liaising with local organisations, who are working on green / cleantech futures for Norfolk who might provide inspiration and ideas to stimulate dialogue. The Applicant anticipates developing a plan for the dialogue through 2019, with an advisory panel and appointing an independent third party to design and facilitate the process.
19.9	Applicant	A socio-economic assessment of the site selection area for the proposed substation at Necton identifies the impact on community infrastructure, local businesses and residents (ES, 31.7 [APP-355]). Will the assessment be supplemented by including home-workers as a category and the impact on the local house price index and if so when?	NPS EN-1 Section 5.6 sets out the assessment criteria for socio-economic impacts. This identifies that the assessment should consider: • The creation of jobs and training opportunities. • The provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities. • Effects on tourism. • The impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. A search was undertaken of the Journal of Property Investment and Finance, which showed little evidence to establish a quantifiable link between house prices and renewable energy infrastructure. This was reported within ES Chapter 31 Socio-Economics (document reference 6.1.31). Potential impacts on home-workers are assessed within all relevant chapters in relation to impacts to residential receptors, i.e. the potential noise, visual and air quality impacts to the nearest residential properties are assessed in those respective chapters. Home-workers are not identified as a discrete category within available socio-economic datasets and so it is not possible to undertake a meaningful assessment of impacts to that sector. The scope of the socio-economic impact assessment was agreed during the scoping exercise and reaffirmed through Section 42 consultation. Neither the NPS nor the agreed scope of the assessment identified a requirement to consider the impact on home-workers or impacts on local house prices. On this

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			basis, the Applicant does not propose to supplement the application with these additional assessments.
19.10	Applicant	Specify the stakeholders in the phrase "stakeholder consultation" referred to in ES Chapter 31 Table 31.7 [APP-355] as a result of which demand for housing is to be scoped out of assessment.	Stakeholder consultation in this context refers to the scoping exercise that was undertaken in 2016. Demand for housing was excluded from the scope of the socio-economic assessment presented within the scoping report. All statutory stakeholders were consulted at the scoping stage and invited to comment on the proposed scope.
19.11	Orsted	Comment on whether you consider account should still be taken of the Gross Vale Added (GVA) supported by construction activity and to demand for housing, accommodation and local services in the Local Impact Areas in the CIA, in light of the Applicant's responses to these points in [APP-355]	
19.12	Applicant	In ES Chapter 31 Table 31.10 [APP-355] the value levels for community infrastructure, other than for education and health, are given a low or negligible value as other facilities are available, merely stating that local facilities may be preferable and "*people can easily visit a different shops* [sic] *or businesses if necessary*". How are these assessments informed by an analysis of the availability of alternative services and facilities using a sustainability approach to the socio, economic and environmental aspects of delivery of such infrastructure to local communities?	The information provided within Table 31.10 of Chapter 31 Socio-economics (document reference 6.1.31) provides examples to give context to the assessment criteria for the sensitivity of community infrastructure. The most sensitive receptors are those where there is typically no alternative available within a community, such as local hospitals, dentists, doctors, schools etc; and the least sensitive are those where there are typically alternatives available. These are presented as examples to inform the assessment criteria. In the context of this application, the pathways for impacts upon community infrastructure are limited. Direct impacts have been avoided by routing the onshore cable route away from any towns and villages. Potential impacts are therefore limited to indirect effects associated with traffic delays or other disturbance effects upon those community facilities. Where potential impacts are identified, mitigation measures are proposed to reduce the magnitude of any potential effect down to low or negligible as set out in section 31.7.5.2.3 of Chapter 31 Socio-economics (document reference 6.1.31). The criteria for magnitude is set out in Table 31.12 where low represents "*Temporary nuisance to community infrastructure due to noise or visual impacts during construction*".

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			On this basis, the Applicant does not propose to undertake a further analysis of alternative services.
19.13	Applicant	In Table 31.29 [APP-355] it is stated that there are several businesses within 200m of the site boundary at Happisburgh and Whimpwell Green and one business within the site boundary. Have the nature of these businesses been assessed individually in relation to the potential for direct or indirect interaction with the effects of the project during construction and how have you engaged with each business to date?	As set out in Table 31.17 the businesses in proximity to the site boundary at Happisburgh and Whimpwell Green include general businesses (shops), financial (bank/post office) and community (public house). The assessment within Chapter 31 Socio-economics (document reference 6.1.31) has been undertaken based on the sensitivity of the types of community infrastructure present within the study area, rather than an assessment of each individual business present. The assessment presented within Chapter 31 Socio-economics (document reference 6.1.31) states that impacts are limited to indirect effects upon community infrastructure (paragraph 160) and that with the mitigation proposed the magnitude of any effect would be reduced to low to negligible. As set out in response to question 19.14, the Applicant will ensure effective and open communication with local residents and businesses that may be affected by the construction works as part of the development of the Construction Liaison Committee and the appointment of a Community Liaison Officer. This is set out within the OCoCP (document reference 8.1) and secured through Requirement 20.
19.14	Applicant	Please provide more detail on how the Construction Liaison Committee (CLC) would work with local businesses and stakeholders to minimise adverse impacts to an acceptable level ES Chapter 21 paragraph 165 [APP-355].	The approach to community liaison is set out in section 2.4 of the OCoCP (document refence 8.1). The Applicant will ensure effective and open communication with local residents and businesses that may be affected by the construction works. In summary, this would include: • Communications will be co-ordinated on site by a designated member of the construction management team. • A proactive public relations campaign will be maintained, keeping local residents informed of the type and timing of works involved, paying particular attention to potential evening and night time works and activities which may occur in close proximity to receptors. • A combination of communication mechanisms such as posters and parish meetings will be employed to keep local residents informed.

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			• A designated Norfolk Vanguard Limited local community liaison officer will respond to any public concerns, queries or complaints in a professional and diligent manner. • Parish Councils in the relevant area will be contacted (in writing) in advance of the proposed works and ahead of key milestones. This information will include indicative details for timetable of works, a schedule of working hours, the extent of the works, and a contact name, address and telephone number in case of complaint or query. Enquiries will be dealt with in an expedient and courteous manner. Any complaints will be logged, investigated and, where appropriate, rectifying action will be taken. The above will be captured in a communications plan as part of the final CoCP for each stage of the works, secured through Requirement 20.
19.15	Applicant	Increased traffic is considered to be an issue that may have a significant effect on some community infrastructure and a small number of businesses in two areas of the cable route ES Chapter 31 Table 31.32, [APP-355]. Please provide more detail on the areas of cable route in question and the nature of each business affected and to what extent. What is the worst case scenario for construction period(s) that may affect such businesses?	Table 31.32 in Chapter 31 Socio-economics (document reference 6.1.31) referred to in the question is a screening exercise for potential cumulative impacts. With specific reference to traffic impacts the two areas affected relate to shared road links required by both Norfolk Vanguard and Hornsea Project Three construction exercises, i.e. increased traffic on those road links leading to potential traffic delays. As explained in answer to Questions 12.5 and 19.1, to the extent that further information becomes available for Hornsea Project Three, an updated cumulative traffic impact assessment could be submitted to the examination. Any traffic mitigation measures identified along shared road links would be secured through each project's final Traffic Management Plans to be developed post-consent – secured through Requirement 21. On this basis, the Applicant is satisfied that the minor adverse residual impact identified for cumulative impacts on community infrastructure and local business (related to increased traffic) is robust.

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19.16	Applicant	Sections 30.6 and 30.8 of ES Chapter 30 [APP-354] consider dark sky areas. What is your conclusion as to how dark sky areas referred to will be protected from impacts of the project during both the construction and operational stages?	As stated in section 30.6.4 of ES Chapter 30 Tourism and Recreation (document reference 6.1.30) there are three dark sky areas located in Norfolk. The closest is located 22km from the onshore project area. Construction working hours are limited to 07.00 to 19.00, which is secured by Requirement 26 of the dDCO. Operational lighting at the onshore project substation will be provided for operations and maintenance activities only, and under normal conditions it will not be lit. In addition, programmed maintenance activities would typically be planned during normal working hours. Given that the construction hours are limited to 07.00 to 19.00, that the onshore project substation will be unmanned with no requirement for permanent operational lighting, and the distance of separation between the project and the nearest dark sky areas, no impacts upon dark sky areas have been identified.
19.17	Applicant	BB4ER's RR [RR-069] indicates its wish to see a better broadband service to their area and look for an opportunity to insert telecommunication fibre optic cables in the same footprint as the onshore cable route. In [APP-355] you state that installation of such cabling falls outside the DCO application process but appear to be willing to explore the opportunity of inserting telecommunication fibre optic cables in the same footprint as the onshore cable route. Please explain what the implications are for the construction, operational, maintenance and decommissioning impacts of the Project of any eventual additional installation of fibre optic cables and how these have been assessed?	Rural Norfolk has some of the slowest broadband speeds in the UK. In 2017, Better Broadband for East Ruston (**BB4ER**) approached Vattenfall, developer of the Norfolk Vanguard and Norfolk Boreas offshore wind farms, to ask whether Vattenfall could assist in improving broadband speeds. This could be secured by running broadband services along the same route as the onshore infrastructure needed to connect the wind farms to the National Grid. As set out in ES Chapter 31 Socio-Economics (document reference 6.1.31) the Applicant is willing to explore the opportunity of inserting additional telecommunication fibre optic cables in the same footprint as the onshore cable route. This would only be progressed subject to separate consents being obtained as necessary by the telecommunications provider (i.e. planning and land owner consents). No environmental assessment of the installation of additional fibre optic cables has been undertaken as part of the Norfolk Vanguard submission. Vattenfall entered a Memorandum of Understanding with BB4ER in March 2018, through which the parties agreed to explore broadband opportunities. Further meetings, discussion and dialogue between Vattenfall and BB4ER continues to appreciate the opportunity presented and importantly whether it is deliverable (noting that planning, land rights, legislative/regulatory matters

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			and other considerations would need to be addressed). As stated by Vattenfall in March 2018, if discussions progress to a deliverable concept (acknowledging the stages of construction, operation, maintenance and decommissioning of an offshore windfarm), any consents required (and further assessment in connection with this) would be dealt with outside of the Norfolk Vanguard and Norfolk Boreas DCO processes.
19.18	Applicant	The evidence quoted in [APP-355] to demonstrate little evidence to establish a quantifiable link between house prices and renewable energy infrastructure, is dated 2007. Has a thorough search been made of more recent literature on this subject and, if so, with what results?	As explained in answer to Question 19.9, the scope of the socio-economic impact assessment was developed following the criteria set out in NPS EN-1, agreed during the scoping exercise and reaffirmed through Section 42 consultation. Neither the NPS nor the agreed scope of the assessment identified a requirement to consider the impact on local house prices. The Applicant undertook a data search to provide some rationale behind the scoping decision. There is little research on this issue but the 2007 paper was this most recent and relevant. There are no plans to undertake any further review of research in this area.
19.19	Applicant	Happisburgh Parish Council state Beach Road car park is essential for village income and any closure must have a long notice period and preferably be compensated for, and requests a community fund. Has the revised proposal to use HVDC cable technology and long HDD at landfall obviated the need to consider the effect of the Project on Beach Road car park?	The use of a long HDD at the landfall has allowed the Applicant to commit to not using the beach car park at Happisburgh South. This is committed to within section 2.5.2 of the OCoCP (document reference 8.1) and secured through Requirement 20.
19.20	Applicant	You have been requested by Necton Parish Council to provide some form of financial compensation in respect of the impacts from siting of the onshore substation, referenced in the consultation responses to ES Ch.31. Your response does not clarify whether for example it accepts that "strategic investments" are appropriate in the context of mitigation of the effects of the Project. Please comment.	The ES refers to mitigation which is considered appropriate to reduce or avoid adverse effects of the onshore project substation and this is addressed in each topic specific chapter of the ES where relevant. There are no significant residual effects remaining in relation to the onshore project substation, following implementation of the mitigation as presented in the ES. It is therefore considered that further mitigation by way of 'strategic investment' or some other form of financial compensation is not required as part of the DCO process. The extent that strategic investments are being considered outside of the DCO process is set out in the Applicant's responses to Q19.8 and Q19.21.

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19.21	Applicant	State what is the timescale for the production of the Skills Strategy and Supply Chain Strategy and state how this is to be secured in the dDCO.	Whilst the Applicant is working closely with local communities, communities of interest and stakeholders to explore means of local optimisation of supply chain, jobs and skills opportunities associated with the project, only mitigation which addresses impacts directly associated with the Project should be considered in the planning and DCO process. The Applicant will address these wider benefits separately and outside of the DCO process. Evidence of relevant productive local dialogue and initiatives can be found in Appendix 19.1 and 19.2 to these responses (document references ExA; WQApp19.1; 10.D1.3 and ExA; WQApp19.2; 10.D1.3). Post-consent, the Applicant will submit an application for a CfD for the Project as soon as it is appropriate to do so. CfD eligibility requires Vattenfall to produce a Supply Chain Plan assessed and marked by the Secretary of State for Business, Energy, and Industrial Strategy. Supply Chain Plans must give consideration to how the Project will support skills, innovation, and competition in the sector. Developers are likely to be required to produce follow-on Post Build Reports for the Secretary of State that assess the delivery of the commitments given in Supply Chain Plans.
19.22	Necton Parish Council NSAG	You (and Necton Substation Action Group (NSAG)) refer to four holiday let businesses in PEIR response (cf [APP-354], Table 30.4 and paragraph 258). Please clarify (i) which of these businesses has made representations to the Examining Authority and provide the appropriate reference; (ii) provide inso far as you are able from publicly available information or with the consent of the businesses: (A) their location and details of the room numbers involved and (B) in light of the Applicant's assessment of hotels as low value for the reasons given at para 314 and elsewhere in [APP-354], your further comments if any as to what impact the use of tourist accommodation for the mobile workforce	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		would have in the short, medium and long term situation for the local tourist industry.	
19.23	Applicant	Please add any further comments you may wish to make on the matters highlighted in the preceding question.	As set out in section 30.7.6.2.3 of ES Chapter 30 Tourism and Recreation (document reference 6.1.30) consultation with Necton Parish Council highlighted that there are potentially four holiday let businesses located approximately 1km away from the onshore project substation in the general direction of Necton. These were assessed as low sensitive receptors in accordance with the criteria set out in Table 30.5 of Chapter 30 Tourism and Recreation (document reference 6.1.30). The assessment criteria for tourism features was detailed within the PEIR consulted upon with all Section 42 and Section 47 stakeholders in November 2017. The rationale for defining holiday accommodation as a low sensitive receptor (because it is not a tourist attraction in and of itself) is consistent with other recent offshore wind farm DCO applications, and the assessment was undertaken on the basis of that sensitivity.
19.24	Applicant	A number of hotels, self-catering cottages and camping and caravan parks are located in the vicinity of the landfall at Happisburgh South, and along the cable route (para 180 [APP-354]). What reasonable measures if any exist that you would expect holiday businesses and/or the Applicant could or should take that would facilitate the retention of rooms available for holiday lets during the construction period of the project, where this is a concern of the business in question?	The landfall works are programmed to take approximately 20 weeks (in the worst case scenario) as described in section 5.5.8.2 of ES Chapter 5 Project Description (document reference 6.1.5). The maximum number of workers required for the landfall works would be 20 personnel assuming that two drill rigs are in operation (10 personnel if only one drill rig in operation at any one time). Given the low numbers of workers associated with the works in proximity to Happisburgh and the relatively short timescale for the landfall works, the Applicant is confident that there will not be any significant impacts to tourism in this area as a result of availability of holiday accommodation. As set out in response to question 19.14, the Applicant will also ensure effective and open communication with local residents and businesses that may be affected by the construction works as part of the development of the Construction Liaison Committee and the appointment of a Community Liaison Officer. This is secured within the OCoCP (document reference 8.1) and through Requirement 20. At the pre-construction stage, the final works programme and actual workforce numbers will be known (rather than the current assumed

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			worst case) to inform engagement on any remaining concerns related to the retention of holiday accommodation.
19.25	Applicant	What is the worst case scenario for the duration of sediment disturbance referred to in ES Chapter 30 paragraph 295 [APP-354] and has this been accounted for in your assessment?	Paragraph 295 relates to perceived water quality impacts to blue flag beaches and summarises the findings presented within Environmental Statement Chapter 9 Marine Water and Sediment Quality. Chapter 9 details that during landfall cable installation any suspended sediment plumes arising would be localised to within approximately 1km of the release location and would disperse within a few hours. The nearest blue flag beach is 3.8km south east from the landfall. The worst case scenario presented within ES Chapter 30 Tourism and Recreation (document reference 6.1.30) is for Norfolk Vanguard and Norfolk Boreas landfall works undertaken concurrently, i.e. potentially creating a larger plume (rather than the sequential scenario since the single project plume would not extend beyond 1km of the works). The worst case for landfall works is 20 weeks for a single project. If the landfall works for both projects were undertaken concurrently (i.e. at the same time) it would still be 20 weeks. This has been taken into account in the assessment presented within Chapter 30 Tourism and Recreation (document reference 6.1.30).
19.26	Applicant NNDC	When will information be available for the sandscaping scheme at Bacton Gas Terminal to inform the cumulative impacts assessment of deterioration to North Norfolk WFD bathing waters and blue flag beaches in the vicinity of the proposed development?	At the time the Norfolk Vanguard application was submitted, the sandscaping scheme was not sufficiently developed to allow a cumulative impact assessment of potential impacts to bathing water to be undertaken. The sandscaping scheme application was submitted to North Norfolk District Council in August 2018 and has subsequently been approved. The Environmental Impact Assessment (**EIA**) undertaken for the sandscaping scheme takes Norfolk Vanguard into account within its cumulative impact assessment.
19.27	Applicant	Please supply the Biggar Economics (2016) study of sites where onshore wind farms have been operational for around 10 years, referred to in ES Chapter 30 [APP-354].	A copy is provided as Appendix 19.3 to this submission (document reference ExA; WQApp19.3; 10.D1.3).
19.28	Applicant	Norfolk County Council has stated in [RR-123] that there are likely to be demonstrable impacts during	A Fisheries Liaison and Co-existence Plan (as required under the DCO Schedules 9 and 10 Part 4 Condition 14(1)(d)(v) and Schedules 11 and 12 Part 4 Condition

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		construction, operation and/or decommissioning on commercial fishing, affecting communities in Norfolk and it is considered that the Applicant should provide appropriate compensation (i.e. disturbance payments) to those fishing businesses affected. Please comment on whether you are prepared to provide compensation and if so under what circumstances, also explaining how this would be secured through the DCO?	9(1)(d)(v)) will be produced for the project post-consent to ensure that relevant fisheries stakeholders are kept fully informed of development planning, construction and maintenance activities for Norfolk Vanguard. Following a request from the NFFO, an Outline of this plan is currently being prepared by the Applicant and proposed to be submitted during the Examination Process. Furthermore, as required under DCO Schedules 9 and 10 Part 4 Condition 14(1)(d)(iv) and Schedules 11 and 12 Part 4 Condition 9(1)(d)(iv), a Fisheries Liaison Officer (**FLO**) will also be appointed for the construction and operational phases of the project. A number of embedded mitigation measures have been included as part of the project design to help minimise impacts and facilitate co-existence with fishing activities (See ES Chapter 14 Commercial Fisheries Section 14.7.1). The Applicant has identified key local fisheries stakeholders through early engagement and site investigation work undertaken during the pre-consent phase, and will maintain regular dialogue with affected parties going forward. Although in the UK there exists no legal basis for financial compensation associated with the loss of access to fishing grounds, disruption or displacement of fishing activities resulting from OREIs, is recognised by both industries as a potential area of concern and one which may require discussion and an agreed resolution between the interested parties. Where there will be demonstrable impact on individual local vessels as a result of the construction of Norfolk Vanguard, individual agreements may be reached as necessary, based on evidence and track record – this is in accordance with FLOWW Best Practice Guidance (https://www.thecrownestate.co.uk/media/1776/floww-best-practice-guidance-disruption-settlements-and-community-funds.pdf and https://www.sff.co.uk/wp-content/uploads/2016/01/FLOWW-Best-Practice-Guidance-for-Offshore-Renewables-Developments-Jan-2014.pdf). The Fisheries Liaison and Co-Existence Plan will follow the FLOWW guidance, which provides recommendations on appropriate mitigation strategies.

1.20 Content of the draft DCO (dDCO)

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20.1	Applicant	The questions below refer to the submitted dDCO [APP-005]. Please provide an updated Explanatory Memorandum with each submitted update to the draft DCO (dDCO) in order to assist everyone involved in the examination of the application.	The Applicant acknowledges this request and will provide an updated Explanatory Memorandum with each submitted update to the dDCO.
20.2	Applicant	The Project is proposed by the Applicant after consultation as a result of which it is proposed to deploy HVDC export infrastructure, however the dDCO does not stipulate the use for this technology. Justify the omission of such a requirement in the dDCO, and comment on whether if anything other than HVDC were to be used that would result in a different scheme which has not been assessed.	The draft DCO does not stipulate the use of HVDC export infrastructure. The Applicant considers that it is not necessary to do so as it would not be physically possible to construct an HVAC export system within the Order limits, as defined by the Work Plans and the Land Plans. For example, an HVAC transmission system would require a much wider cable corridor for the additional cables required. In addition, the description of the authorised development contained in Part 1, Schedule 1 of the dDCO does not refer to (or consent construction of) the additional infrastructure which would be required for an HVAC export system, such as a cable relay station and the additional number of cables which would be required. Further, whilst both HVAC and HVDC export systems were assessed for the preliminary environmental information report, only the HVDC export infrastructure was assessed under the Environmental Statement. Accordingly, the project to be consented is for an HVDC export infrastructure system only and an HVAC export system could not be constructed under the terms of the draft DCO, notwithstanding that there is no express requirement which restricts this.
20.3	Applicant	Comment on the general criticism levelled by Natural England (RR's Appendix 5) at the volumes and figures presented in the dDCO relative to the content of the Environmental Statement, and the suggestion that the project description should contain tables clearly highlighting all worst case scenarios and reflecting the figures in the DML's.	Appendix 6.1 (document reference ExA; WQApp6.1; 10.D1.3) provides a summary of the relationship between design parameters in the draft DCO and Environmental Statement. The worst case scenarios are specific to the receptor and impacts and are therefore detailed in the relevant technical chapters.
20.4	Natural England	Unexploded Ordnance (UXO) detonation is detailed	

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		within the ES (cf Appendix 5.2 - Norfolk Vanguard Detonation Effects of UXO and Appendix 5.4 - Underwater noise from UXO) but not referenced in the dDCO/DMLs. Explain in detail why you consider that a separate Marine Licence will need to be sought prior to construction, and why it is likely that a European Protected Species (EPS) licence will need to be applied for prior to any UXO detonation works.	
20.5	Applicant	Comment on NE's relevant representations (Appendix 5) as to the need for licences as suggested by NE in relation to UXO.	As discussed in the response to Q6.9, UXO clearance would be licenced separately once the nature and extent of UXO clearance is known. This would include European Protected Species (**EPS**) licencing as required. This is the approach that has been taken on other offshore wind farms to date e.g. East Anglia ONE and East Anglia THREE.
20.6	Applicant	Neither the dDML's nor the rest of the dDCO refer to an upper limit on hammer pile energy. Should the maximum hammer energy assessed in the ES be specified within the design parameters in the dDCO and all dDML's, and if not why not, having regard to Natural England's comments in their RR's, suggesting that this is the best available means to ensure the noise generated from piling does not exceed that assessed within the ES?	The Applicant agrees that hammer energy should be referred to within the conditions in the DMLs. The Applicant is reviewing the proposed wording and the Applicant will submit a revised dDCO at Deadline 2 of the Examination timetable.
20.7	Applicant	Article 2 There appears to be no definition of "onshore transmission works". Please comment. Is it intended that they comprise those onshore transmission works identified in Works Nos 5, 6, 7, 7A, 7B, 7C, and 7D?	Article 2 of the dDCO defines "transmission works" as *"Work Nos. 4C to 12 and any related further associated development in connection with those works".* The Applicant is considering updating the definition to "onshore transmission works" in the revised dDCO to be submitted at Deadline 2.
20.8	Applicant	Article 2 In the Interpretations section (p7) there is a different	For offshore works, within the definition of 'maintain' contained in the dDMLs at Schedules 9 to 12 of the dDCO, the Applicant has adopted the definition of

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		definition of 'maintain' than in the Model Order. Explain and justify the different text.	'maintain' used in the recently made East Anglia THREE Offshore Wind Farm Order 2017. This definition clarifies that the ability to 'remove, reconstruct and replace' only applies for ancillary works in Part 2 of Schedule 1 and any component part of any wind turbine generator, offshore electrical station, accommodation platform or meteorological mast, but that it does not include the alteration, removal or replacement of foundations. This is consistent with the approach to maintenance assessed in the Environmental Statement and set out in the Outline Offshore Operations and Maintenance Plan (Document 8.11). This Applicant notes that this definition is not consistent with the definition of 'maintenance' contained in Article 2 of the draft DCO and therefore the definition of 'maintenance' in Article 2 will be amended to limit the ability to 'remove, reconstruct and replace' in the next version of the dDCO to be submitted at Deadline 2. This will be in line with the definition in the dDMLs for offshore works and will also seek to define the extent of onshore components which may be removed, reconstructed or replaced.
20.9	Applicant	Article 2 Definition of "undertaker". In order to ensure that the DCO is binding upon any person to whom the benefit of the order is transferred the definition of 'undertaker' would need to be extended. Can the Applicant provide an updated definition or if not, justify why this would not be necessary?	Under Section 156 of the Planning Act 2008, an Order granting development consent made in respect of any land has effect for the benefit of the land and all persons for the time being interested in the land subject to any contrary provision made in the Order. The definition of "undertaker" is therefore defined as "Norfolk Vanguard Limited" in order to limit the application of Section 156 of the Planning Act 2008 accordingly. Article 6 deals with transfers of the benefit of the DCO and Article 6(8) states "where an agreement has been made in accordance with paragraph (1) or (2) references in this Order to the undertaker, except in paragraph (9), (10), or (12), include references to the transferee or lessee". Therefore, Article 6(8) has the effect of amending the definition of 'undertaker' and it is not necessary to replicate this in the definitions contained at Article 2 of the dDCO.

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			The same approach has been adopted on other DCOs, for example in the case of the East Anglia THREE Offshore Wind Farm Order 2017 and the Hinkley Point C (Nuclear Generating Station) Order 2013.
20.10	Applicant	Article 4 The dDCO provides for variations to accommodate an eventual project at Boreas. Justify the parameters set for the Authorised Development by explaining how in particular the extent of parameters relevant to Norfolk Boreas are not so wide ranging as to effectively represent different schemes in the terms of Advice Note 9.	Paragraph 4.16 of Advice Note 9 'Using the Rochdale Envelope' states, *'At the time the application is submitted, the parameters within the DCO should not be so wide ranging as to represent an effectively different Proposed Development from that which was consulted on and assessed in the ES. The Applicant is encouraged to make effort to limit the parameters applicable to the Proposed Development. The parameters used for the assessment need to be clearly defined in the DCO and therefore in the accompanying ES. This will simplify the assessment and give confidence that the Proposed Development within the DCO (as built) would not result in significant effects beyond those assessed in the ES.*' Whilst the parameters for the Authorised Development allow for enabling development for Norfolk Boreas, this enabling development has always been part of the Proposed Development and was consulted upon and assessed within the ES accordingly. Therefore the parameters will not permit a project, other than that consulted on and environmentally assessed as part of the Proposed Development to be built out.
20.11	Applicant	Please provide a definition of "circuit" in Article (1) and include it within the dDCO.	Article 4(1) of the dDCO refers to limits of deviation "in carrying out the replacement of circuits as part of Work No. 11". In this context, the term 'circuit' refers to a set of three conductors (which together constitute a three-phase AC circuit) mounted onto a series of overhead line towers. The Applicant proposes to amend Article 4(1), replacing the phrase "replacement of circuits" with "overhead line modification". A definition of the latter term is already given in Article 2 of the dDCO. The term 'circuit' is also referred to in Schedule 1, Part 1, to describe the works which can be carried out in connection with Work No. 11 as follows: "the temporary diversion of overhead line circuits onto the temporary pylons" This will be amended in the dDCO to read:

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			"the temporary diversion of the overhead line onto the temporary pylons"
20.12	Applicant	Article 6 Article 6(5) requires the Secretary of State to determine an application for consent to transfer the benefit of the Order within eight weeks from receipt of the application and Article 6(6) provides for arbitration in accordance with Article 38 if no such consent is received. Justify these provisions with particular reference to the discretion that resides in the Secretary of State to approve or not to approve an application to transfer the benefit of development consent orders and the public law remedies available in the event of dissatisfaction with a decision made by the Secretary of State.	The Applicant refers to its response to Q20.110 below, which outlines reasons why the revised arbitration process is seen as fit for purpose and should be binding on all parties. In relation to the Secretary of State in particular, as the Applicant outlines in response to Q20.110, the arbitration article contained in Article 42 of the Infrastructure Planning (Model Provisions) (England and Wales) Order 2009 applies to *"any difference"* and all parties under a DCO. Section 120 (by way of reference to paragraph 37 of Part 1 of Schedule 5) of the Planning Act 2008 also prescribes that the submission of disputes to arbitration may be included in an order granting development consent. This reference is not qualified or conditioned and it does not exclude any party to a dispute. The Applicant considers that the ability to refer non-determination or refusal under Article 6(5) to arbitration reflects the guidance within the Planning Inspectorate's Advice Note 15 (Good practice point 3) which, amongst other things, states that: *"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 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. The mechanism could also address the fees payable for discharging the Requirements."* The Applicant considers that the option to resort to judicial review (**JR**) does not provide for a suitable alternative mechanism for dispute resolution. In the case of non-determination, it is questionable whether the remedy of JR would be available to pursue given that no decision will have been made. In any event, a JR procedure can be very time consuming and costly for all parties. This is particularly relevant for offshore wind developments, which will be under strict time constraints to meet CfD milestones and who are

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			working to meet the Government's ambition to achieve the lowest cost of energy whilst ensuring energy security and meeting carbon reduction commitments. The timescales for approval are referred to further in answer to Q.20.13 below; in this context, it is also worth noting that the parties can agree an extension to the 8 week determination period. This in itself would reduce the requirement for non-determination within agreed timescales which, in turn, would minimise the need to refer to arbitration.
20.13	Applicant	Explain separately why a period of eight weeks is stipulated in Article 6(5)	The timescale of eight weeks has been adopted from the Town and Country Planning Act 1990 (**TCPA**) regime. Section 27 of the Town and Country Planning (Development Management Procedure) (England) Order 2015 stipulates that local authorities (i.e. governmental statutory bodies who act in a similar role to the Secretary of State) must give notice of its decision (in relation to an application for any consent, agreement or approval required by a condition or limitation attached to a grant of planning permission) within a period of 8 weeks from the date the request was received. The position is similar in this regard as Article 6(5) acts as a condition or limitation attached to the grant of permission. The Applicant therefore considers that the time period for the Secretary of State to discharge an application for the transfer of the benefit of the Order under Article 6(5) should contain the same timescales as that provided for local planning authorities. This time period is designed to provide for an expeditious procedure in a nationally significant infrastructure project regime which, previously, provided little provision for the exact process for determination. It is worth noting that the TCPA wording also provides for appeals for non-determination to be made after the statutory time limit has expired with the agreement of the person making the application. The Applicant has therefore included this same provision ("*unless otherwise agreed in writing with the undertaker*") within Article 6(5).

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			The same timeframe has also been stated within the Hornsea Project Three draft Development Consent Order.
20.14	Applicant	Article 7 Article 7(2) excludes the operation of the Neighbourhood Planning Act 2017 relating to temporary possession or use of land and bespoke temporary possession provisions are written into the DCO. The 2017 Act appears to be designed among other matters to bring the general law into line with DCO orders and other orders that commonly make such provisions. Explain and summarise the significance of the differences in the bespoke provisions including the extent to which, if at all, they would adversely affect those who would otherwise be entitled to rely on provisions as drafted in the 2017 Act and to compensation.	The relevant provisions of Part 2 (sections 18 to 23) of The Neighbourhood Planning Act 2017 (for this question only, the **Act**) are not yet in force and it is unclear whether or when they will be brought into force. No landowners, occupiers or third parties would be able to benefit from the Act's provisions if the dDCO did not exclude it. In any event, the Applicant has applied for provisions that are standard in most DCOs, and are well understood by practitioners, agents and contractors. The key difference between the provisions of the Act and the dDCO is the minimum notice period to be given before temporary possession can be taken. In Section 20 of the Act (which is not in force), the minimum notice period is three months. The dDCO requires a minimum of 14 days. As the Act is not yet in force, it is not yet clear that Parliament intends this notice period to be applied. The Act also provides, at Section 23, a counter-notice procedure for the benefit of freehold owners or leaseholders with a right to occupy. This may result in the land not being taken temporarily; being temporarily possessed for a maximum of 12 months if it forms part of a dwelling; or being temporarily possessed for no more than 6 years in other cases. In those circumstances the acquiring authority has the option to take permanent compulsory acquisition of the land rather than accept the counter-notice. The dDCO does not provide a counter-notice procedure. Those provisions of the Act are not in force so are not considered appropriate to apply to the dDCO. The Applicant is in discussions with all landowners and relevant occupiers to negotiate property agreements, which will include access provisions to allow

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			for the surveying of land upon giving notice to the landowner; this should reduce or eliminate the need for counter-notices.
20.15	Applicant	Article 7(2) refers to the temporary use of land for carrying out the authorised project and for maintaining the authorised project: should the articles referred to read, respectively, Article 26 and Article 27?	Yes, Article 7(2) should refer to Article 26 and Article 27 respectively with reference to the temporary use of land for carrying out the authorised project and for maintaining the authorised project. This will be corrected in the next version of the dDCO to be submitted at Deadline 2.
20.16	Applicant	Article 11 Please explain how it is intended that stopped up streets will be used for mobilisation areas and identify what consideration has been given to detailed design parameters, including control of such matters as stockpiling of materials, access, traffic management and boundary treatments, activities (such as crushing and sorting) undertaken within the mobilisation areas and the times during the day when such areas would be in use.	The Applicant refers to its response to Q20.18 with respect to the intention for stopped up streets to be used for temporary working sites and the proposed amendment of the dDCO to amend the reference from 'mobilisation area' to 'temporary working site' to clarify the Applicant's intention Requirement 26 of the dDCO (document 8.01) outlines the secured construction hours associated with the onshore transmission works which includes the mobilisations areas. Furthermore, with respect to access and traffic management, the Applicant refers to Document 8.08 Outline Traffic Management Plan, Document 8.09 Outline Travel Plan and Document 8.10 Outline Access Management Plan. These plans are secured under Requirement 21 of the dDCO.
20.17	Relevant planning authority	Regarding Article 11 have you considered the list of streets specified in column 1 of Schedule 4 for which there is a requirement for consultation, but not consent, that may be temporarily stopped up? Please comment thereon.	
20.18	Applicant	Article 11 Are Articles 11(2) and 11(5) effective to secure that sufficient notice will be given and consultation will take place with the relevant street works authority of any area proposed to be used as a mobilisation area not already identified within the Order? In relation to all mobilisation areas, please explain how the order would ensure that adequate details	The main purpose of Article 11 is to allow the temporary stopping up of streets to enable ducts to be laid within the onshore cable corridor. Typically, only one carriageway of the street will be temporarily stopped up with traffic control measures (i.e. traffic lights) to minimise impacts on the highway network. Where streets are less than 7.2m kerb to kerb, it may be necessary to temporarily stop up the entire width of the street. However, the duration of the works will be limited to short periods, typically less than two weeks.

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		of the plant and equipment proposed to be installed in that location and the activities undertaken and duration of use would be controlled.	Further details on this approach are set out in section 1.7.2 of the Outline Traffic Management Plan (Document 8.8). The purpose of Article 11(2), which allows the street temporarily stopped up to be used as a mobilisation area, is to enable the storage of materials and equipment required for those immediate works (i.e. as a temporary working area). Any storage of materials and equipment will be limited in scale by reference to the limitations on the areas identified in Schedule 4 and the period of temporary stopping up. Given the minimal scale and temporary nature of storage proposed it is considered that notification for locations which fall within Schedule 4, or the consultation period of 28 days for locations falling outside of Schedule 4, is reasonable and would be effective. Article 8 of the Hornsea Project One Offshore Wind Farm Order 2014 permits the use of any temporarily stopped up street as a temporary working site in this way. It is proposed to amend the next version of the dDCO (to be submitted at Deadline 2) to amend the reference from 'mobilisation area' to 'temporary working site' to clarify the Applicant's intention. It is considered that details of plant and equipment proposed to be installed at locations specified in Schedule 4, and activities undertaken and duration of use, can be controlled through the final Traffic Management Plan to be submitted in accordance with Requirement 21(1)(a) of the dDCO, and which must accord with the Outline Traffic Management Plan. Locations outside of Schedule 4 will be controlled in the same way, or through conditions which can be attached to the street authority's consent under Article 11(5)(b).
20.19	Applicant	Article 12 Article 12 appears to give the Undertaker power to form and lay out means of access to Works in predefined locations and otherwise in accordance with Requirement 22. Confirm whether it is intended that possession will have been taken of the requisite land or rights will have been acquired in	In the first instance, the Applicant will seek to enter into voluntary agreements with landowners affected by means of access to works. Where voluntary agreements cannot be reached, temporary powers will be exercised to enable the construction of means of access (unless freehold acquisition is proposed, in which case temporary powers are not available). In some cases, for example the running track along the onshore cable route or other construction accesses, means of access will only be required during the

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		accordance with the compulsory acquisition schedule before any such means of access is formed.	construction period and compulsory powers to obtain permanent rights will not be exercised as it will be sufficient to rely on temporary powers alone. Where permanent means of access are created under temporary powers (and to the extent that a voluntary agreement cannot be reached), compulsory rights will be sought following construction of the means of access. This ensures that permanent rights are acquired only over the as built means of access. Where freehold acquisition is proposed, for example the means of access to the onshore project substation, temporary powers will not be exercised and, to the extent that a voluntary agreement cannot be reached, compulsory acquisition powers for the freehold of the land will be exercised prior to construction of the means of access.
20.20	Local highway authority	Please comment on Article 12 and the 28 day deemed approval period set out in Article 12(2) with regard to the implications of a worst case scenario with regard to the safety and efficiency of the highway network. Do you accept that a deemed approval provision is appropriate?	
20.21	Applicant	Article 15 Article 15 allows for the onshore transmission works to be carried out in one or two phases. Explain why the works could not be completed in a single phase, and comment on, and explain the extent to which, remedial and mitigation works carried out after an eventual first phase may have to be revisited on implementation of a second phase of works.	It is assumed the ExA refers to Requirement 15 of the DCO relating to stages of authorised development onshore. As discussed in the Applicant's response to Q19.4, the key reasons for maintaining a two phase installation for the electrical works onshore (cable pulling along the cable route and population of electrical equipment at onshore project substation) is with respect to CfD auctions and potential supply chain capability, (also discussed further in Q20.22). The separation between the first and second phases onshore will be dictated by these aspects and aligned with the offshore construction works. Section 5.5.2.4.1 of ES Chapter 5 Project Description outlines the cable pulling process associated with the onshore transmission work phasing. Remedial and mitigation works carried out after an eventual first phase and which may have to be revisited on implementation of a second phase of works would involve the 20% of running track length that will be required to be reinstated between

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			the phases and any temporary hardstanding at joint locations for pulling and jointing activities. The 20% of the running track which may require reinstatement for cable pulling is outlined in Table 5.31 of ES Chapter 5 Project Description and is derived from a review of the accesses required from the local public highways to accommodate the type and quantum of vehicles required for cable pulling activities.
20.22	Applicant	Provide a Gantt chart or similar plan that illustrates the Project schedule and explains the dependency relationships between the possible phases and stages of the authorised development for onshore Works, and a single or twin offshore phase of Works including the possible transfer of generation assets. The plan should include remediation and compensatory measures and other contingency provisions and the overall timescale of the Project.	The following notes should be read together with the Gantt chart provided as Appendix 20.1 (document reference ExA;WQApp20.1;10.D1.3). Vattenfall intends to construct the Norfolk Vanguard and Norfolk Boreas projects using a sequential, modular approach. The two projects (3,600MW of capacity in total) will comprise either 3 or 4 similar but distinct offshore wind farm 'units'; each unit is independent from the other units, and each unit can be brought into service at a different time. The construction of each unit will take up to 4 years. It is likely that construction of consecutive units will be phased, with an interval of 12 months between the start of works for each unit. Each 'unit' will comprise its own HVDC transmission link to the onshore transmission system, as well as the wind turbines themselves. The transmission link will be constructed and commissioned before the turbines are installed. This ensures that all WTGs can be commissioned and brought into service quickly after installation. In order to minimise the onshore impacts of the two projects, Vattenfall is proposing to execute some strategic onshore enabling works at the start of the construction process. These works are detailed in response to Q2.3. Following these enabling works, the electrical infrastructure installation onshore (e.g. cable pulling and electrical plant at the onshore project substation) may be completed in one or two phases, in line with offshore electrical works. Requirement 15 of the dDCO secures the requirement that the onshore transmission works may not be commenced until notification has been submitted to the relevant planning authority detailing whether the onshore works will be constructed in a single onshore phase or in two onshore phases.

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20.23	Applicant	Article 16 appears to overlap with Section 53 Planning Act 2008 which provides for entry onto land for surveys to be undertaken in connection with, in effect, this dDCO. Summarise and explain the differences in the bespoke provision justifying where relevant the need for the additional provisions.	Section 53 of the Planning Act 2008 includes a process to obtain access for land to carry out surveys in respect of a proposed DCO and also once a DCO has been made, subject to obtaining authorisation from the Secretary of State. Article 16 in the dDCO provides a survey power to be used at the Applicant's discretion (within the limitations of the power) once the DCO has been made. These survey powers are standard practice in DCOs. The Applicant's experience is that Section 53 would most likely be used where there was a need to carry out extensive environmental surveys on land, but the owners of that land were resistant to permitting this in a sufficient timescale. The power in Article 16, in contrast, will only apply to land that has already been the subject to land referencing, the service of all appropriate statutory notices, and compliance with the relevant procedures to assess and approve the DCO application. Section 53 of the PA2008 requires a further Secretary of State approval whereas including Article 16 in the dDCO means that if made in that form the Secretary of State in making the DCO will have approved the power to enter onto land for surveys. There are no substantive differences between the power in Section 53 and Article 16 save that Section 53 applies a criminal sanction for parties who wilfully obstruct the exercise of the powers whereas Article 16 does not.
20.24	Applicant	Article 16 The onshore detailed design parameters make references to ground level and define the level differently for different parts of the Works. Please justify this approach and comment on whether ground levels should be defined before commencement of works and at the end of the works all levels to be same as original ground levels, and if so how this should be secured	The Applicant has assumed that the Examining Authority is referring to Requirement 16 – Detailed design parameters onshore, rather than Article 16. Existing ground levels have been defined within Requirement 16 of the dDCO for the proposed locations of the onshore project substation (Work No. 8A), the National Grid substation extension (Work No. 10A), and the east and west overhead line towers (Work No.11). The need to refer to existing ground levels in these instances is because the installed height of each of these pieces of infrastructure has been assessed and defined in relation to the existing ground level. For example, the dDCO defines that the installed onshore

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			project substation must not exceed 19m above existing ground level, which means 71 metres above ordnance datum (Requirement 16(5) and 16(8)). As such, it is essential to define the existing ground level at this stage through the dDCO to ensure that the height of the installed onshore project substation remains within the assessed envelope. The existing ground levels are not specified with a view to reinstating ground back to that original level, as these locations will have new permanent above ground infrastructure located on them. The Applicant therefore considers that the wording should remain as is currently drafted.
20.25	Applicant	Confirm whether a topological or contour survey has been undertaken in respect of any of the Order Limits and if so which parts. Please provide a topological survey of the areas proposed for the substation and extension to the existing substation.	An aerial photogrammetry topological survey was undertaken in February 2017 of the onshore cable corridor as identified at that time, including additional ecology survey buffer widths. This survey in relation to the onshore project substation and extension to the existing National Grid substation is provided in Appendix 20.2 of this submission (document reference ExA; WQApp20.2; 10.D1.3).
20.26	Applicant	Article 23 Article 23 amends for the purposes of the Order, Schedule 2A of the Compulsory Purchase Act 1965, such that the counter-notice provisions in that schedule that are available to landowners, where only part of land is acquired compulsorily, do not apply where the land has only been taken possession of under the temporary possession powers set out in Article 26 or Article 27. Justify the inclusion of this additional provision.	The wording is intended to provide clarity. The new Schedule 2A is intended to apply to permanent compulsory acquisition, as it refers (for example in part 1, paragraph 1(a) and (b)) to notices to treat, but refers in a number of places to "possession". The Applicant considers that if Parliament currently intended for counter-notice provisions to apply to temporary possession powers, the clear way to do this would be to bring into force Part 2 of the Neighbourhood Planning Act 2017.
20.27	Applicant	Article 27 Under Article 27 any land within the Order Limits, except (a) any house or garden belonging to a house; or (b) any occupied building (other than a house)	No land is currently excluded from temporary powers for maintenance as a result of the scope of Article 27. This is because, to the Applicant's knowledge, there is no land within the Order limits which includes (a) a house or garden belonging to a house, or (b) an occupied building other than a house, for which entry and/or temporary possession will be required for

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		which is reasonably required for the purpose of maintaining the authorised project may be entered and/or temporarily possessed. Provide a plan or plans that show the extent of land excluded from the scope of Article 27.	maintenance purposes. Notwithstanding this, the Article is required in case this position changes over time. Accordingly no plan has been provided. However, it should be noted that: 1. new rights are sought over an entrance driveway at Plot 02/20 (this is not considered to fall within the term 'house or garden'); and 2. temporary rights are sought over an area used for storage of grain at Plot 18/15 and 18/16, as shown by blue shading on sheet 18 of the Land Plans (Document Reference 2.2). The Applicant proposes to use these plots temporarily for the storage of cable pulling equipment and cable drums during construction. This process is outlined in more detail in response to Q11.25. The Applicant is currently seeking heads of terms with both of the above land interests. Save for the inclusion of a new paragraph (4) relating to the requirement for notice in the case of emergency, Article 27 follows the form of Article 29 *(Temporary use of land for carrying out the authorised project)* contained in the Infrastructure Planning (Model Provisions) (England and Wales) Order 2009.
20.28	Applicant	Clarify what is meant by "garden" in Article 27 with reference to the concept of domestic curtilage, and whether or not it is intended that land forming part of the non-domestic curtilage of a building is to be excluded from the scope of Article 27.	It is the Applicant's intention to seek powers of temporary possession where required over the curtilage of non-domestic buildings. The intention is to exclude the availability of temporary possession powers over domestic houses, the gardens of domestic houses which would be within the curtilage, and occupied non-domestic buildings. In any event, as is explained in response to question 20.27, to the Applicant's knowledge, there is no land currently within the Order limits which includes (a) a house or garden belonging to a house, or (b) an occupied building other than a house, for which entry and/or temporary possession is required during maintenance.
20.29	Applicant	The Explanatory Memorandum [APP-006] appears to state that Article 27 would operate for a period of	The maintenance period is intended to be the single date referred to in Article 27(12).

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		five years from the date on which "that part of the authorised development is first used". Is it intended that more than one maintenance period may occur in respect of use commencing of separate parts of the Project, bearing in mind that Article 27 (12) appears to refer to a single date, being that when the authorised project first exports electricity to the national electricity transmission network?	
20.30	Applicant	Provide examples of scenarios in which it is envisaged that temporary works would be necessary over the land affected and confirm where the worst case scenario in terms of the nature and maximum duration of works has been evaluated in the Environmental Statement.	Temporary works may be necessary for the maintenance of the cables within the Order limits in the event of a cable fault and subsequent repair requirement. These works would be similar in nature to a single cable pull and joint exercise at the faulted cable which is assessed within the Environmental Statement and detailed within Section 5.5.2.4.1 of Chapter 5 Project Description. Where relevant, potential effects of maintenance activities have been considered within the assessment of operational impacts. For example ES Chapter 21 Land Use and Agriculture section 21.7.6.2 which discusses operational changes to land use. The worst case scenario for these potential maintenance works is described therein and evaluated.
20.31	Applicant	Article 29 Should Article 29(a) read "limits of the land" instead of "limits to the land"?	The Applicant is content to amend the dDCO to state "limits of the land".
20.32	Applicant	Article 38 Is it intended that any dispute or non-approval in relation to any matter referred to in the deemed marine licences be referred to arbitration in accordance with Article 38 and if not please explain why?	Yes, the dDCO allows for any dispute or non-approval in relation to any matter referred to in the deemed marine licences to be referred to arbitration in accordance with Article 38.

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20.33	Applicant	Article 40 What provision is made for abatement of works or site restoration in relation to abandoned or decayed onshore works?	Onshore decommissioning is controlled under Requirement 29 of the dDCO which provides as follows: "*29(1) Within six months of the permanent cessation of commercial operation of the onshore transmission works an onshore decommissioning plan must be submitted to the relevant planning authority for approval.* *(2) The decommissioning plan must be implemented as approved*." In relation to reinstatement and restoration following construction, certain requirements of the dDCO relate to restoration and reinstatement proposals to be submitted for approval. For example, Requirement 18(2)(e) requires the Landscape Management Scheme (which must accord with the Outline Landscape and Ecological Management Strategy (document 8.07)) to include 'retained historic landscape features and proposals for restoration, where relevant'. Requirement 25(1) requires a scheme and programme for crossing, diversion and reinstatement of any designated main river or ordinary watercourse. In addition, some outline plans note that restoration may be required in certain circumstances. For example, paragraph 56 of the Outline Written Scheme of Investigation (Onshore) (document 8.05) states that, "Built heritage / historic building surveys and recording may also be required at certain targeted locations as part of the post-consent initial informative stages mitigation, and could result in subsequent, additional mitigation, as required, in the form of further conservation and restoration requirements". The OLEMS also refers to restoration and reinstatement in the context of: • Table 1 (page 6) – the requirement to reinstate, where possible, each 150m (approx.) work front following duct installation and before work on the next work front commences • Paragraph 11 – the aim of the Landscape Management Strategy to set out the basis for protection and restoration of impacted trees and hedges

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			• Paragraph 32 – the ability of the mitigation planting to help restore enclosure • Paragraph 39 – a requirement that the Landscape Management Scheme includes proposals to retain historic landscape features and restore them where relevant • Paragraph 41 – a requirement for a scheme for tree and shrub planting and aftercare, including details of soil restoration • Paragraph 106 and 107 – a requirement to reinstate hedgerows during early winter where possible • Paragraph 114 – reinstatement of grassland habitats • Paragraph 124 – reinstatement of pond habitats • Paragraph 129 – reinstatement of arable field margin habitat • Paragraph 140 – reinstatement of hedgerow habitats • Paragraph 164 – reinstatement of water vole habitats • Paragraph 175, 177, 179 and 182 – restoration of habitats for great crested newts (including ponds) • Paragraph 186 and 190 – reinstatement of reptile habitat • Paragraph 224 – reinstatement of wintering/ on passage bird habitat • Paragraph 226 – reinstatement of bat habitat. In relation to the exercise of temporary powers for possession of land, restoration is controlled under Article 26(4). This requires the removal of temporary works and restoration of the land to the landowner's reasonable satisfaction before possession of the land is given up.
20.34	Applicant	Schedule 1 The project is not subject to a requirement to carry out all or any of the Authorised Development, for example Schedule 1 Part 1 refers to "up to 200 wind turbine generators" comprised within Work No 1. The Explanatory Memorandum [APP-006] at 4.28 states it is lawful for less than the full extent of the consent to be constructed, as long as what is constructed is in accordance with the requirements	Paragraph 4.28 of the Explanatory Memorandum (document 3.02) referred to is part of a section which addresses the question of whether a minimum number of turbines should be specified. There are a number of reasons why specifying a minimum number of turbines would not be appropriate. The capacity of the project itself is "an offshore generating station with an electrical export capacity of up to 1,800MW…comprising up to 200 wind turbine generators" and "up to two accommodation platforms", "up to two

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		of the consent. Justify this statement in 4.28, distinguishing long standing principles from legal authority relied on.	meteorological masts" and so on. The project definition does not set out the full extent of consent to be constructed. The Undertaker will therefore have freedom within the specified parameters as to the number of wind turbines installed, the size of turbines, the resulting electrical export capacity of the generating station (up to 1,800MW), the extent to which the area within the Order limits is used, the precise layout of turbines, accommodation platforms, meteorological masts and offshore electrical platforms, and the arrangement of cabling between turbines, accommodation platforms, meteorological masts and offshore electrical platforms. The Undertaker will also have flexibility with regard to the configuration and specification of the HVDC export infrastructure. It is inherent in this type of project that there will be variations in turbine numbers and scheme layout and this flexibility, which has previously been critical to the development of wind farms in the UK, is fundamental to whether the Order is fit for purpose. The use of flexibility in project details within an Order is expressly endorsed by National Policy Statements EN-1 (at paragraphs 4.2.7 – 4.2.10) and EN-3 (at paragraphs 2.6.42 – 2.6.45) provided the resulting variables are fully assessed in terms of worst case effects. Even if the project were to specify the full extent, it would be open to the Applicant to implement the project in part provided (as Advice Note 9 states) the parameters are not "so wide ranging as to represent effectively different schemes". Reference is made to the Planning Encyclopaedia P94.04. In R (Robert Hitchins Limited) v Worcestershire County Council (2015) EWCA CIV 1060, Richards LJ explained that "where a development has been begun in accordance with planning permission but has not been completed, Section 94 of the 1990 Act permit the local planning authority in defined circumstances to serve a completion notice stating that the planning permission will cease to have effect at the expiration of a further period specified in the notice. This implies that a development may be commenced but not completed yet still

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			remain lawful, since otherwise there would be no need for the notice provisions: the local planning authority could rely instead on its normal powers of enforcement in respect of unlawful development". It is not necessary to impose a minimum to ensure the project exceeds the Nationally Significant Infrastructure Project (**NSIP**) threshold of 100MW as that threshold is defined on what the capacity of the scheme is expected to be at the point of application and consent. It must be open to doubt whether setting a minimum number of turbines as a parameters would either be reasonable or enforceable. Government Guidance on Planning Conditions 6 March 2014 advises that "conditions requiring a development to be carried out in its entirety will fail the test of necessity by requiring more than is needed to deal with the problem they are designed to solve. Such a condition is also likely to be difficult to enforce due to the range of external factors that can influence a decision whether or not to carry out and complete a development." There can be no EIA justification for seeking to impose a minimum turbine requirement since the fewer the number of turbines the lesser the impact. No DCO consent for an offshore wind farm has been granted with a minimum number of turbines specified for all the above reasons.
20.35	Applicant	The inter-tidal area, in which Work No 4B is proposed, appears to fall within the jurisdiction of the MMO and North Norfolk District Council (Ex Memo 4.12). (i) Confirm whether jurisdiction only exists and is to be exercised in relation to the discrete powers and duties of the respective bodies including those that stem from the DCO, explaining the remit of the respective bodies. (ii) Identify any concurrent jurisdiction over aspects of the Work, or possible exercise of independent jurisdictions over the same subject matter, and if there are any,	The discrete powers and duties of the relevant planning authority pursuant to the DCO requirements relate to the "onshore transmission works" which are defined as "Work No's. 4C to 12 and any related further associated development in connection with those works". Work No. 4C is "landfall transmission works consisting of up to two transition jointing pits and up to four cables to be laid in ducts underground and associated fibre optic cables laid within cable ducts underground from Mean High Water Springs (**MHWS**) at Work No. 4B to Work No. 5". In general therefore, the relevant planning authority's jurisdiction under the DCO requirements extends landward of MHWS. The only exception is

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		provide details.	Requirement 17 (Landfall method statement) which provides for prior approval by the relevant planning authority of a method statement for construction of Works No. 4A, 4B and 4C (i.e. including works below MHWS in the form of 4B – export cables between MHWS and Mean Low Water Springs (**MLWS**), and 4A – export cables seaward of MHWS) to include measures for long horizontal directional drilling below the coastal shore platform and cliff base at the landfall. The discrete powers and duties of the MMO pursuant to the DML conditions extend seaward of MHWS. They relate to the "authorised scheme" which is defined as "Work Nos. 2, 3, 4A and 4B", and the "licensed marine activities" set out in paragraph 1 of Part 3 of the DML.
20.36	Applicant	Comment on the RYA's concerns [RR-019] as to (i) a possible reduction in water depth at the cable landfall area where the cable comes within the 10m contour; (ii) issues where the cables cross other wind farm export cables and other inland waterways on route to the onshore Grid connection and the request for RYA to be consulted with respect to this matter.	Within ES Chapter 15 Shipping and Navigation, the Applicant commits to a Cable Burial Risk Assessment to be undertaken post-consent. The Cable Burial Risk Assessment is secured in DML Condition 14(1)(g) (Generation DMLs, Schedule 9-10) and Condition 9(1)(g) (Transmission DMLs, Schedule 11-12) - Cable Specification, Installation and Monitoring Plan. The Cable Burial Risk Assessment will be under taken pre-installation of the offshore cables and will include consideration of under keel clearance including at sensitive cable crossing points. All subsea cables will be suitably protected based on the risk assessment, and the protection monitored and maintained as appropriate. As noted in the SoCG with the RYA, the RYA are content that the post-consent Cable Burial Risk Assessment will address concerns associated with reductions in water depth by ensuring that an effective assessment is undertaken, and burial/protection is in line with MGN 543.
20.37	Applicant	Justify the need for ongoing operational safety zones for floating offshore wind turbines outside of construction, major maintenance and decommissioning periods, or manned structures during operation.	As discussed in response to Q8.1, the Applicant is not proposing to apply for operational safety zones for any of the wind turbine foundation types. As stated in Section 4.6 of ES Chapter 15 Shipping and Navigation, an application will be made for the following standard safety zones (to be submitted post consent and as detailed in the Safety Zone Statement (document reference 7.2)) which may comprise the following:

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			• A 500 metre radius around individual OREI and their foundations whilst work is being performed as indicated by the presence of construction vessels; • A 500 metre radius around all major maintenance works being undertaken around the wind turbines and their foundations, and • A 50 metre radius around individual OREI and associated foundation structures whether they be installed and operational, or complete or incomplete but awaiting commissioning. As stated in the SoCG with the RYA (Rep1 - SOCG - 14.1), the Applicant may also include the provision within the safety zone application for 500m operational safety zones around accommodation platforms. As per the SoCG, the RYA does not generally support operational safety zones, however they do not object to their use around permanently manned accommodation platforms. No other operational safety zones are being considered once the wind farm is operational.
20.38	Applicant	Works Nos. 6 – 7D refer to "onshore transmission works consisting of up to four cables to be laid in ducts and up to four additional cable ducts for the Norfolk Boreas offshore wind farm". However Chapter 5 of the ES [APP-329] refers in multiple locations, including at Table 5.32 which summarises the onshore cable route parameters, to a maximum of four cable trenches to be installed in relation to both the Proposed Development and the Norfolk Boreas project, likely to be two ducts for the four cables of the Proposed Development and two ducts for Norfolk Boreas. Please clarify the apparent discrepancy.	With reference to Plate 5.16 of ES Chapter 5 Project Description, each trench will accommodate two ducts to house an electricity power cable in each. With reference to Table 5.32 of ES Chapter 5 Project Description, a maximum of four cable trenches are to be installed in relation to both Norfolk Vanguard and Norfolk Boreas, each trench comprising of two ducts for electricity power cables. There will therefore be up to four ducts for four electricity power cables installed in two trenches associated with Norfolk Vanguard and up to four ducts for four electricity power cables installed in two trenches associated with Norfolk Boreas. Plate 5.15 of ES Chapter 5 Project Description depicts this arrangement with two ducts per trench and two trenches for each of Norfolk Vanguard and Norfolk Boreas. It should be noted that there is an error at Work No.5 of the dDCO, which refers to 'two additional cable ducts for the Norfolk Boreas offshore wind farm', and this will be corrected to 'four additional cable ducts' in the revised draft DCO to be submitted at Deadline 2.
20.39	Applicant	Schedule 1, Part 2 Of the Ancillary works referred to in (a) (b) and (c) clarify precisely which works or	Schedule 1, Part 2 refers to the following Ancillary works:

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		structures are intended to be temporary, by what periods will they be defined as temporary, and explain what assessment has been made of their impacts as recorded in the Environmental Statement.	(a) temporary landing places, moorings or other means of accommodating vessels in the construction and/ or maintenance of the authorised development; • The footprint associated with vessel anchors and jack-up barges has been assessed in the relevant offshore technical chapters as a component of the total footprint of temporary habitat disturbance during construction and maintenance (e.g. see Table 10.12 of ES Chapter 10 Benthic Ecology). (b) beacons, fenders and other navigational warning or ship impact protection works; • Navigational warning aids constitute mitigation of impacts in relation to shipping and navigation and are considered in ES Chapter 15, Section 15.7.1 Embedded Mitigation. The assessment takes account of the following mitigation by design: o Final site design to include consideration of lighting and marking. Suitable lighting and marking of the OWF sites complying with International Association of Marine Aids to Navigation And Lighthouse Authorities (IALA) Recommendations O-139 (IALA, 2013), to be finalised in consultation with TH and the MCA; o Structures and all cables (offshore export and array) to be clearly marked on appropriately scaled nautical charts and electronic charts; o Use of guard vessel during the deployment of safety zones, and during any other key construction periods. (c) temporary works for the benefit or protection of land or structures affected by the authorised development. • As discussed in response to Q20.30, temporary works may be necessary for the maintenance of the transmission works within the Order limits in the event of a cable fault and subsequent repair requirement. These works would be similar in nature to a single cable pull and joint exercise

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			at the faulted cable which is assessed within the Environmental Statement and detailed within Section 5.5.2.4.1 of Chapter 5 Project Description and typically concluded within five weeks per repair. Where relevant, potential effects of maintenance activities have been considered within the assessment of operational impacts. For example Environmental Statement Chapter 21 Land Use and Agriculture section 21.7.6.2 which discusses operational changes to land use. The worst case scenario for these potential maintenance works is described therein and evaluated. Such activities would be highly localised, temporary and of short duration.
20.40	Applicant	Requirement 2 states that the wind turbines will not exceed a height of 200m when measured from HAT. However Table 5.7 of the ES states that the maximum hub height of the turbines will be 198.5m above HAT. If 198.5m is what has been assessed should this not be inserted into the dDCO?	The dDCO will be updated to reflect a turbine hub height of 198.5m and resubmitted at Deadline 2.
20.41	Applicant	In Requirement 5 with regard to cable protection, should the area of impact be stated as well as the volume, and in respect of scour protection?	The Applicant notes this question and the Applicant will amend the table at Part 3, Requirement 5 of the dDCO to include a further column detailing the maximum parameter for the area (in m^2) of cable protection and scour protection. This will be reflected in the next version of the dDCO which will be submitted at Deadline 2 in accordance with the Examination timetable.
20.42	Applicant	Explain (i) why Requirement 11, with regard to scour protection, does not provide figures for individual turbines, and (ii) whether scour protection should be defined, as suggested by MMO [RR-186] for individual structures and aligned with the ES, and if not why not?	(i) The impacts of scour protection are assessed in Chapter 8 Marine Geology, Oceanography and Physical Processes of the ES, and Chapter 10 Benthic and Intertidal Ecology of the ES. The ES considers scour protection and foundation structures combined in order to provide a conservative and meaningful assessment (i.e. scour protection would never be installed in the absence of the foundation structure). The figure in Requirement 11 of the dDCO is the total volume of scour protection provided for the wind turbine generators, accommodation platform, meteorological masts, offshore electrical platforms and LIDAR measurement buoys. The volume must not exceed 53,195,398m3. This figure is based on the assessment of the worst case scenario. Up to a maximum of

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			200 wind turbine generators have been assessed in the ES but it is not yet known how many turbines will be constructed (up to the maximum of 200). It is therefore not necessary or feasible, at this stage, to define the exact parameters for each turbine. (ii) Indicative details of scour and cable protection are included in the Outline Scour Protection and Cable Protection Plan (document 8.16). The details within the outline plan are based on information which is currently available. The precise detail of the scour and cable protection will be secured, prior to commencement of licensed activities, through the final Scour Protection and Cable Protection Plan pursuant to Condition 14(1)(e) of the Generation DMLs (Schedule 9 and 10) and Condition 9(1)(e) of the Transmission DMLs (Schedules 11 and 12). The Scour Protection and Cable Protection Plan must be submitted to the MMO for approval. Comments regarding cable protection are also addressed in the Statement of Common Ground with Natural England (Rep1 - SOCG - 13.1) and the MMO (Rep1 - SOCG - 11.1) respectively.
20.43	Applicant MMO	Requirement 13 (2) Mitigation is offered in respect of wind turbine generators that may affect Ministry of Defence surveillance operations. If the Examining Authority concludes that there will be some adverse effects, and the mitigation offered or agreed with MoD is deemed acceptable, is the drafting adequate to allow for such appropriate mitigation that will not necessarily "prevent or remove" in their entirety those effects?	Requirement 13 of the dDCO restricts development until a suitable mitigation scheme for the Remote Radar Head (RRH) Trimingham is agreed and implemented for the lifetime of the project. The Secretary of State must determine, in consultation with the MoD, whether the mitigation is appropriate. Appropriate mitigation is defined in the dDCO as "*measures to prevent or remove any adverse effects which the operation of the authorised development will have on the air defence radar at Remote Radar Head (RRH) Trimingham and the Ministry of Defence's air surveillance and control operations.*" Accordingly, the Secretary of State may only confirm satisfaction of the mitigation if it prevents or removes adverse effects in their entirety. This decision will be a matter of judgement for the Secretary of State, in consultation with the MoD. The Applicant does, however, take on board the Examining Authority's comment and the Applicant agrees that the wording of the Requirement should be amended to allow for such appropriate and agreed

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			mitigation that will not necessarily prevent or remove in their entirety those adverse effects. The Applicant will seek to clarify in the next iteration of the dDCO at Deadline 2 of the Examination. The Applicant proposed a mitigation solution to the MoD on 23 December 2018 and is currently in discussions with the MoD in relation to this and to agree a suitable form of wording for the amended DCO Requirement. This is noted in the SoCG with the MoD (Rep1 - SOCG - 28.1). The mitigation proposal offered to the MoD is aimed at removing entirely any effect that wind turbine generators will have on MoD surveillance operations.
20.44	Applicant	Requirement 14 prevents offshore works commencing until a written decommissioning programme in compliance with any notice served upon the undertaker by the Secretary of State (SoS) pursuant to section 105(2) of the 2004 Act has been submitted to the SoS for approval. The decommissioning programme set out in the Energy Act 2004 does not cover the inter-tidal zone (the area of the shore between the high and low tide water marks), however, decommissioning of any infrastructure in this zone should be carried out in accordance with any removal conditions attached to a Marine Licence issued under the Marine and Coastal Access Act 2009. How will any decommissioning programme apply to Work 4B, the inter-tidal area?	Since the decommissioning programme referred to in Section 105 of the Energy Act 2004 relates to waters between the mean low water mark and the seaward limits of the territorial sea (see Section 105(1)(a)), Work No. 4B will not be covered by the decommissioning programme as it relates to "subsea cables and fibre optic cables along routes within the Order limits between MLWS and MHWS". Decommissioning of Work No. 4B will therefore need to be included in the onshore decommissioning plan to be submitted to the relevant planning authority (whose jurisdiction extends to MLWS) under Requirement 29(1), unless otherwise agreed between that relevant planning authority and the Secretary of State.
20.45	Applicant	Confirm whether it is intended that Article 15(1) requires notification but not approval of the number of onshore phases of construction.	The Applicant has assumed that the Examining Authority is referring to Requirement 15 – Stages of authorised development onshore, rather than Article 15. The Examining Authority is correct in that Requirement 15 of the dDCO requires notification, rather than approval, of the number of onshore phases of construction. As part of the EIA, the Applicant has assessed up to two phases

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			of onshore construction. It will therefore be for the Applicant to decide how many phases (up to a maximum of two) to use to construct the onshore works. This will be dependent upon, amongst other things, construction timetables and associated commercial agreements.
20.46	Applicant	Should Article 15(2) be amended such that approval of the relevant planning authority is required to the written scheme setting out the stages of the onshore transmission works? (Article 15(5) requires the scheme to be implemented as approved)?	The Applicant has assumed that the Examining Authority is referring to Requirement 15 – Stages of authorised development onshore, rather than Article 15. It will be for the Applicant to decide on the number of stages of onshore construction (within a larger phase). As currently drafted, the dDCO defines the relevant planning authority (**RPA**) as a district council for the area in which the relevant provision of the Order relates. Given that the onshore cable route passes through three district council areas, it would be unworkable to give each respective RPA control over the stages of construction as each RPA may have a different view on where the boundary of a stage should start and finish. The stages will therefore need to be determined by the Applicant and will be influenced by, amongst other things, construction timetables and associated commercial agreements. The wording at Requirement 15(5) will be amended in the next iteration of the DCO, to be submitted at Deadline 2 pursuant to the Examination timetable.
20.47	Applicant	In Requirement 16(5) and (9) should there be a definition of "external electrical equipment"? (Cf definition of "onshore project substation" which does not distinguish external from internal equipment)	The Applicant considers that "external electrical equipment" should remain undefined and be given its plain English meaning. Notwithstanding, the restrictions on height in Requirement 16(5) and 16(9) are the principal factors for determining acceptability of the external electrical equipment in accordance with the parameters assessed in the ES.
20.48	Applicant	Requirement 19 specifies a period of five years during which trees or shrubs should be replaced in specified circumstances. Should in addition a period of ten years be specified in the case of all structural planting and if so, how should the DCO be amended?	A five year replacement / maintenance period is referred to in the OLEMS (document 8.7) and Requirement 19(2) of the dDCO. Five years is seen as a standard practice for replacement planting. This is because most defects will occur in the first five years after planting, and trees or shrubs that survive the first five years tend to be robust and well established.

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			Similar requirements with a five year timeframe have been used on other DCOs including The East Anglia THREE Offshore Wind Farm Order 2017, Hornsea Project Two Offshore Wind Farm Order 2016, and Dogger Bank Creyke Beck Offshore Wind Farm 2015. The Applicant therefore considers that the wording of the Requirement should remain as is currently drafted.
20.49	Norfolk County Council	Requirement 20 Explain why, in relation to this requirement, Norfolk CC as the Highways Authority should be the designated relevant local authority for construction affecting rights of way and trails and how, if at all the requirement should be amended to reflect this.	
20.50	The Applicant	The Environment Agency [RR-117] seeks prior approval for soil management, construction method statements, site and excavated waste management, and surface water drainage plans to ensure that all areas within its remit are adequately addressed and that areas of crossover between environmental elements are captured. Should there be a requirement for it to be consulted and to approve detailed CoCPs to safeguard areas within their remit and if not why not?. Please comment on how the CoCP should be structured and managed and whether Requirement 20 should provide that, for each phase a CoCP and associated pollution control plans are submitted to and approved by the Environment Agency prior to works on that phase commencing?	The wording of Requirement 20 will be updated to reflect this request from the Environment Agency. The new wording will read: "20.—(1) No stage of the onshore transmission works may commence until for that stage a code of construction practice has been submitted to and approved by the relevant planning authority, in consultation with the Environment Agency." The Applicant does not propose to alter the proposed structure of the CoCP. The Environment Agency would only be expected to respond to the elements that fall within its remit when consulted on the contents of the final CoCP for each stage of the works.
20.51	The Environment Agency	Comment on how, if at all, Requirement 20 should be varied in light of your concerns to safeguard areas	

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		within your remit.	
20.52	Applicant	Please comment on Requirement 20 in light of Norfolk CC's relevant representations [RR-123], including whether the definition of relevant local authority, (defined as the district authority), needs to be altered, and are there other instances where a change to substitute or add the local highways authority is appropriate?	The Applicant considers that the district planning authorities will be in a position to seek advice and/or sign-off on any relevant matters that concern the County Council – for instance, in relation to public rights of way. Concerns regarding DCO requirements are also addressed in the SoCG with Norfolk County Council (Rep1 - SOCG - 15.1). The Applicant therefore considers that it is not necessary to amend the wording in Requirement 20 at this stage.
20.53	Applicant	Should Requirement 20(1) be amended to add wording such as "and authorities in whose area the stage or stages fall"?	Requirement 20 requires a CoCP, for that stage of development, to be submitted to and approved by the relevant planning authority prior to commencement of works for that stage. The stages of the onshore transmission works will be defined and submitted to the relevant planning authority pursuant to Requirement 15. The relevant planning authority is defined as: *"the district planning authority for the area in which the land to which the relevant provision of this Order applies is situated*." Accordingly, the submission of the CoCP under Requirement 20 will only apply to the district council in whose area that stage of the works fall. The Applicant therefore considers that the suggested wording would be superfluous.
20.54	Applicant	Should Requirement 20 be amended to ensure that fencing and screening is in place prior to commencement of substantive operations?	Full details of the fencing and screening will be contained in the CoCP, as required by Requirement 20(2)(k) of the dDCO. The EIA has not been reliant on the need to screen the onshore cable route construction works. The visual effects of the works are considered to be short-lived in any one location and the Applicant considers that it would be more disruptive to introduce screening or temporary fencing along the cable route. The Applicant therefore considers that it is not necessary to amend the wording in Requirement 20 at this stage.

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20.55	Applicant	Surface water management is referred to in Works Nos 8B, 10B, 12, the CoCP in Requirement 20, and the protective provisions in Part 7 of Schedule 16 for the Environment Agency and drainage authorities. Comment on the County Council's proposed additional condition/requirement at para 1.34 [RR-123], also having regard to Environmental Statement [APP-229] Appendix 20.4 - Detailed Watercourse Crossing Schedule and table 20.1 re crossing of ordinary watercourses: "*Prior to commencement of development, in accordance with the submitted Environmental Statement for Application for Development Consent - The proposed Norfolk Vanguard Offshore Wind Farm, detailed designs of a surface water drainage scheme incorporating the following measures shall [NB if this is to be included, 'shall', 'will' , 'should' needs to be changed to 'must' in the* *drafting] be submitted to and agreed with the Secretary of State or his delegated approving body. The approved scheme [will] be implemented prior to the first use of the development. The scheme [shall] address the following matters:* *I. Detailed infiltration testing to be undertaken in accordance with BRE Digest* *365 within the study areas for the sub-station and the National Grid sub-station extension for the design of SuDs features.* *II. If infiltration is not possible surface water runoff rates [will] be attenuated to the pre development 1 in 1 year rate (or 2 l/s/ha). Where applicable confirmation [should] be sought from the*	The Applicant does not consider it necessary to include an additional Requirement in the dDCO for the approval of a detailed design for a surface water drainage scheme. It is considered that this is already adequately secured through: • Requirement 20(2)(i) and section 11 of the Outline Code of Construction Practice (Document 8.1) which requires approval of a surface water drainage plan (see paragraph 118); and • Requirement 25 which requires approval of a scheme and programme for crossing, diversion and subsequent reinstatement of any designated main river or ordinary watercourse.

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		Internal Drainage Board that the proposed rates and volumes of surface water runoff from the development are acceptable. *III. Provision of surface water infiltration / attenuation storage [should] be sized and designed to accommodate the volume of water generated in all rainfall events up to and including the critical storm duration for the 1 in 100 year return period, including allowances for climate change, flood event.* *IV. Detailed designs, modelling calculations and plans of the of the drainage conveyance network in the:* • *1 in 30 year critical rainfall event to show no above ground flooding on any part of the site.* • *1 in 100 year critical rainfall plus 40% climate change event to show, if any, the depth, volume and storage location of any above ground flooding from the drainage network ensuring that flooding does not occur in any part of a building or any utility plant susceptible to water (e.g. electricity equipment required at the converter / booster station and substation) within the development.* *V. The design of any drainage structures [will]include appropriate freeboard allowances. Plans to be submitted showing the routes for the management of exceedance surface water flow routes that minimise the risk to people and property during rainfall events in excess of 1 in 100 year return period*	

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		VI. Details of how temporary works or temporary storage areas that will *generate surface water runoff will be controlled to prevent a temporary increased risk of flooding. These details [will] also include what strategy/ plans will be provided to reinstate land to the pre-development state.* *VII. Finished ground floor levels of the converter / booster station and substation [should] have a freeboard such that all infrastructure is above expected flood levels from all sources of flooding, including fluvial flooding associated with the ordinary watercourse, tidal flooding and any above ground storage or flooding from the proposed drainage scheme.* *VIII. Details of how all surface water management features are to be designed in accordance with The SuDS Manual (CIRIA C697, 2007), or the updated The SuDS Manual (CIRIA C753, 2015), including appropriate treatment stages for water quality prior to discharge.* *IX. A maintenance and management plan detailing the activities required and details of who will adopt and maintain the all the surface water drainage features for the lifetime of the development. This [will] also include the ordinary* *watercourse and any structures such as culverts within the development boundary."*	
20.56	Applicant	Requirement 23 refers to an archaeological written scheme of investigation to be approved by the	Requirement 23 of the dDCO states: "23 – (1) ***No stage of the onshore transmission works may commence until for that stage an archaeological written scheme of investigation (which accords***

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		relevant planning authority after consultation with Historic England and Norfolk County Council. Please comment on the County Council's proposed additional requirements: A) No development [shall] take place other than in accordance with the submitted and approved Outline Written Scheme of Investigation: Archaeology and Cultural Heritage (Onshore). And, separately, B) The development [shall] not be operated until the site investigation and post investigation assessment has been completed in accordance with the programme set out in the archaeological written scheme of investigation approved under (A) and the provision to be made for analysis, publication and dissemination of results and archive deposition has been secured.	***with the outline written scheme of investigation*** *(onshore)) has, after consultation with Historic England and Norfolk County Council, been submitted to and approved by the relevant planning authority".* *(2) In the event that archaeological site investigation is required, the scheme must include details of the following—* (a) *an assessment of significance and research questions; and* (b) *the programme and methodology of site investigation and recording;* (c) ***the programme for post investigation assessment****;* (d) ***provision to be made for analysis of the site investigation and recording****;* (e) ***provision to be made for publication and dissemination of the analysis and records of the site investigation****;* (f) ***provision to be made for archive deposition of the analysis and records of the site investigation****. "* [emphasis added] The wording proposed for Requirement 23 has subsequently been agreed with Norfolk County Council in the Statement of Common Ground submitted at Deadline 1 (Rep1 - SOCG - 15.1).
20.57	Applicant	How is it proposed within Requirement 23 or elsewhere in the dDCO to secure that all mitigation measures included in the outline archaeological Written Schemes of Investigations (WSIs), are secured?	The measures outlined in the outline archaeological Written Scheme of Investigation (onshore) (document 8.5) are secured through Requirement 23 of the dDCO by way of a final written scheme of investigation, which will be submitted (after consultation with Historic England and Norfolk County Council) to, and approved by, the relevant planning authority prior to commencement of that stage of onshore transmission works. The measures outlined in the outline archaeological Written Scheme of Investigation (offshore) (document 8.6) are secured through Condition 14(1)(h) (Generation DML, Schedule 9-10) and Condition 9(1)(h) (Transmission DML, Schedule 11-12) of the dDCO by way of a final written scheme of investigation, which will be submitted to and approved by the MMO (after consultation with the statutory historic body) prior to commencement of licensed activities.

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20.58	Applicant	With regard to the outline WSI (onshore) [APP-029], how is it proposed to ensure that all necessary mitigation measures are made enforceable through the dDCO and are agreed with the relevant local authority archaeological advisors?	The Applicant would refer the Examining Authority to the response to question 20.57.
20.59	Applicant	Requirement 26 Please justify in relation to each of the activities specified, the power to work outside normal construction hours set out in 26(2).	Requirement 26(2) of the dDCO provides that the power to work outside of normal construction hours will only apply for essential or non-intrusive activities. The Applicant has provided examples where these activities may be relevant in relation to each subsection of Requirement 20(2), as follows: (a) Once concrete pouring, such as that required at the onshore project substation, has begun for the basis of foundations or other related works, it will be necessary to complete those works in a continuous period as dictated by aspects such as concrete curing requirements. Equally, once the process of cable pulling has commenced and a cable has begun to be pulled into a duct, it is necessary to complete the installation in a single phase which may extend beyond the working hours if unforeseen issues occur. Once drilling has begun, it may not be suitable to stop the drilling process until the installation is complete – for instance, the drill head (and/or other technical elements) may need to be maintained at a certain level or pressure for a successful drill completion. (b) The same principle applies for the trenchless installation techniques as for drilling outlined in (a) above. (c) The same principle applies for the onshore transmission works as for drilling outlined in (a) above. (d) The onshore project substation is a critical piece of infrastructure and fitting out of the onshore project substation may be required outside of working hours to maintain programme and coincide with the National Grid connection dates.

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			(e) Outages of the National Grid substation will be required to allow for the extension to the National Grid substation (Work No. 10A). This outage may be conducted outside of working hours to minimise risk to National Grid's ability to supply electricity. (f) Similarly, outages of the National Grid overhead lines may be required outside of normal working hours to allow the overhead line modification works (Work No. 11) to be completed with less risk of interference to National Grid's ability to supply electricity. (g) Abnormal loads, such as transformers, will typically be required outside of working hours to minimise impacts on the road network. (h) Access to the onshore transmission works site may be required outside of working hours to ensure maximum and efficient periods of work (daily start up and shut down) can be completed within the prescribed working hours. (i) Once underway, aspects such as the filling of transformers with insulation mediums and other time critical electrical installation requirements will need to continue. This may extend outside of working hours. (j) Closure of roads may be conducted outside of normal working hours to minimise impact to road users. Emergency works should be conducted at the time of the emergency, which may be outside of working hours.
20.60	Applicant	Is it intended to vary construction hours where the Works are in proximity to residential properties? If so, please provide details and explain how this will this be secured by the DCO?	Potential disturbance effects in proximity to residential properties have been assessed in the relevant ES Chapters, based on the construction hours set out in the draft DCO at Requirement 26. Where relevant, mitigation measures have been identified to ensure that any disturbance effects are reduced to non-significant. Mitigation measures are captured within the OCoCP (document reference 8.1) and secured through Requirement 20 of the draft DCO. On this

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			basis, the Applicant does not intend to vary construction hours as set out in Requirement 26.
20.61	Applicant	Requirement 29 Explain how the permanent cessation of commercial operation of the onshore transmission works will be verified.	The onshore transmission assets will be transferred to an Offshore Transmission Owner (**OFTO**). The OFTO operates under a transmission licence, which is regulated by Ofgem. The transmission licence will have a fixed term. When the licence comes to an end, Ofgem will determine whether a new licence should be made available or whether the transmission connection should be decommissioned. The future owner of the transmission works will be able to provide evidence of a renewed licence application (or otherwise) to the relevant planning authority to verify its intentions for ongoing commercial operations or permanent cessation of commercial operations.
20.62	Applicant and relevant planning authority	Comment on whether it is necessary and/or desirable for the undertaker to notify the relevant planning authority within 28 days of its determination to cease commercial operations	Requirement 29 states that the relevant planning authority must be provided with an onshore decommissioning plan within six months of the permanent cessation of the commercial operation of the onshore transmission works. The relevant planning authority will therefore be notified in due course through submission of the onshore decommissioning programme. Accordingly, the Applicant does not consider it necessary to provide a separate advance notification to the relevant planning authority.
20.63	Applicant	Justify why a period of 6 months from the date of permanent cessation of operations is necessary within which to submit an onshore decommissioning plan.	The decommissioning plan needs to consider and take account of consultation with relevant bodies (for example stakeholders, landowner and the local councils) together with engagement with the supply chain, who will ultimately conduct the works, before the decommissioning plan is ready for submission. The decommissioning plan must be implemented as approved so it will likely be in the Applicant's (or their successors') interest to submit this at their earliest convenience.
20.64	Applicant	ES Chapter 5 – paragraph 5.5.2.9 identifies that the cabling can simply be pulled from the ducting for recycling. What assessment has been made of the risk that the seaward, and, over the long term, landward ducts and infrastructure will be exposed and will require	The design of the landfall works will adopt a highly conservative approach to ensure cables and infrastructure do not become exposed as a result of erosion during the operation of the wind farm (as outlined in response to Q16.27 and in the Landfall Info Sheet, Additional Submission document reference ExA_AS;10.D1.8B). A construction method statement, including for cable

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		removal, identifying what funded mechanisms are proposed if any for the removal of historical/redundant infrastructure.	landfall, must be agreed with the MMO prior to construction, as required under the DML Schedules 11 and 12 Part 4 Condition 9(c)(iv). Decommissioning of the landfall works will be included in the onshore decommissioning plan to be submitted to the relevant planning authority (whose jurisdiction extends to MLWS) under Requirement 29(1), and must then be implemented as approved. The appropriateness of removing the ducts at the point of decommissioning the landfall works or at a later point, would be agreed as part of the decommissioning plan approved by the relevant planning authority under Requirement 29.
20.66	Relevant planning authority	Please comment on the acceptability of Article 31 which deals with amendments to approved details	
20.67	Relevant planning authority	Requirement 31 can be read in conjunction with Schedule 15 which relates to consultation periods for discharge of Requirements. Do you intend to consult persons/bodies for the purposes of discharging any Requirement or agreeing to an amendment or variation, who are not named in the Order as "requirement consultees"? If so consider and comment as to whether they should be added as a "requirement consultee", specifying where in the Order any such change is necessary and why.	
20.68	Applicant	Schedules 9 to 12 Deemed marine licences In the event that a transfer of benefit takes place, (i) what mechanisms would be in place to ensure that two different windfarm developers working in the same area will work in co-operation especially with regard to in-combination effects and (ii) what consideration has been given to securing such mechanisms within the dDCO/DML's?	In the event that a transfer of benefit of the Order or DMLs takes place, the transferee will remain subject to the relevant obligations of the Order or DMLs. Article 6(9) provides that "the exercise by a person of any benefits or rights conferred in accordance with any transfer or grant under paragraph (1) or (2) are subject to the same restrictions, liabilities and obligations as would apply under this Order if those benefits or rights were exercised by the Undertaker".

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			Article 6(14) requires notice of any transfer to be given to the MMO and relevant planning authority if such transfer or grant relates to the exercise of powers in their area. Both the MMO (under DML Condition 14) and the relevant planning authority (under Requirements 16 and 17) would respectively have the right to approve the manner of implementation of the works offshore and onshore. It would also be in the commercial interests of the transferor to ensure that the transfer agreement contains appropriate provisions on cooperation between the two wind farm developers.
20.69	Applicant	Schedules 9 to 13 A condition in each draft licence is concerned with driven or part-driven pile foundations and harbour porpoise as a protected feature of the Southern North Sea candidate Special Area of Conservation. Comment on the relevant representations of 03 August 2018 from Whale and Dolphin Conservation [RR-013], and in particular each of its key recommendations, explaining what consideration has been given to such matters, where they are included within the dDCO, and, where the Applicant considers it appropriate, how the dDCO could be amended to secure the recommendations or otherwise justifying their non-inclusion.	Section 2 of Appendix 20.3 (document reference ExA;WQApp20.3;10.D1.3) provides the Applicant's response to the WDC Relevant Representation. In summary: • The Information to Support HRA report (document reference 5.3) provides the assessment of effects on the Southern North Sea candidate cSAC/SCI; • As discussed in responses to Q4.3, based on current technology and market availability, a monopile solution is likely to be the most economical solution available for the size of wind turbines proposed and water depths within the Norfolk Vanguard offshore wind farm sites. Removing piled foundations from the consent envelope for Norfolk Vanguard would therefore increase the cost of energy to the consumer and significantly affect the commercial viability of the project. • The SIP, required under DCO Schedules 9 and 10 Part 4 condition 14(m) and Schedules 11 and 12 Part 4 condition 9(l), in accordance with the In-Principle SIP (document reference 8.17), provides the framework for agreeing mitigation measures with the Marine Management Organisation (MMO) prior to construction. The SIP will be based on the best available information and guidance at that time. • Reduction of noise at source is included as a potential mitigation measure in the In-Principle SIP (document reference 8.17).

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			• DCO, Schedules 9 and 10 Part 4 Condition 14(f) and Schedules 11 and 12 Part 4 condition 9(f), requires a MMMP, based on the draft MMMP (document reference 8.13) to be agreed with the MMO prior to construction. This provides the framework to identify appropriate marine mammal mitigation based on the best available information at that time. • In relation to the discharge of Conditions in the DMLs, the MMO will be the relevant authority and it is considered that the MMO would consult relevant nature conservation bodies where appropriate. • The current JNCC guidance for minimising the risk of injury to marine mammals from piling noise (2010) states: *"When piling at full power, there is no requirement to cease piling or reduce the power if a marine mammal is detected in the mitigation zone."* The MMMP provides the framework to identify appropriate marine mammal mitigation based on the best available information and guidance prior to construction. • The IPMP (document 8.12) provides an appropriate framework to agree monitoring requirements with the MMO prior to construction. Section 4.5.2 of the IPMP acknowledges that there may be little purpose or advantage in site specific monitoring and a strategic approach may be more appropriate in providing answers to specific questions where significant environmental impacts have been identified at a cumulative/in-combination level. • Noise monitoring would be undertaken as stated in Condition 19(1) of the DML. Section 4.6 of the IPMP outlines the proposals for construction noise monitoring (if pile driving is required) of the first four piled foundations of each foundation type to be installed. If required, underwater data will be recorded that allows a comparison with the assessed underwater noise modelling with analysis using un-weighted metrics, such as peak sound pressure level, sound exposure level and peak to peak pressure level. • No mortalities of marine mammals are expected as a result of Norfolk Vanguard. In the unlikely event that a post mortem showed Norfolk

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			Vanguard to be the cause of death, the MMO would have the power to issue a stop notice under Section 102 of the Marine and Coastal Access Act, should they determine that this represents serious harm to the environment. • Reporting of monitoring results will be submitted to the MMO at a timeframe agreed through the Construction Programme and Monitoring Plan (as required under DCO Schedules 9 and 10 Part 4 Condition 14(1)(b) and Schedules 11 and 12 Part 4 Condition 9(1)(b).
20.70	Applicant	(i) Comment on the Wildlife Trust's recommendation [RR-172] that all offshore wind farm developments should be conditioned as part of their DCO to pay into an underwater noise levy which would fund and deliver strategic mitigation and monitoring and establish an implementation group. (ii) Clarify the position with regard to ES Appendix 12.6 which suggests there is potential for tens of thousands of harbour porpoise to be impacted by underwater noise disturbance. (iii) What mechanisms are appropriate to deliver strategic monitoring and mitigation to understand and manage in-combination underwater disturbance impacts, or if none explain why?	(i) There is currently no mechanism for a levy to deliver strategic mitigation, this is a recent draft proposal by The Wildlife Trust that has not yet been fully consulted on with the Industry, Regulators or Statutory Nature Conservation Bodies. Therefore it is not considered appropriate to condition this in the DMLs contained within the draft DCO. (ii) The assessments in ES Appendix 12.6 are, as stated, theoretical worst-case scenarios, however it is considered logistically impossible for 26 offshore wind farms to all undertake piling at exactly the same time, e.g. due to the availability of suitable vessels to undertake pile driving. Therefore, the 'likely overlap' worst-scenario presented in Chapter 12 of the ES is deemed to be highly conservative and this has been used to define the cumulative disturbance magnitude as a realistic worst-case scenario. The approach to the marine mammal Cumulative Impact Assessment (**CIA**) is agreed through the following SoCGs: • Natural England • MMO (iii) The SIP which is required under dDCO Schedules 9 and 10 Part 4 condition 14(1)(m) and Schedules 11 and 12 Part 4 condition 9(1)(l), in accordance with the In Principle SIP (document reference 8.17), will set out the approach to deliver any project mitigation or management measures in relation to the Southern North Sea cSAC/SCI and must be agreed with the MMO prior to construction. Strategic mitigation, managed by the Regulator, is a potential option outlined in section 6.1.3 of the In Principle SIP.

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20.71	Applicant	Comment on whether, in Part 3 condition 2 (1) (e) the number of cable crossings should be limited to the number assessed in the ES.	The Applicant considers that it is not necessary to define the number of cable crossings. The total volume of cable protection is considered the key factor for assessment. Cable protection is defined in the DCO as: *"measures for offshore cable crossings and where cable burial is not possible due to ground conditions, to protect cables and fibre optic cables and prevent loss of seabed sediment by use of grout bags, protective aprons, mattresses, flow energy dissipation (frond) devices or rock and gravel dumping;".* The cable protection maximum parameters are outlined in Requirement 5 of Schedule 1 of the DCO. Accordingly, the maximum number of cable crossings has been taken into account in defining the maximum volume of cable protection and is therefore a component of Requirement 5(1) and the DMLs. Furthermore, to the extent necessary, any measures to deal with the particular cable crossing will be outlined within the Scour Protection and Cable Protection Plan, which is to be agreed with the MMO and secured through condition 14 (Schedules 9-10) and condition 9 (Schedules 11-12) of the DMLs. The Applicant therefore considers that the DCO should remain as it is currently drafted in this respect.
20.72	Applicant	Comment on whether in Part 3 condition 2 (2) (c) it is appropriate to give disposal as a total volume, having regard to NE's RR's at Appendix 5.	Natural England's comments regarding including a limit on the drill arising disposal volume in the DCO is acknowledged and the dDCO will be updated and submitted at Deadline 2.
20.73	Applicant	Should Part 4 condition 8 (1), whilst listing the maximum scope of the project for both potential phases, also specify the total maximum array cables, cable protection and cable crossings?	The dDCO, at Requirement 5, includes the maximum length of array cables and volumes (in m^3) of cable protection. The Applicant would refer the Examining Authority to the response to Q.20.72 in relation to cable crossings.
20.74	Applicant	Part 4 condition 8 (2) requires the undertaker to inform the MMO if the project is to be built in one phase or two. Should Natural England also be included in this notification and if not why not?	In relation to the discharge of Conditions in the DMLs, the MMO will be the relevant authority. Certain Conditions provide for consultation with specified bodies on the discharge of that Condition, such as Trinity House, the MCA, and

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			the relevant statutory body. It is considered that the MMO would consult relevant statutory nature conservation bodies where appropriate.
20.75	Natural England	Please comment on the suggestion that you be included in the notification referred to in the preceding question.	
20.76	Applicant	Comment on the MMO's recommendation [RR-186] that a condition is included to restrict the maximum hammer energy to the worst case scenario (5,000kJ) assessed in the ES: *In the event that driven or part-driven pile foundations are proposed to be used, the hammer energy used to drive or part-drive the pile foundations must not exceed 5,000kJ*"	The Applicant agrees that hammer energy should be referred to within the conditions in the DMLs. The Applicant is reviewing the proposed wording and the Applicant will submit a revised dDCO at Deadline 2 of the Examination timetable.
20.77	Applicant	In Part 4, condition 9(7), does the Applicant agree that Kingfisher should be informed at the beginning of a major stage of the project, such as operations and maintenance or any works which represent a risk to fishermen?	The Applicant considers the wording of condition 9(7) in Schedules 9 and 10 and Condition 4(7) in Schedules 11 and 12 of the Draft DCO to be suitable and appropriate. This follows the standard condition wording agreed for other offshore wind farms to date, as outlined below: *7) The undertaker must inform the Kingfisher Information Service of Seafish by email to kingfisher@seafish.co.uk of details regarding the vessel routes, timings and locations relating to the construction of the authorised scheme or relevant part—* *(a) at least fourteen days prior to the commencement of offshore activities, for inclusion in the Kingfisher Fortnightly Bulletin and offshore hazard awareness data; and* *(b) as soon as reasonably practicable and no later than 24 hours of completion of all offshore activities.* *Confirmation of notification must be provided to the MMO within five days.*
20.78	MMO	Supply wording in respect of your proposed amendment to Part 4, condition 9(7) of Schedules 9 to 12 to the dDCO	

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20.79	Applicant	Should Condition 12 be amended as suggested by MMO to ensure that no man-made material is disposed to sea ("*any man-made material must be separated from the dredged material and disposed of on land*"), and if not why not?	The Applicant considers that this is covered by DML Condition 12(5) (Generation DML, Schedule 9-10) and DML Condition 7(5) (Transmission DML, Schedule 11-12) which states that: *"The undertaker must ensure that only inert material of natural origin, produced during the drilling installation of or seabed preparation for foundations, and drilling mud is disposed of within site disposal reference [XX] within the extent of the Order limits seaward of MHWS. Any other materials must be screened out before disposal at this site."* This has been agreed with the MMO - see Appendix 1 of the MMO SoCG (document reference Rep 1 –SOCG –11.1).
20.80	Applicant	The disposal return date in Condition 12(4) of 31 January for a period August to January inclusive is suggested by the MMO to be revised to the 15th of the month following the disposal period. Does the Applicant agree the consequential amendment proposed by MMO: "*The undertaker must inform the MMO of the location and quantities of material disposed of each month under this licence. This information must be submitted to the MMO by 15 February each year for the months August to January inclusive, and by 15 August each year for the months February to July inclusive*." And if not why not?	The Applicant is content to change this wording and this will be reflected within the revised dDCO at Deadline 2 of the Examination timetable.
20.81	Applicant	Should Part 4 condition 12 (6) be amended, in light of NE's RR's that the use of similar materials minimises the impact on the environment, to include the additional wording: '*where reasonably practicable any rock material used will be similar to material naturally present in the location'* and if not why not?	DML Part 4 Condition 12(6) requires the undertaker to ensure that any rock material used in the construction of the authorised scheme is from a recognised source, free from contaminants and containing minimal fines. The Applicant considers that this wording provides an appropriate degree of protection to the marine environment, while allowing for the selection of materials that are fit for purpose.

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20.82	MMO	Clarify your reference to Condition 13(2) and "the survey" in connection with your suggestion that where the cable route crosses the Haisborough, Hammond and Winterton SAC, the survey should extend outside the Order Limits to ensure any reef known to be present has been unaffected by the works.	
20.83	Applicant	Condition 14 (1) (a) refers to the design plan which outlines the micro-siting requirements. Should Natural England be named as a consultee on this design plan and if not why not?	See the response to Q6.7.
20.84	Applicant	Conditions 14 (1) (b) (iii) and (aa) cover the requirement for pre-construction monitoring to be agreed 4 months prior to the first survey. Assess whether in light of NE's comments [RR-106] a different approach is appropriate and comment on the benefits argued for, of an extended period for submitting monitoring plans prior to the first survey and what, if any, alternative period is appropriate.	The Applicant refers the Examining Authority to the answer to Q6.8, which also applies in this context.
20.85	Applicant	Condition 14 (1) (c) and (g) require submission of cable installation plans but not to discuss ground preparation works and potential disposal activities involved. Comment on NE's RR's on this matter and whether: (i) the plans should be required to provide detailed information on any disposal works involved, methodology and proposed location of disposals. (ii) a condition should be added to ensure a sandwave levelling, seabed preparation and disposal plan is provided as detailed in NE's RR's; and if so comment on the proposed wording:	In answer to points i and ii, the Applicant considers preparation works such as sandwave levelling and disposal to be a component of the cable installation strategy and therefore included in DCO Schedules 9 and 10 Part 4 Condition 14(1)(g)(ii) *"a detailed cable (including fibre optic cables) laying plan for the Order limits, Incorporating a burial risk assessment to ascertain suitable burial depths and cable laying techniques, including cable protection"* N.B. this also applies to the Transmission DMLs (Schedules 11 and 12, Part 4 condition 9(1)(g)(ii)).

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		"(*vii) in the event that sandwave levelling, seabed preparation or disposal is required within the Haisborough Hammond and Winterton Special Area of Conservation, the licence activities, or any phase of those activities must not commence until a detailed methodology and updated assessment of the impacts has been submitted to the MMO and the MMO is satisfied that the methodology includes such mitigation and monitoring as is necessary to avoid adversely affecting the integrity of a relevant site."*	
20.86	Applicant	Condition 14 (g) (ii) requires submission of cable installation methodology. Should it be amended to require the plan to provide the methodology for seabed preparation works such as pre-lay grapnel runs, seabed levelling and disposal activities and if not, why not?	As stated in response to Q20.85, the Applicant considers preparation works such as sandwave levelling and disposal to be a component of the cable installation strategy and therefore included in 14(1)(g)(ii). N.B. this also applies to Schedules 11 and 12, 9(1)(g)(ii).
20.87	Natural England	Explain, in your relevant representations [RR-106] "*also allow amendments to the plan to be reviewed in context with the existing volumes and the success to the cable protection and scour protection deployed*" and clarify whether the dDCO needs to be amended in this regard and if so how.	
20.88	Natural England	Justify the proposed amendment to Condition 14 (e) (scour protection and cable protection plan) to require an as-built report to be submitted after completion of cable installation works, to confirm the locations and volumes deployed and thus confirm adherence to the approved plan.	
20.89	Applicant	Condition 14 (1) (l) requires submission of an ornithological monitoring plan, however as the timing of this report is not stipulated, it would, under Condition 15 (2) require to be submitted 4 months	The Applicant notes NE's comment. The Applicant, however, believes that the four month time frame conditioned within the DMLs is appropriate and proportionate to allow the MMO, in consultation with NE where relevant,

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		prior to construction. Comment on whether a longer period of 18 months as suggested by Natural England is appropriate in light of NE's suggestion that ornithological monitoring plans often require a full year's survey pre construction, and if not what alternative period if any is appropriate.	sufficient time for stakeholder consultation and the provision of comments, whilst ensuring no unnecessary delay to the commencement of development. In any event, the Applicant will endeavour to submit plans, programmes, protocols, schemes and/or statements to the MMO in good time and in advance of the four month minimum period. It should also be noted that Condition 15(2) (Generation DML) and Condition 10(2) (Transmission DML) allows for the determination period to be extended if agreed between the parties.
20.90	Applicant	Condition 14 (j) requires submission of an operations and maintenance plan every 3 years. Comment on whether, in light of NE's RR's as to significant concerns related to the designated sites and the presence of annex I habitat along various areas of the export cable, its proposal for consultation and updated assessments is acceptable and if not why not.	The RR comment states: *Natural England notes that condition 14 (j) requires the submission of an operations and maintenance plan every 3 years and that based on the in-principle operations and maintenance plan all activities permitted (including cable repair and reburial) would not require a consultation. Given the significant concerns related to the designated sites and the presence of annex I habitat along various areas of the export cable, Natural England does not consider it appropriate for such works to proceed without further consideration and updated assessments. Natural England would like to engage with the applicant and the MMO on potential changes to the Outline Operations and Maintenance Plan and the DML conditions to ensure that important habitats are not unduly impacted during the operations phase of the project.* The Applicant acknowledges this comment and will revise the Outline Operations and Maintenance Plan (document 8.11) for resubmission during the Examination following further discussion with NE and the MMO.
20.91	Applicant	Condition 15 (1) requires all archaeological reports to be agreed with the statutory historic body. Could another condition be added requiring all ecological reports be agreed with the statutory nature conservation body?	In relation to the discharge of Conditions in the DMLs, the MMO will be the relevant discharging authority. Certain Conditions provide for consultation with specified bodies on the discharge of that Condition, such as Trinity House, the MCA, and the relevant statutory body. Ecological reports will be submitted to and approved by the MMO, and it is considered that the MMO would consult relevant statutory nature conservation bodies where appropriate.

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20.92	Applicant	Should all pre-construction monitoring reports be submitted to the MMO six months before commencement of works? (Condition 14(j))	Further to the responses to Q6.8 and Q20.84, the Applicant considers that the four month time frame conditioned within the DMLs is appropriate and proportionate to allow the MMO sufficient time for stakeholder consultation and the provision of comments, whilst ensuring no unnecessary delay to the commencement of development. The four month time period is also contained in a number of other offshore wind farm DCOs.
20.93	Applicant	Condition 15 (2) requires all pre-construction plans to be submitted 4 months prior to construction. In light of the reasons stated by NE as to the increased size and complexity of projects such as the Project, should this period be extended and if so by what period, and if not why not?	Further to the responses to Q6.8 and Q20.84, the Applicant considers that the four month time frame conditioned within the DMLs is appropriate and proportionate to allow the MMO sufficient time for stakeholder consultation and the provision of comments, whilst ensuring no unnecessary delay to the commencement of development. The four month time period is also contained in a number of other offshore wind farm DCOs.
20.94	Applicant	Condition 16 requires a post construction survey of the seabed to be submitted to the MCA. This appears to be very similar to the requirements of Condition 20. Is there a need for a separate condition?	Condition 16 (of the Generation DML, Schedule 9-10) refers to a swath bathymetric survey to be carried out in accordance with IHO Order 1a, with the data and survey reports to be shared with the MCA and UKHO; whereas Condition 20 links with the discharge of the construction programme and monitoring plan pursuant to Condition 14(1)(b) and requires approval by the MMO. Condition 20 includes various different requirements and details on the proposed post-construction surveys, including methodologies and timings, and a proposed format for providing reports on the results. In the interests of clarity, it is therefore appropriate to separate these obligations into different conditions; the former relates to matters concerning navigation, whereas the latter is a more detailed condition relating to the construction programme and monitoring plan and which falls within the primary jurisdiction of the MMO.
20.96	Applicant	Condition 19 (3) Please comment on the reasons given by NE for its proposed amendment and the proposed wording: *(3) The results of the initial noise measurements monitored in accordance with sub-paragraph (1) must be provided to the MMO within six weeks of the*	The Applicant is required to submit a construction programme and monitoring plan to the MMO for approval at least four months prior to commencement of any licensed activities (Condition 14(1)(b) of the Generation DMLs, and Condition 9(1)(b) of the Transmission DMLs). In discharging this condition, and before the MMO can approve the construction programme and monitoring plan, the Applicant must submit details (which accord with the offshore in principle monitoring plan (document 8.12)), for approval by the MMO in

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		installation of the first four piled foundations of each piled foundation type. The assessment of this report by the MMO will determine whether any further noise monitoring is required. If, in the opinion of the MMO in consultation with Natural England, the assessment shows significantly different impact to those assessed in the ES or failures in mitigation all piling activity must cease until an update to the MMMP and further monitoring requirements have been agreed.	consultation with relevant statutory bodies, of the proposed monitoring and surveys for the construction of the authorised scheme. It is considered likely that the MMO will consult Natural England at this stage. The timings, methodologies, and details of further actions in the event of unacceptable levels of noise would therefore be included in the plan provided pursuant to Condition 14(1)(b) or Condition 9(1)(b) of the DMLs. The MMO would have control, after consulting with the relevant statutory bodies, as to whether to approve the details and methodology within the said plan. The Applicant therefore does not believe that it is necessary to amend the wording of the dDCO at this stage.
20.97	Applicant	Part 4, Condition 19(3) is interpreted by MMO (2.22) such that activities can continue in the event that the results of the as-built noise monitoring fail to confirm the effectiveness of current modelling and mitigation. Please comment, including on the suggested amendment: "*If, after expert review, the results received 6 weeks after the completion of the first four piles are deemed to be unacceptable, then the MMO will look to suspend all further piling activities in the event that the developer has not already voluntarily done so*"	The Applicant would refer the Examining Authority to the response to question 20.96 as the same principles apply in this context.
20.98	MMO	Justify your proposed amendment to Part 4, Condition 19(5): "*In the event that driven or part-driven pile foundations are proposed to be used, a marine mammal mitigation protocol (MMMP), including details of soft start procedures with specified duration periods following current best practice as advised by the relevant statutory nature*	

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		conservation bodies."	
20.99	Applicant	Does the Applicant agree the proposed amendment by MMO to Condition 19(5) and if not why not?	The MMO's suggested wording refers to adding specific reference to using soft start mitigation. Given NE's recent potential concerns with the use of soft start, as referred to in Q4.1, the Applicant suggests the wording should remain as per the dDCO. As stated in response to Q4.1, the MMMP provides the framework to agree mitigation measures based on the latest guidance at that time. This has since been agreed with the MMO as shown in Appendix 1 of the SOCG (document reference Rep1 - SOCG - 11.1 App1).
20.100	Applicant	Part 3 condition 2 (2) lists cable protection, however the export cables include 2 pipeline crossings. Should this provision be amended and should the number of pipeline and cable crossings be restricted to the parameters assessed in the ES?	The maximum number of cable and pipeline crossings has been taken into account in defining the maximum volume of cable protection and is therefore a component of the cable protection volumes provided in dDCO Schedule 1 Part 3 Requirement 5(1) and Schedules 9 and 10 Part 4 Condition 3.
20.101	Applicant	Part 3 condition 3 describes the limits of the project. Should it also limit the project to a maximum of 6 export cables and maximum length of cable of 400km, as detailed in the ES?	Schedules 11 and 12, Part 3, paragraph2(3) provides the details of Work no 4A, which includes the maximum of four export cables. Schedules 11 and 12, Part 4, Condition 2 provides the maximum length of export cables (400km).
20.102	Applicant	If the Change Report is accepted [AS-009] what would be the consequential amendments to the DCO Order Limits?	The Change Report details onshore amendments to a number of cable route accesses, as requested by landowners; minor route amendments, as requested by landowners; increases to the areas within which the National Grid towers will be located (resulting in equivalent increases to the areas subject to permanent compulsory acquisition); and inclusion of permanent new rights for that part of the overhead line that is to be repositioned, as requested by National Grid. The Change Report provides an assessment of the implications of each amendment on other relevant application documents, including relevant updates to the DCO Order limits. It should be noted that none of the proposed amendments have been found to result in any change to the impacts assessed in the ES, or any relevant DCO application documents as submitted in June 2018.

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			Figures 1 – 9 of the Change Report present the amendments required to the Order limits as a result of each proposed change. The Applicant intends to submit revised drafts of the Onshore Works Plans (document reference 2.04) and corresponding updated dDCO, as well as any other relevant plans (e.g. Access to Works Plan (document reference 2.05)) at Deadline 2. There would be no change to the Order limits offshore. The Applicant would also refer the panel to the response to Q1.1.
20.103	Maritime and Coastguard Agency	The dDML's refer to Emergency Response & Co-operation Plans. Are you proposing an amendment in respect of a SAR checklist to be agreed before construction starts to include the requirement for an approved Emergency Response Co-operation Plans (ERCOP)? If so please clarify what part of the dDCO and/or DML's you consider should be amended and provide your proposed wording.	
20.104	Applicant	Please comment on the MCA's suggestion relating to Emergency Response Cooperation Plans (ERCOP)'s [RR-187].	The Applicant notes that the provision of the Emergency Response Cooperation Plans (**ERCOP**) is currently a standard DML condition contained within other offshore wind farm DCOs and this requirement is included in Condition 15(5) of the DMLs.
20.105	MCA	Justify your proposal for linear progression of the construction programme with reference to any adverse effects of disparate construction sites across the development area, and the need for an agreed construction plan to be in place ahead of any works commencing, explaining how the dDCO/DML's should be amended.	
20.106	Applicant	Comment on the MCA's suggestion [RR-187] relating to the construction programme.	The MCA note in their Relevant Representation that they would expect to see some form of linear progression of the construction programme, avoiding disparate construction sites across the development area, and request that the DCO needs to include the requirement for an agreed construction plan to be in place ahead of any works commencing.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			The Applicant's preference would be for some form of linear progression of the construction programme, however the two-phase programme is considered to be a possible and necessary scenario for construction of the project for the following key reasons: • CfD auctions – There is no guarantee that Norfolk Vanguard will be able to secure CfD support for the full project of up to 1,800MW in one allocation round. At present, CfD bidding rules impose a limit of 1,500MW on the size of projects that can receive CfD support. Further clarity is therefore required in relation to future CfD auction rounds. • Supply chain capability – At 1,800MW, Norfolk Vanguard is substantially larger than any offshore wind farm built to date. There is therefore uncertainty whether the supply chain will be able to deliver such a large project in a short programme. In order to limit programme risks, and to minimise costs, it may be necessary to split the construction of the project into two distinct phases. The methodology for the construction programme would be agreed with the MMO before the works commences as secured in Schedule 9 Part 4 Condition 14(1)(b), Schedule 10 Part 4 Condition 14(1)(b), Schedule 11 Part 4 Condition 9(1)(b) and Schedule 12 Part 4 Condition 9(1)(b) of the dDCO.
20.107	MCA	Clarify what amendment is proposed to the dDCO/DML's to ensure that consented cable protection works do not compromise existing and future safe navigation. Does the Applicant accept the MCA's request to specify a maximum of 5% reduction in surrounding depth referenced to Chart Datum?	The Applicant is content with the wording contained within Marine Guidance Note 543 which states that the MCA is willing to accept up to 5% reduction in surrounding charted depths referenced to chart datum unless developers are able to demonstrate evidence that any identified risk to any vessel types are satisfactorily mitigated. Embedded mitigation within ES Chapter 15 includes undertaking a cable burial risk assessment (DML Condition 14(1)(g) Cable Specification, Installation and Monitoring Plan) post consent and pre-installation; this will include consideration of any changes to water depth. It is noted that within the SoCG with the MCA (Rep1-SOCG-31.1) that the MCA are content with this approach.
20.108	Applicant	Comment on the MCA's suggestion relating to the cable protection works.	As stated in the SoCG between the Applicant and the MCA (document reference Rep1 -SOCG -31.1) the dDCO, Schedules 9 and 10, Part 4 Condition

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			14(1)(a) and Schedules 11 and 12, Part 4 Condition 9(1)(a) requires a design plan to be submitted and approved by the MMO in consultation with the MCA and Trinity House prior to licensed activities commencing. A cable specification, installation and monitoring plan must also be agreed with the MMO prior to construction as per the dDCO Schedules 9 and 10 Part 4 Condition 14(1)(g) and Schedules 11 and 12 Part 4 Condition 9(1)(g). This must include a detailed cable laying plan, including cable protection.
20.109	Applicant	Schedule 14 Comment on Natural England's RR(Appendix 5) taking account of concerns that the arbitration procedure may compromise its advice and its ability to meet its responsibilities; that it should not be subject to any potential award of costs; and that the confidentiality clause may not be enforced against it.	Please see the Applicant's response to Question 20.110 below which also applies here. In addition to the matters raised in response to Question 20.110 below, it should be noted that Natural England has previously sought to be excluded from the arbitration article in relation to the Triton Knoll Offshore Wind Farm Order 2013 and the Burbo Bank Extension Offshore Wind Farm Order 2014. In both cases, the Secretary of State considered that it was appropriate for the arbitration article to apply to SNCBs. Paragraph 7.3 of the Secretary of State's decision letter for Triton Knoll Offshore Wind Farm states: "*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*." In his Report to the Secretary of State, the Examiner appointed to examine the Burbo Bank Extension Offshore Wind Farm Order stated at paragraph 7.45 and 7.46:

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			Article 13 - Arbitration "*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 applicant's draft DCO Version 6 [APP-099]. I am content with the current drafting of this article*." It is therefore considered appropriate that the arbitration article should apply to Natural England and other SNCBs. In any event, it is considered unlikely that matters between Natural England and the Applicant will result in a dispute to be referred to arbitration given that Natural England's role under the DCO is as a consultee rather than an approval body. The arbitration provisions would not prevent Natural England from providing its advice or from meeting its responsibilities when consulted on matters by the MMO, for example.
20.110	Applicant	Comment on the RR's from the MMO [RR-186] in respect of the arbitration clause, and on each of the paragraphs 2.1 to 2.7 of the representations.	Model Article 42 of the Infrastructure Planning (Model Provisions) (England and Wales) Order 2009 provides an arbitration provision and the inclusion of such a mechanism in this manner has existed since the creation of the Planning Act 2008. The model article reads as follows: "*Any difference under any provision of this Order, unless otherwise provided for, shall be referred to and settled by a single arbitrator to be agreed between the parties or, failing agreement, to be appointed on the application*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			of either party (after giving notice in writing to the other) by the [insert appropriate body]." The principle of arbitration has therefore never previously been in dispute and has been included in numerous development consent orders in this form. However, such arbitration mechanisms based on the model provision do not contain any structure, timings or outcomes so as to provide the detail of how the arbitration process is intended to operate. For Nationally Significant Infrastructure Projects it is considered appropriate to provide a swift and clear process for resolution of disputes. The Applicant has therefore adopted the approach taken by the Hornsea Project Three Offshore Wind Farm project (currently at examination with reference EN010080) to develop the model provision by including more detail on the timeframes and steps associated with the arbitration process in order to ensure clarity and that the provision has practical effect. The Applicant is not seeking to remove the MMO's decision making powers and the Applicant recognises the MMO's important statutory function, but the Applicant is instead seeking to introduce a practical way forward in the (unlikely) event of the parties not reaching agreement through the approval process associated with the Order (particularly the conditions within the deemed marine licences). Arbitration is not, and should not, be the first port of call when a difference of opinion is encountered. The arbitration process would only begin in the event of non-determination or unreasonable non-approval of the conditions set out in the deemed marine licences. The draft DCO sets out minimum periods (usually four months) to consider plans and submissions and the MMO would therefore already have been in discussions for some time with the Applicant regarding this. In any event, it is extremely likely that further discussions would continue following the end of the determination period set out in the deemed marine licences. Therefore the MMO would have a significant amount of time to consider the issues that could ultimately be presented at arbitration and to reach a conclusion on their position. The 14 day period to appoint an arbitrator is

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			therefore appropriate and strikes a reasonable balance to enable collation of known information whilst avoiding unnecessary delay. Allowing for a further consultation period would negate the purpose of the arbitration provisions in seeking a conclusion in a reasonable timeframe following a lengthy but ultimately unsuccessful process to discharge a condition under the deemed marine licences. The Applicant understands the importance of the MMO's statutory duty, and the Applicant is not seeking to dis-apply statutory provisions in this regard. The arbitration provisions would apply equally to the MMO as they do to all parties under the DCO; and the appointed arbitrator would have regard to the submissions and standing of the MMO when considering the matter in question. It is therefore unclear as to how arbitration would compromise the ability of the MMO to meet its responsibilities. It is a well-established principle, with precedence in offshore wind farm DCOs to date, that arbitration should apply equally to all parties. In relation to confidentiality, the Applicant acknowledges that the MMO would still be subject to the requirements of the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 and the Applicant proposes to amend the confidentiality provisions at paragraph 7(2) of Schedule 14 to make it expressly clear that a party can disclose information in accordance with an obligation required by legislation, as follows: "(2) The parties and Arbitrator agree that any matters, materials, documents, awards, expert reports and the like are confidential and must not be disclosed to any third party without prior written consent of the other party, save for any application to the Courts and/or save for compliance with legislative rules, functions or obligations on either party." Equally, costs will follow the principles well-established through the courts and the arbitration process. The MMO would be subject to similar cost awards in the event of judicial review proceedings.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			It is for the above reasons that the Applicant believes the current Arbitration mechanism would be fit for purpose and provide greater clarity for all parties in the event of a dispute under the DCO and is therefore preferable to the wording contained in the Model Provisions.
20.111	Applicant	Schedule 15, 2.4. There appears to be a typographical error in the wording "is not thereafter be entitled". Please clarify.	The wording should read as follows: "*…(4) If the discharging authority does not give such notification as specified in sub-paragraph (2) or (3) it is deemed to have sufficient information to consider the application and is not thereafter ~~be~~ entitled to request further information without the prior agreement of the undertaker*." The Applicant will include the revised drafting within the next version of the dDCO to be submitted at Deadline 2.
20.112	All Discharging authorities	Schedule 15 sets out the procedure for discharge of Requirements. Please comment on the efficacy of the proposed arrangements, highlighting areas of dispute, if any.	
20.113	Applicant	Schedule 16 The Environmental Permitting Regulations (England and Wales) 2016 are now the relevant regulations which relate to flood risk activity permitting. Should the protective provisions for the benefit of the Environment Agency (Schedule 16) refer to this legislation?	The protective provisions for the benefit of the Environment Agency, contained in Part 7 of Schedule 16 to the draft DCO, do not refer to the Environmental Permitting (England and Wales) Regulations 2010. The Part 7 protective provisions refer to section 23(8) and section 72 *(interpretation)* of the Land Drainage Act 1991 which are still in force and contain appropriate definitions for 'drainage authority' and 'ordinary watercourse' respectively. Paragraph 4(a), Part 6 of Schedule 16 contains protective provisions for the benefit of Anglian Water Services Limited. Paragraph 4(a) refers to the Environmental Permitting (England and Wales) Regulations 2010 and this will be amended, in the next version of draft DCO to be submitted at deadline 2, to refer to the Environmental Permitting (England and Wales) Regulations 2016 (which are defined in Article 2 of the draft DCO as the 2016 Regulations). Similarly, Article 7(3)(a) refers to the 2010 Regulations and this will also be amended to refer to the 2016 Regulations in the next version of the draft DCO submitted at deadline 2.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
20.114	Applicant	Schedule 16, Part 2 (National Grid) paragraph 16 prevents the undertaker from acquiring any land interest or apparatus or overriding any easement and/or other interest of National Grid otherwise than by agreement. However The BoR lists several interests that National Grid (National Grid Electricity Transmission plc) has, among other matters, as lessees or occupiers. Clarify why these entries are included in the BoR as interests susceptible to compulsory acquisition.	Schedule 16, Part 2 is stated to apply "unless otherwise agreed in writing" between the Applicant and National Grid. The parties may wish, in due course, to agree an alternative process to the protective provisions. That could include permitting the Applicant qualified consent to compulsorily acquire interests belonging to NGET (subject to NGET's permission). It is accordingly necessary to have NGET's interests scheduled in the Order to permit such flexibility.
20.115	Cadent Gas	Comment specifically on the protective provisions in Part 3, Schedule 16 of the dDCO as to whether they adequately protect your interests, including apparatus and land interests (gas distribution network) with reference to major accident hazard pipelines and below and above ground apparatus within the Order Limits.	
20.116	Applicant	Please explain why a definition of 'scour protection' has not been provided within the 'Part 1 Interpretation' section of each of the DMLs?	The Applicant notes this comment and will include a definition of "scour protection" within the next draft of the DCO to be submitted at Deadline 2. The definition will read as follows: *"scour protection means measures to prevent loss of seabed sediment around any marine structure placed in or on the seabed by use of protective aprons, mattresses with or without frond devices, or rock and gravel placement".*
20.117	NE and RSPB	In the relevant DML Conditions in Schedules 10 and 11of the made DCO for East Anglia THREE and Requirement 2(2), there was a specified minimum draught height of 22m above MHWS, but there was also the stipulation of a maximum number of wind turbine generators (WTGs) with a draught height of less than 24m from MHWS. Are you satisfied that this has not been included in the dDCO for Norfolk	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Vanguard?	
20.118	Applicant	Please justify why the imposition of a 5 year maintenance period for landscaping in Requirement 19 of the dDCO would be sufficient to ensure that all the proposed landscaping would be suitably established, and please clarify whether a longer period has been considered.	A five-year replacement / maintenance period has been proposed within the OLEMS (document reference 8.7), as this is a standard timeframe for the type of planting proposed. The majority of defects will occur in the first five years and plants that survive the first five years are by that stage robust and well established. Time beyond five years is related to the maturation of established specimens and ongoing maintenance beyond five years has not been identified as necessary.

1.21 Monitoring, Mitigation and Management Plans

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
21.1	Please see questions in other sections		

1.22 Compulsory Acquisition

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
22.1	Applicant	In relation to the Change Report [AS-009] where amendments to the Onshore Order Limits are proposed, although named as minor changes in fact Additional Land is proposed to be included within revised Order Limits. Additional Land is defined in the Infrastructure Planning (Compulsory Acquisition) Regulations 2010 (the 2010 Regulations) as land which it is proposed shall be subject to compulsory acquisition and which was not identified in the book of reference submitted with the application [APP-010] as land.	The Applicant confirms that it is the Applicant's intention to include the additional land in the Book of Reference (document 4.3) and on the Land Plans, and therefore to seek compulsory powers in respect of the additional land. The Applicant anticipates providing new draft versions of these documents at Deadline 2.

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		Please confirm that this is the intention of the Applicant, rather than to simply exclude the unnecessary land from the Order Limits and rely on agreement, with the landowners and others with interests, for acquisition of the additional land required for the Project which lies outside the Order Limits.	
22.2	Applicant	If so, it appears that in relation to each proposed amendment the Applicant then relies on Condition (3) set out in Planning Act 2008 section 123(2)–(4) that all persons with an interest in the land consent to the inclusion of the provision in the dDCO. Please confirm that this is the case and supply full evidence of the consent of each such person or otherwise confirm that the prescribed procedure will be followed in relation to the land.	In relation to compulsory acquisition of the additional land, the Applicant confirms that it relies on condition 3 of Section 123 of the Planning Act 2008, on the basis that all persons with an interest in the additional land consent to the inclusion of a provision authorising the compulsory acquisition of the additional land. Consents are being obtained accordingly and will be supplied as soon as possible. To the extent that all consents cannot be obtained, it is acknowledged that it will be necessary to follow the prescribed procedure in respect of the additional land if the changes are still pursued.
22.3	Applicant	Regulations 5 to 9 of the 2010 Regulations prescribe the procedure for the compulsory acquisition of additional land that applies only where a person with an interest in the additional land does not consent to the inclusion of the provision. Notwithstanding that that there may be no person who has not consented to the inclusion of the Provision, please identify the most expeditious and clear way in which each proposed provision can be readily understood by the Examining Authority and stakeholders, for example by providing a supplement to the book of reference accompanied by a land plan or plans that identify the land required as additional land, or affected by the proposed provision.	The Applicant proposes to submit an updated Book of Reference (document 4.03), with amendments shown by track changes, together with an updated set of Land Plans at Deadline 2. A single updated Book of Reference is considered preferable to a supplementary Book of Reference as landowners/stakeholders may not be familiar with the concept of a supplementary Book of Reference or how this would operate when read alongside a main Book of Reference where removal of land is proposed as well as the inclusion of additional land. The Statement of Reasons (document 4.01) will also be updated to reflect the proposals contained in the Change Report where appropriate. In addition, Section 2.2 of the Change Report clearly describes each change proposed and is supported by plans which identify the precise location of each individual change proposed at Figures 1 to 9.

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22.4	Applicant	What consequential changes to the Land Plans, Works Plans and other application documents, relevant to the compulsory acquisition provisions in the dDCO, are proposed to be submitted following any acceptance of the Change Report and when?	Further to the response to Q.1.1, a list of proposed changes to other application documents, consequent on acceptance of the Change Report is contained at Table 2.16 of the Change Report. In summary, this consists of updated Land Plans, Works Plans, Book of Reference, Statement of Reasons, draft DCO and Explanatory Memorandum. If it would assist the Panel and landowners/ stakeholders, it will be possible to submit draft versions of all of these documents at Deadline 2. Consequential changes will also need to be made to the Order limits shown on all other relevant plans, as outlined in the Guide to the Application submitted at Deadline 1 (document reference 1.4 (version 2)). These plans will also be updated as necessary in accordance with the Inspectorate's Section 51 Advice for submission at Deadline 2.
22.5	Applicant	The proposed change relating to the overhead tower search area is illustrated on Figure 7 of the Change Report. Paragraph 89 states that the changes fall within existing Order Limits but it appears from Figure 7 that land to the north-west of Work 11E (comprised within the construction access zone), which was previously excluded therefrom is now included. Please explain the position in regard to this.	The land to which this question refers is occupied by existing NGET infrastructure (400kV sealing end compound). This sealing end compound will be retained by NGET, and will form part of the proposed double circuit turn-in arrangement to the Necton substation to facilitate the connection of Norfolk Vanguard. The land occupied by the sealing end compound was largely excluded from the Order limits as submitted with the application (see Works Plans (document 2.04), despite the fact that it is embedded within a larger area of land that is included (NG Over Head Line (OHL) temporary works area). The reasons for this are: 1. NGET already has rights over this land 2. It is not proposed to construct any new infrastructure on this land or to substantially change the existing infrastructure there. However, as part of on-going discussions between the Applicant and National Grid, National Grid considered it preferable to extend the OHL temporary works area to also include the area of the existing compound. This will help to secure the OHL diversion works, as some temporary works (e.g. works to install temporary OHL towers) may encroach on the airspace above the sealing end compound.

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			This change is shown in Figure 7 of the Change Report; although paragraph 89 is correct with regard to the new tower search areas, it is not correct with regard to the area of the cable sealing end compound. The relevant amendments to the Order limits will be captured in the Land Plans (document reference 2.02) and Works Plans (document reference 2.04) which will be secured through the dDCO (in particular through Schedule 1, Authorised Project). These changes will also be explained further in the Statement of Reasons and Explanatory Memorandum, as well as outlined in an updated version of the Book of Reference. Updated versions of the relevant application documents will be submitted at Deadline 2.
22.6	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 refer to the schedule submitted with reference ExA;WQApp22.1;10.D1.3_AnnexA_02D. The schedule lists all the relevant representations that have been received which contain an objection to the compulsory acquisition of land or rights over land. The NFU prepared a standard representation which has been submitted on behalf of a number of land owners by their land agent. The standard representation states; '*The NFU and the land agents LIG believe that no meaningful negotiations have taken place in regard to the site for the converter substation and the access routes. Therefore a compelling case as yet cannot be made.*' The NFU's representation notes that agreement has not been reached in relation to the onshore project substation site and the access routes, however as the owners of the land on which the onshore project substation is proposed to be sited have not submitted a representation, the Applicant has not included this objection in the schedule. However, where access routes are relevant to a particular landowner represented by the NFU (as shown in green on the Land Plans, document reference 4.3), these are included in the schedule. There are two further representations where the use of compulsory acquisition powers has been raised, these are Network Rail and National Trust. Discussions remain ongoing with Network Rail to reach a private agreement. The National Trust's interests were excluded from powers of compulsory acquisition in respect of those parcels of land whilst the land itself is scheduled for

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			compulsory acquisition, however, it should be noted that it is the Applicant's intention to remove the exclusion for National Trust's interests in the next version of the Book of Reference to be submitted at Deadline 2. Whilst the Applicant is confident that agreement can be reached with the National Trust (see the Applicant's response to Q22.16) it is considered appropriate to amend the Book of Reference given that agreement has not yet been reached.
22.7	Applicant	With regard to the ongoing negotiations to acquire, by agreement, all of the land, the temporary use of land and the rights required for the Project, please give an update on the current position in respect of: (i) access to land; (ii) the status of negotiations with landowners and others affected by the project; and (iii) 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.	Please refer to the Applicant's Compulsory Acquisition Schedule which has been submitted at deadline 1 (document reference ExA; CA; 10.D1.5). This document sets out the current position in respect of negotiations with all parties from whom the Applicant requires land/ or rights over land. To date, 71 HoTs have been signed with affected landowners and this represents 71% of the total land interests affected by the project.
22.8	Applicant	The Statement of Reasons [APP-008] at paragraph 7.15 states that despite ongoing diligent enquiry, it has not been possible to identify all of the beneficiaries of the many third party interests in the Order lands but the Applicant will continue to attempt to identify the relevant interests where possible. What further steps are being taken to identify outstanding beneficiaries of third party interests in the Order lands?	As set out in the Statement of Reasons (**SoR**) (Document reference 4.1, paragraphs 6.7 and 6.8) and the Consultation Report (document reference 5.1), a full diligent land referencing process was undertaken by the Applicant's Land Referencing advisors, Ardent, however it is not always possible to identify all the interests in land, especially where the land is unregistered. The full process undertaken is set out in the SoR. In ongoing attempts to identify those persons who have not yet been identified, the Applicant's Land Agents are continuing to meet with and speak to neighbouring landowners and land agents to attempt to identify the ownership of the 'Unknown' land. Site notices are also continuing to be erected along the route as set out in the statutory requirements, allowing any party who has not yet been notified about the project to understand how they can become involved in the process.

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			Further, periodic checks are also completed with the Land Registry to identify any changes in title ownership and to identify whether any previously unregistered land is now registered. The last check on previously unregistered land was carried out on the 9th November 2018 and identified no newly registered land. The Applicant believes the correct owner of plot 01/04 has now been identified, subject to the interest proving title, and discussions are now underway to reach a private agreement.
22.9	Applicant	In the event that such beneficiaries cannot be identified how does the Applicant intend to proceed? Please specify how reasonable enquiries will be made, explaining where the procedure may differ in relation to land to be compulsorily acquired; where new rights are to be acquired over land; and where temporary possession is taken of land.	In all instances, the Applicant has sought and will seek to ascertain the owners and (if relevant) occupiers of third party land which benefits from rights over the Order land. Neighbouring landowners are investigated regarding the ownership and history of any unknown land or relevant interest, and reviews are carried out of the registered title history and, where applicable, any unregistered title history. Where landowners or beneficiaries of interests remain unidentified, site notices are placed on the land in the location of the interest to enquire about the ownership of the interest with the public. Land will either be registered or unregistered – where it is registered, the owner will be ascertainable. If unregistered, then detail of ownership of rights may be gleaned from other titles within the Order Land. Owners may also be ascertained from enquiries made of known landowners, informally or through pre-contract enquiries, as well as from physical inspection of the land carried out by the Applicant's agents. Where there are third party rights identified, a key question is also whether those rights will be interfered with. There will be no difference in the approach outlined above due to the type of power being sought by Applicant (that is, whether freehold, new rights, or temporary possession are sought). However, the impacts on parties with interests in land will be different.

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			It is not unusual for some owners of land interests to remain unknown throughout the application process, up to when the time comes to exercise compulsory acquisition powers. In such cases, site notices will be used to "serve" any unknown interests with appropriate statutory notices at each stage, depending on which process is chosen. This is likely to involve temporary possession notices prior to ecological mitigation works and construction, followed, post-construction, with general vesting declarations to compulsorily acquire any outstanding permanent rights.
22.10	Applicant	Are you in a position to identify the specific third party interests in Crown Land which are required to be compulsorily purchased? Has the dDCO been drafted to take account of the advice in Planning Act 2008: Guidance related to procedures for the compulsory acquisition of land, which is to the effect that certain Crown authorities may be unable to give general consents for compulsory purchase of interests in Crown land?	The Crown Land included in the Order comprises Plots 01/01, 01/02, 01/03, 01/17 and 01/19. This is foreshore land owned by The Crown Estate (**TCE**) Commissioners. The Guidance referred to suggests that the Applicant should be able to identify, at this stage, specified third party interests in Crown land that it needs to acquire. The Applicant's land referencing process has revealed potential ownership interests of Cossette Blanche Hart scheduled in Plot 01/02, and of Thomas William Love in Plot 01/17. Agreement is being sought with Cossette Blanche Hart and Thomas William Love. The Applicant is in discussion with TCE to ensure that these interests, as well as any unknown third parties, can be dealt with compulsorily if the need arises. The Applicant has been engaged with TCE for several months to negotiate a letter of consent for the inclusion of the above plots in the dDCO, which is well advanced. The consent letter does not provide a general consent to the compulsory acquisition of land, and is conditional on certain drafting being included in the dDCO, in particular at Article 42.
22.11	Applicant	Section 135 of Planning Act 2008 only permits the compulsory acquisition of interests held otherwise than by or on behalf of the Crown. Please confirm	All interests held by TCE have been excluded from the Book of Reference (**BoR**) (document reference 4.3). Please refer to the BoR, column 2 for parcels 01/01,

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		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	01/02, 01/03, 01/04, 01/17, 01/19 where it is stated at the end of the parcel description that the land and rights in the parcel are: *(Excluding those interests held by The Queen's Most Excellent Majesty in Right of Her Crown)*
22.12	Applicant	Requirement 15 in the DCO requires the Applicant to submit a written scheme detailing the stages of the authorised development onshore and as part of that scheme, to notify the relevant planning authority which single route (of the route options shown on Works Plans (2.4) and described in Work Nos. 7A to 7D) will be taken forward. Depending on what option is chosen, how and when would landowners know the extent of compulsory acquisition of their land and/or interests? Would the uncertainty imposed upon the landowners in question be justified and proportionate?	As referred to in Paragraph 84 of the Change Report (document reference: Pre-ExA; Change Report; 9.3): *Two cable route options were included at this location within the original application – a northern and a southern option. Both options were assessed within the submitted Environmental Statement. Further discussion with the landowner (C Allhusen) and the property owner located in proximity to both options (Mr and Mrs Garrett of Wood Farm) has identified a preferred route which crosses between the two previously assessed routes, across two arable fields*. Discussions with the affected landowners remained ongoing from the date of application in June 2018 through to the submission of the Change Report in December 2018. As noted in the Change Report, both parties have now agreed to the final route as shown in the Change Report (document reference: Pre-ExA; Change Report; 9.3) and the amended Order limits will be submitted in the revised Land Plans, Works Plans and BoR to be submitted at deadline 2. As the reason for multiple route options to be submitted with the Application was to allow discussions to continue with the affected landowner, this approach is considered justified and proportionate. The landowner is now aware of the proposed routing and has signed HoTs for an Option Agreement based on this final route alignment.
22.13	Land Interest Group (LIG)	Savills (UK) Ltd (Savills) make several "Outline Representations" on behalf of "the National Farmers Union ("NFU") and the Vattenfall Agents (agents acting for NFU members and their clients on this project.) The agents represented are Savills, Strutt & Parker, Bidwells, Irelands, Brown & Co and Cruso & Wilkin (henceforth known as the Land Interest Group (LIG)" The LIG represents approximately 60 clients who	

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		own or lease land affected by the DCO. Has a full list of names and addresses been made available for each landowner or occupier for whom an outline representation has been submitted? Please provide a schedule that correlates specific issues highlighted in the representations by the business in question, to the relevant Plot numbers in the Book of Reference.	
22.14	National Trust	Do you maintain an objection to the compulsory acquisition of land owned by the Trust? [RR-191]	Please note the Applicant's response to Q22.6 above and the Applicant's proposed amendment relating to deletion of the exclusion in respect of the National Trust's interests in the BoR.
22.15	Network Rail	Your comments in [RR-192] refer to Plot 10/04 which is acquired for the purpose of its statutory undertaking and you consider that there is no compelling case in the public interest for the acquisition of the Compulsory Powers and it cannot be concluded having regard to section 127 PA 2008, that new rights and restrictions over the railway land can be created without serious detriment to Network Rail's undertaking. Please explain the "serious detriment" to the undertaking and specify exactly what is being sought by agreement with the Applicant to regulate (i) the manner in which rights over Plot 10/04 or other railway land may be exercised; and (ii) the carrying out of works in the vicinity of the operational railway network	
22.16	Applicant	The Statement of Reasons [APP-008] paragraph 8 states that the Applicant is currently negotiating the grant of the necessary interests by the National Trust	The Applicant is still in negotiations with the National Trust with HoTs for the grant of the necessary interests being progressed between the parties. The Applicant has provided an undertaking for costs to the legal advisors for the

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		and anticipates that this can be agreed before the start of the examination. Please provide an update	National Trust in order to allow them to review and input into the Heads of Terms. A brief update is provided in the Applicant's Compulsory Acquisition Schedule which has been submitted at deadline 1 (document reference ExA; CA; 10.D1.5). The Applicant remains confident that the concerns of National Trust have been addressed and that an agreement will be concluded.
22.17	Applicant	The Statement of Reasons [APP-008] at 8.22 states that the Applicant is seeking to agree protective provisions (the subject of Article 29 and Schedule 16) with the relevant undertakers in good time before the close of the examination. Please provide a timetable of engagement with the relevant undertakers with whom agreement of the protective provisions is outstanding.	The Applicant refers the Examining Authority to the SoCGs for the following undertakers and like parties, each of which includes a history of engagement and set out the current position on negotiations: • Anglian Water Services (Rep1 - SOCG - 1.1); • Cadent Gas Limited (Rep1 - SOCG - 10.1); • East Anglia THREE Limited (Rep1 - SOCG - 4.1); • Environment Agency (Rep1 - SOCG - 6.1); • National Grid Electricity Transmission PLC and National Grid Gas PLC (Rep1 - SOCG - 9.1); • Network Rail Infrastructure Limited (Rep1 - SOCG - 12.1); and • Orsted Hornsea Project Three (Rep1 - SOCG - 18.1).
22.18	Applicant	The Statement of Reasons [APP-008] at 8.24-5 states the Applicant will continue to negotiate a commercial agreement for the protection of Dudgeon "as soon as possible". Please provide an update on progress.	Land previously owned and listed in the Book of Reference (document reference 4.3) as owned by Dudgeon Offshore Wind Limited, has now been split and is part owned by Equinor UK Limited and part owned by the OFTO, Transmission Capital Partners GP Limited (**TCP**). The Applicant is engaged in ongoing discussions with both Equinor UK Limited and TCP to secure the land and rights required by agreement. Negotiations are progressing and there have been several meetings, conference calls and numerous emails to move matters forward. TCP have only recently taken over the responsibility of the land and the land registration is not yet completed at the Land Registry, therefore discussions are currently at an early stage. As stated in the Compulsory Acquisition schedule, the Applicant remains hopeful that an agreement can be concluded with both parties.

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22.19	Equinor	Does Equinor agree with the Applicant's assessment that it is unnecessary to replace the land over which rights are required for the Project and that the interest sought in land can be purchased and not replaced without serious detriment to the carrying on of Dudgeon's undertaking, and if not why not?	
22.20	Applicant	Paragraph 4.1 of the Funding Statement [APP-009] states that the total property cost estimates for the acquisition of the required interests in land should not exceed £10,143,000. However paragraphs 4.5 and 4.7 suggest that the cap is based on the likely level of compensation for the compulsory acquisition only of interests and blighted interests. Please clarify that the estimated cap specifically includes costs not just for compulsory acquisition but compensation for temporary possession taken of land in the Order Limits. Why is the estimated liability capped and what happens if the cap is exceeded?	The Applicant can confirm that the £10,143,000 includes costs for the compulsory acquisition of land including also land required for temporary possession. The figure is inclusive of a prudent and material level of contingency. The figure has been calculated by the Applicant using market evidence according to the various grading of land (Grade 1, Grade 2, Grade 3). Other allowances have been made within the calculation for replacement of fences, loss of subsidies as a result of the scheme, surveyor and solicitor fees etc. The Applicant and the Company are commercial companies and therefore cannot expose themselves to unlimited liability; they have to account for potential liabilities; that said, as the Funding Statement provides, the capped liability has been calculated based on the total property cost estimates for the acquisition of the required interests in land.
22.21	Applicant	Paragraph 4.8 of the Funding Statement [APP-009] states that it is not expected that there will be any claims for blight. Please explain the basis for this statement providing full justification.	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 concept of blight derives from the provisions of sections 149 to 171 of the Town and Country Planning Act 1990. Certain owners (within limited categories) can serve a blight notice to compel an authority to acquire their property. An owner of land may serve a blight notice where they have made reasonable endeavours to sell the land, but because of the planning proposals, they have not been able to do so, except at a substantially lower price than expected. One of the categories where an owner has the ability to serve a blight notice is where their land is, or may be subject to powers of compulsory acquisition (as provided under paragraph 24 of Schedule 13 to the TCPA 1990). A blight notice can be served by owner occupiers where the land is, or is part of, a hereditament under section 64 of the Local Government Finance Act 1988,

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			of which the net annual value is less than £34,800 (as stated by the Town and Country Planning (Blight Provisions) Order 2010). This applies: • Mainly to small businesses; • Where the land is a hereditament occupied by an individual who occupies the whole or a substantial part as a private residence; • Where the land is an agricultural unit or part of a unit. The term "agricultural unit" is defined by the TCPA 1990 and means land that is occupied for agricultural purposes including any dwelling house or any other building occupied by the same person for the purpose of farming the land. For the blight notice to be accepted, it must be supported by evidence that the claimant has made reasonable endeavours to sell the land in question and that they have been unable to do so, or could do so only at a price substantially lower than that for which it might reasonably have been expected to sell. At the point of application the Applicant concluded that no small business premises were affected by the powers of compulsory acquisition and it knew of no proposals to sell any of the land affected by the proposed powers. The land affected by the scheme is predominantly agricultural land. As the powers will be mainly used for rights to lay and maintain the electricity cables (with the exception of temporary construction sites and freehold for the onshore project substation and substation access road), it was concluded at the point of submission that there was no land that could have been the subject of a valid blight claim. The land included within the Order limits for the purposes of the easement strip, will be occupied during construction only. Once construction is completed the land can continue to be used for its existing use. To date, no blight notices have been served in respect of Norfolk Vanguard. Should any claims for blight arise as a consequence of the threat of compulsory acquisition of land or rights over land related to Norfolk Vanguard, the costs of

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			meeting any valid blight notice claim will be met by the Applicant as outlined in paragraph 4.8 of the Funding Statement.
22.22	Applicant	"Upheld" blight claims due to the Application will be met by the Applicant. Please clarify what arrangements, if any, are in place with local authorities who would otherwise (and who may in any event retain) statutory responsibility in respect of claims.	Any claims arising from public works would rest with the party responsible and clear criteria are set out in Part 1 1973 Act as to who is liable for claims and process to be followed. The Applicant does not consider that any agreements will be needed with local authorities in respect of blight claims, and none are currently in place.
22.23	Applicant	Please confirm the position regarding acceptance of liability relating to any eventual service of a purchase notice which is upheld on the basis of a claim that no reasonably beneficial use can be made of the land due to the effects of the Project.	If a purchase notice is served and is accepted (or otherwise determined), the liability falls on the relevant planning authority. There is scope for a statutory undertaker (in this case, that could include the Applicant) to accept on the relevant planning authority's behalf and acquire the whole interest. However, given the current use of land along the route and the extent of the acquisition of interests sought by the Applicant (which for the most part will be permanent rights or temporary possession), the Applicant does not consider there is a reasonable prospect of purchase notices being served, or being successful. It is not anticipated that a case could be successfully made that any Order Land will become incapable of reasonable beneficial use.
22.24	Applicant	Please supply Report and Accounts of Vattenfall Wind Power Limited (Company Number 06205750) (the Company) for year ending December 2017.	The 2017 Annual Report and Financial Statement is provided in Appendix 22.2 of this submission (document reference ExA; WQApp22.2; 10.D1.3). Please also follow the link to Companies House https://beta.companieshouse.gov.uk/company/06205750
22.25	Applicant	Para 4.6 of the Funding Statement [APP-009] states sufficient funding for payment of compensation will be available to the Applicant if compulsory acquisition powers are provided in the Order. Please explain how such funding will be made directly accessible to persons entitled to compensation.	Clause 5.1 of the Funding Agreement attached to the Funding Statement provides that those Specified Third Parties listed in Schedule 3 of the Funding Agreement can enforce the provisions of the Funding Agreement by virtue of the Contracts (Rights of Third Parties) Act 1999. This Contracts (Rights of Third Parties) Act 1999 allows persons who are not directly a party to a contract (known as a third party) to enforce its provisions to their benefit. The Act allows third parties to enforce terms of contracts that benefit them in some way, or which the contract allows them to enforce. As the Funding Agreement expressly

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			permits the Specified Third Parties to enforce its terms, this allows those third parties to claim the compensation.
22.26	Applicant	Paragraph 7.7.9 of the Statement of Reasons [APP-008] states a 45 metre maximum working width of the cable route during construction is required, with a 20 metre width being required permanently for the majority of the route. What level of confidence is there that all locations where extra width will be required, where construction processes or other reasons necessitate a wider permanent easement, have been identified?	The exact extent of the permanent easement required for the cable corridor will not be finalised until the ducts through which the cables are to be pulled have been installed. With reference to Plate 5.15 of Chapter 5 Project Description, the Applicant has high confidence that the permanent easement will be no greater than 20m for the majority of the route which is in open agricultural land. At trenchless crossings, there is the potential for the permanent easement to be wider as a result of greater separation of the ducts due to increased installation depth. In these locations, the installation will be retained within the 45m working width as identified on the land plans, but the permanent easement may be required to be greater than 20m.
22.27	Applicant	The Statement of Reasons [APP-008] at 7.7.57 states that the whole of Plot 41/31 is unlikely to be acquired freehold, but at this stage it must be scheduled as such to ensure that the Project can be constructed and maintained while accommodating detailed design work that will take place after agreements are finalised with Statoil or its successor OFTO. Please explain what steps are being taken to minimise uncertainty over the extent of compulsory acquisition sought and provide an update on negotiations with Statoil or its successor OFTO.	Land previously owned and listed in the Book of Reference (Document reference 4.3) as owned by Dudgeon Offshore Wind Limited, has now been split and is owned by Equinor UK Limited (New name for Statoil) and Transmission Capital Partners GP Limited (TCP). The Applicant is in ongoing discussions with both parties to secure the land and rights required by agreement. Negotiations are making progress and there have been several meetings, conference calls and numerous emails to move matters forward. TCP have only recently taken over the responsibility of the Dudgeon assets and the land registration is not yet completed at the Land Registry, therefore discussions are currently at an early stage. As stated in the Compulsory Acquisition schedule, the Applicant remains hopeful that an agreement can be concluded. The location of any area of freehold acquisition in Plot 41/31 will be confirmed following detailed design by National Grid, which will identify the final footprint of the new tower within this plot (Work No. 11). As secured in Requirement 16(15), the total footprint of each permanent replacement overhead line pylon comprised in Work No. 11 must not exceed 25 metres by 25 metres.

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22.28	Applicant	The Statement of Reasons [APP-008] refers 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. 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? If so, how would these be secured?	It is assumed the ExA refers to Article 26(1)(c) which states 'The undertaker may, in connection with the carrying out of the authorised project – construct temporary works (including the provision of means of access), running tracks, security fencing, bridges, structures and buildings on that land;' With reference to Section 5.5.2.8 of Chapter 5 Project Description, there is no ongoing requirement for regular maintenance of the onshore cables following installation. Therefore the period of time during which temporary works may be required during operation would be limited to very short emergency repair requirements, see the Applicant's response to Q20.30 for further details. No mitigation works are therefore envisaged in respect of temporary use of land for maintenance.
22.29	Applicant	Article 21 provides for private rights over land to cease to have effect subject to compulsory acquisition, or be suspended and temporarily unenforceable where the Project takes temporary possession of land. The Statement of Reasons at paragraph 10.3.9 states that the Applicant will take particular regard to those rights of access over which the Order lands cross and where possible maintain access at all reasonable times. How and when would the undertaker decide whether existing private rights would continue?	Where possible, rights of access for those with existing rights of access that currently cross the proposed cable corridor, will be maintained and crossing points provided to allow access to otherwise severed areas of farmland. These crossing points will be agreed once entry to land is taken and will be discussed between the ALO to be appointed by the contractor and the affected landowner/agent.(See section 8.1, paragraph 92 I the CoCP, Document Reference 8.1) Where reasonably possible, access will be maintained to reduce and minimise impact on farming businesses and to allow the continued operation of the business. Adherence to onsite health and safety will be a consideration for the Applicant and the contractor when considering the reasonableness of the proposed accesses. Whether any particular private right could be left unaffected or would need to be suspended, or even extinguished, will depend on the physical nature of that right, and whether it continuing would be compatible with the operation of the Applicant's project. The Applicant does not seek power to extinguish existing rights except where freehold land is to be acquired.

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22.30		Is the drafting in Article 21 dDCO adequate to give effect to the intentions of the Applicant as expressed in the Statement of Reasons at paragraph 7.19, to give notice as appropriate to beneficiaries of rights that such rights will not be extinguished?	Yes, the Applicant believes it does. Article 21 provides that existing private rights in land will become suspended and unenforceable on the Applicant's acquiring a freehold interest in the land (whether by agreement or compulsorily) or taking possession under a Notice of Entry; acquiring permanent new rights; or taking possession under temporary possession powers. This is subject to any agreement made between the Applicant and the owner of the interest, or any notice to the contrary served by the Applicant prior to the Applicant taking such interests in the land, under Article 21(6). The drafting of Article 21 does not operate to automatically extinguish private rights, even where freehold land is acquired under Article 21(1). Rather, it permits the Applicant to elect to extinguish private rights on acquiring freehold land only, by serving notice stating the same on the owner of that right (Article 21(1)). The Applicant considers that for the majority of private rights that relate to an interest that is in use or otherwise valuable, it will be possible to serve notice to prevent the suspension of the right from operating, depending on how the right can be accommodated in practice. This would apply in many cases where there was no agreement in place, but may not be appropriate in every case. If any rights need to be extinguished, then the Applicant would look to regrant these on similar terms. For rights that may not have been identified despite diligent enquiry, the automatic suspension provided by this Article will take effect. Beneficiaries of suspended rights will be able to claim for relevant compensation under the Order.
22.31	Applicant	Explain the proposed acquisition of plots for "cable logistics" and how this relates to the development comprised within the Project.	The cable logistics area is an area of existing hardstanding and agricultural buildings to allow the storage of cable drums and associated materials and to accommodate a site office, welfare facilities and associated temporary infrastructure to support the cable pulling works. (See Land Plan plots 18/15 and 18/16 identified for temporary use only).

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			The use of the area is referenced within Para 371 of Chapter 5 Project Description, which states that during the cable pull phase, materials will be delivered directly to the joint locations, or through the use of a cable logistics area.
22.32	NNDC and NCC	Statement of Reasons at paragraph 8.7 states the Open Space Land comprises Plot numbers 01/04, 01/05, 01/06, 01/18, 01/20, 23/07 and 24/10 on the Land Plan and in the Book of Reference and forms part of the beach and foreshore at Happisburgh South and part of the Marriott's Way long distance path. Do you agree with the Applicant's understanding that this land being beach land (Plot numbers 01/04, 01/05, 01/06, 01/18, 01/20) does not prevent it from being open space. Is the land subject to the Open Spaces Act 1906 as amended?	
22.33	Applicant	Section 132 provides that where an applicant for development consent seeks compulsory acquisition powers over open space land, the Order will be subject to Special Parliamentary Procedure unless the Secretary of State is satisfied among other matters that: (a) ... one of subsections (3) to (5) applies. Please confirm that none of the subsections apply other than subsection (3) or if not, why not?	The Applicant confirms that Section 132 (3) applies to all of the areas of open space within the Order. This is detailed in the Statement of Reasons. While the onshore cable route crosses through land defined as open space, the method of installation will mean that there is minimised interference at the surface during the construction and operational periods. Accordingly the land, when burdened with the Applicant's rights, will be no less advantageous to the persons identified in Section 132(3).
22.34	Applicant	As to the Open Space (OS) land crossing the Marriott's Way, compulsory acquisition of rights is sought to enter and use the OS Land for the purposes of installing the cables, fibre optic cables and ducts and for the repair, maintenance, renewal, replacement and removal of the apparatus once installed At 8.13 of the Statement of Reasons, it	As detailed in 8.12 of the Statement of Reasons, trenchless installation methods will be used to install the ducts and cables underneath the Marriott's Way (Plots 23/07 and 24/10). This installation process will not involve any works taking place in the Open Space Land such as to have an effect on access to the Open Space Land. It is not envisaged for any circumstance to close access to the land and as such, no arrangements are made for that eventuality.

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		states the Open Space Land "should" not be affected by the installation of the apparatus, and access "should" remain open throughout the construction period. In what circumstances might it become necessary to close access to the land and what arrangements will be made in that eventuality? Have the worst case scenarios been assessed and if so please identify where they have been assessed in the Application?	
22.35	Applicant	Please confirm that there is no Special Category of Land within the Order Limits other than the open space land referred to in the Book of Reference.	Special Category land is identified in Part 5 of the Book of Reference (Document reference 4.3). This part lists parcels of land which are believed to be open space land and parcels of land owned by the National Trust.
22.36	Applicant	Schedule 3 lists details of 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-017]. Schedule 3 does not refer to diversions or identify alternative routes. What consideration has been given to providing a temporary diversion route for each of the lengths of PRoW to be stopped up, or to identifying existing alternative routes? Where diversions are to be put in place, how would the necessary rights be secured?	Typically, soft management measures will be employed as mitigation for PRoW which it is proposed would be temporarily stopped up, such as appropriately fenced (unmanned crossing points); and manned crossing points to maintain access along the PRoW. Should a temporary diversion be required the approach will be to utilise either another PRoW, or road footpath, or use land within the Applicant's control. As the ducting works will be limited to 150m sections there is expected to be adequate flexibility to divert footpath users around the active works but remain inside the land within the Applicant's control. Any temporary diversion would only be required for approximately 1 week, as a result of the sectionalised approach to the duct installation works. The need for a temporary diversion, and identification of an appropriate diversion route, will be discussed and agreed with the relevant local authority's PRoW Officer / Trail Officer. The approach to managing disruption to any PRoW during construction is set out in the submitted Public Rights of Way Strategy (document reference 8.4) and OCoCP (document reference 8.1), and secured through Requirement 20 of the draft DCO.
22.37	Applicant	Paragraph 7.7.10 of the Statement of Reasons states the majority of the plots on the cable route contain	Access will be maintained along access routes as identified in green on the Land Plans (Document Reference 2.2), however should emergency access be

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		an additional right to create an access to the public highway. This power will not be utilised unless difficulties prevent access from being taken over the various permanent access routes to the cable easement contained in the Order, shown on the Land Plans shaded green. Explain what difficulties are envisaged that might arise and how they would prevent access being gained over the permanent access routes.	required to the cable corridor and access be blocked or prevented along the prescribed accesses, alternative access will be required. Difficulties could include for example, obstructive landowners, fallen trees, fallen buildings, escaped livestock and broken down vehicles.
22.38	Applicant	In paragraph 7.7.12 of the Statement of Reasons it states that no right to break open the surface of the land will be sought in areas subject to trenchless crossing, even in an emergency, due to the sensitive nature of the infrastructure being crossed. How are these areas delineated on the Land plans and is a distinction made within such areas between land where the surface may not be broken and land on which vehicles, plant and equipment might nevertheless be moved and /or stationed?	The Land Plans do not distinguish between trenchless cable land and trenched cable land and are contained within the yellow shaded land for acquisition of permanent rights. In locations where trenchless crossings are required, temporary areas of land shown in blue on the Land Plans are identified for launch and receiver areas. Where trenchless crossing is confirmed to be employed, as secured by Requirement 16(17) of the dDCO, ducts will be installed using a trenchless method defined as a technique for installing an underground duct between two points, without excavating and backfilling a trench. This method will not require the land to be broken open. Subsequent cable installation will be achieved through pulling and jointing of the cables at either end of the trenchless crossing, again, not requiring the land to be broken open. In the event of an emergency repair, the faulted cable section can be cut and pulled from either side of the trenchless crossing, preventing the requirement to break open the land. At all trenchless crossings, the land will therefore not be broken open. With reference to Table 20.14 of Chapter 20 Water Resources and Flood Risk, at all trenchless crossings, with the exception of Wendling Beck at Bushy Common, stop ends will be employed on the running track at each of the trenchless crossing points such that no access across the trenchless crossing for vehicles, plant and equipment is proposed. Temporary access across Wendling Beck at Bushy Common is required to facilitate construction of cable route section MA2-E from mobilisation area two between the trenchless crossing of

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			the A47 to the south and Wendling Beck at Old Brigg, Gressenhall to the north, as illustrated in Figure 24.7a of ES Chapter 24 Traffic and Transport.
22.39	Applicant	When will a decision be taken on how many converter stations are required? Depending on what option is chosen, what would the extent of compulsory acquisition be? How and when would landowners know the extent of compulsory acquisition of their land and/or interests? Would the uncertainty imposed upon the landowners in question be justified and proportionate?	It is expected that a decision on the number of required converter stations will be taken by the end of 2019. This early decision will enable the Applicant to provide clarity for landowners and other local stakeholders. It will also be of benefit to the Project, as it allows time for further development of the design of the converter stations prior to entering into full construction contracts. Irrespective of the decision that is made, the land take for the onshore converters is likely to be quite similar to that detailed in the draft DCO. In particular, the amount of land required for flood mitigation, landscaping, access and other associated infrastructure is not materially affected by the decision.
22.40	Applicant	What consideration has been given to offering full access to alternative dispute resolution techniques for those with concerns about the compulsory acquisition of their land? Please comment on whether such techniques are appropriate to deploy for this project and if not, why not.	Alternative Dispute Resolution (**ADR**) is an intrinsic part of the compulsory acquisition process, in that there is an expectation that it is engaged in the determination of compensation. ADR can be used to resolve valuation issues as well as through mediation matters that the Upper Tribunal may not have jurisdiction over. Whilst the Applicant considers ADR to be a positive process for resolution of identifiable conflicts and it remains receptive to the prospect of ADR techniques, the Applicant does not consider it necessary or appropriate at this stage of negotiations to offer any alternative form of dispute resolution which could cut across those disrupt ongoing negotiations. 70% of landowners have signed HoTs with the Applicant and the majority of those outstanding are in constructive negotiations with the Applicant. In the event that concerns or issues are raised by landowners which are suitable for some form of ADR such as mediation, the Applicant will consider any request for ADR, and whether it is appropriate to proactively promote mediation as an option with the relevant party.

1.23 Habitats Regulation Assessment

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
23.1	Applicant	The Information for the HRA report [APP-045] states that approximately 1,200,000m3 of sediment would be released within the Haisborough, Hammond and Winterton SAC (HHW SAC) due to trenching operations for the offshore export cables. However, the draft DMLs refer to 1,900,000 m3 of material being disposed of within the HHW SAC. Can you please explain why a greater volume of material would be permitted to be disposed of than is anticipated to be released, and confirm whether you have assessed the effects of the volume of material permitted by the draft DMLs.	Schedules 11 and 12 Part 3, 1(d)(iii) refers to 1,900,000m^3 of sediment disposal within the offshore cable corridor excluding the Haisborough, Hammond and Winterton SAC. As this is excluding the SAC, this value is not referred to in the Information to Support HRA report. In addition, Schedules 11 and 12 Part 3, 1(d)(iv) refers to sediment disposal within the Haisborough, Hammond and Winterton SAC of up to 500,000m^3 in accordance with Table 7.4 of the Information to Support HRA report. Table 7.4 of the Information to Support HRA report, refers to the following: • 1,200,000m^3 of potential sediment arising in relation to trenching works in order to provide a conservative assessment of suspended sediment, however as this sediment would not be raised, (as it would for pre-sweeping/dredging) it does not require disposal and is therefore not referred to in the dDCO. • 500,000m^3 of sediment disposal within the Haisborough, Hammond and Winterton SAC (in accordance with Schedules 11 and 12 Part 3, 1(d)(iv)).
23.2	Applicant	Paragraph 662 of the Information for the HRA report [APP-045] states that there would only be one UXO detonated at a time during UXO clearance operations. Can you explain what measures would be in place in regard to concurrent UXO detonations taking place and how such measures would be secured within the dDCO?	As discussed in response to Q6.9, UXO clearance is not licensed within the dDCO, it would be licenced separately once the nature and extent of UXO clearance is known. Conditions associated with the UXO clearance Marine Licence would be determined at that time. This is the approach that has been taken on other offshore wind farms to date.
23.3	NE	Please comment on whether the corrections made to the Greater Wash SPA citation would have any bearing on the Applicant's assessment.	
23.4	Applicant	In regard to the Information for the HRA report [APP-045], for example paragraphs 40 and 47, please can you explain how in-combination effects have been assessed at the screening stage and provide clear justifications for the conclusions you have	With respect to paragraph 40 (screening for displacement and barrier effects on lesser black-backed gull and herring gull from Alde Ore Estuary SPA), the assessment considers the likelihood of these impacts occurring at any wind farms (for which there is no evidence) and also the fact that Norfolk Vanguard is at a sufficiently great distance from the SPA that connectivity will at most be

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		reached.	very low. Thus, the likelihood of a project alone effect has been ruled out on the basis of both aspects. The risk of an in-combination effect is similarly ruled out on the basis of the absence of evidence for these impacts (displacement and barrier) on these species and the fact that no effect is predicted for the project alone. With respect to paragraph 47 (screening for displacement barrier effects for auks from Flamborough and Filey Coast SPA), project alone effects were screened out due to the fact Norfolk Vanguard is beyond foraging range of the SPA and hence breeding birds are not likely to be present, and during the nonbreeding season the proportions of the regional population made up of birds from this SPA are very small. The extremely low proportions from the SPA on Norfolk Vanguard and absence of predicted cumulative effects means that the likelihood of Norfolk Vanguard contributing to an in-combination effect can be ruled out.
23.5	Applicant	Paragraph 50 of the Information for the HRA [APP-045] screened out a likely significant effect (LSE) of gannet displacement from the Flamborough and Filey Coast SPA. Please justify why you have not used a similar approach for gannet displacement as that which you have applied to auk cumulative displacement, and set out whether a LSE for gannet could be screened out should such a similar approach be undertaken.	The assessment makes use of appropriate ecological information for each species' assessment. In the case of gannet, the predicted displacement impact for Norfolk Vanguard was extremely small and this was considered sufficient justification for ruling out a likely significant effect for the project alone and in-combination.
23.6	Applicant	Please respond to NE's comment [RR-106] that it does not agree to no AEOI for the Greater Wash SPA and also its recommendation that the in-combination collision risk should be revisited once uncertainties around the CRM are resolved.	The Red-throated diver displacement note (Appendix 3.1, document reference ExA; WQApp3.1; 10.D1.3) considers the potential impacts on the Greater Wash SPA and provides additional justification for a conclusion of no AEoI on that feature. The little gull assessment, which it is assumed this question refers to, is subject to the same considerations with regard to agreement regarding CRM methods as discussed in answer to Qs 3.3, 3.7 and 3.8 above. Thus, this aspect is subject to ongoing discussions with NE. In addition the Collision Risk Modelling: update and clarification note (Appendix 3.2, document reference ExA; WQApp3.2; 10.D1.3) includes mean collision predictions (i.e. as per

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			Natural England's request) and these outputs are very similar to those presented in the ES and on which the likelihood of a significant effect was ruled out. Therefore, the Applicant does not expect this conclusion to be affected.
23.7	NE	Please set out the CRM methodology and data that you consider the Applicant should provide and use in order for you to be able to fully determine whether or not there would be no AEOI for the Greater Wash SPA.	
23.8	Applicant	Please can you clarify whether or not any enabling works for Norfolk Boreas within the marine environment would be included within the dDCO for Norfolk Vanguard, and if so, whether these works have been assessed?	There are no enabling works for the offshore aspect of Norfolk Boreas. As such, no offshore enabling works were assessed and there are no offshore Norfolk Boreas enabling works included within the dDCO.
23.9	Applicant	To what extent have you given consideration to proposed developments outside UK territorial waters in undertaking the assessment of in-combination effects on European sites?	**Marine mammal in-combination assessment** The CIA screening for ES Chapter 12 Marine mammals (provided in ES Appendix 12.3), was also used to inform the in-combination assessment for the HRA. As outlined in ES Appendix 12.3 Section 12.3.2.2, an initial list of 66 European offshore wind farms with the potential for construction, operation and decommissioning cumulative impacts or in-combination effects were considered. Where information was available, the potential for in-combination effects from other activities was also considered. European offshore wind farms were taken into account in the HRA (see Table 8.33 of the Information to Support HRA report), the provision for the potential UXO clearance and seismic surveys outside UK waters was also taken into account in the Information to Support HRA report. **Ornithology in-combination assessment** Natural England developed the BDMPS approach and has advocated its use in case work by developers and their consultants. The BDMPS approach considers the smallest appropriate biologically defined population scale against which to assess population-level impacts. For most seabirds this scale is a section of UK waters and does not extend into areas outside UK territorial waters. Due to

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			differences in how projects are assessed in different countries it is extremely challenging to combine impact estimates across countries. However, the majority of impacts at Norfolk Vanguard to which the project could contribute to an in-combination effect relate to the nonbreeding season. During this period of the year seabirds from a wide range of European designated sites are mixed together and it is only possible to assign individuals to colonies on the basis of relative population sizes. The resulting reference populations against which impacts are assessed are based on birds within UK waters (e.g. BDMPS populations in Furness 2015). Thus, assessing UK projects against UK seabird populations ensures consistency in approach. An in-combination assessment across a larger spatial scale would not only be difficult because other European countries make assessments differently, so numbers cannot easily be added up, but also would assess in-combination impacts against a larger population size (because the larger spatial scale would include birds in non-UK waters that are not included in the BDMPS approach advocated by Natural England). The larger seabird population resulting from using a larger spatial scale would reduce the assessed in-combination impact, since at the present time the density of developments is higher in UK waters than in waters of other European countries. The present method is therefore precautionary. An assessment against the biogeographic population would be much more difficult, but also would indicate a smaller impact than associated with a BDMPS population.
23.10	NE	In your RR [RR-106] you have advised that you cannot complete any in-combination assessment relating to marine mammal disturbance until the Review of Consents is completed. The Examining Authority (ExA) understands that the Department for Business, Energy and Industrial Strategy has published a draft HRA for consultation. Taking this into account, are you now able to provide further comment on potential impacts to marine mammals of the Southern North Sea cSAC?	

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23.11	MMO	Can you provide examples as to how a strategic approach to the scheduling of pile driving can best be delivered?	
23.12	Applicant	Please respond to the comments made by NE and the MMO regarding in-combination impacts on the Southern North Sea cSAC.	Sections 3 and 4 of Appendix 20.3 (document reference ExA; WQApp20.3; 10.D1.3) provide the Applicant's response to Relevant Representation comments regarding in-combination impacts on the Southern North Sea cSAC.
23.13	NE	Can you confirm whether or not you agree with the European sites and features screened in by the Applicant, ie for which a LSE has been identified.	
23.14	NE	Can you provide further details of your concerns with regard to the identification of a LSE for red-throated divers of the Outer Thames Estuary SPA, and please detail how you consider your concerns could be resolved by the Applicant.	
23.15	Applicant and NE	Please provide comment on whether you consider that trenchless crossing (Appendix 5.2, paragraph 86) [APP-047], limited construction hours (Information for the HRA report, paragraph 102) [APP-045], mitigation for noise effects from piling and UXO clearance (Table 8.4) [APP-045] and micrositing to avoid permanent habitat loss (Information for the HRA report, paragraph 67) [APP-045] should be considered mitigation in light of the judgement in the People over Wind, Peter Sweetman v Coillte Teoranta case C-323/17.	In Case 323/17 People over Wind and Peter Sweetman v Coillte Teoranta, the Court of Justice of the European Union ruled that where a developer has screened out the need for Appropriate Assessment of a SAC or SPA on the grounds that a significant effect is unlikely, the proposed mitigation measures must not be a factor in this decision. The Court interpreted mitigation as "measures that are intended to avoid or reduce the harmful effects of the envisaged project on the site concerned". "A full and precise analysis of the measures capable of avoiding or reducing any significant effects on the site concerned must be carried out not at the screening stage but specifically at the stage of the appropriate assessment". (i) Trenchless crossing (Appendix 5.2 paragraph 86) [APP-047]. Paragraph 86 states "the River Wensum is located in the onshore project area. The onshore cable corridor crosses the River Wensum at Elsing. As part of the embedded mitigation for the project, a trenchless technique (e.g. HDD) will be used when crossing the River Wensum. This technique will ensure that there are no direct effects upon any of the qualifying features of the SAC within the site

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			boundary and therefore potential direct effects upon the SAC boundary are screened out from any further assessment." The trenchless installation techniques referred to in Requirement 16(17) are not strictly "intended to avoid or reduce the harmful effects of the envisaged project on the site concerned". These techniques must be used for the purposes of passing under specified rivers, becks, a canal, a plantation, County Wildlife Sites, a coastal path, railway lines and A roads. They are inherent features of the onshore transmission works as set out in Requirement 16(17). As stated at paragraph 94 "direct impacts on the River Wensum SAC have been screened out following the selection of method used to cross the feature, namely the use of trenchless cable burial techniques (eg horizontal directional drilling (HDD)). The use of this technique will ensure no direct effects upon any of the qualifying features of the SAC". (ii) Limited construction hours (Information for the HRA Report, paragraph 102) [APP-045] In considering potential effects on Paston Great Barn SAC (a building supporting a maternity roost of barbastelle bats), located 2.9km form the onshore project, paragraph 102 states "potential effects arising from air quality and visual disturbance have been screened out of further assessment as the qualifying features of the Paston Great Barn SAC are not sensitive to potential effects from these sources. Construction noise effects will be restricted to project working hours of 7.00am – 7.00pm Monday to Friday and therefore have also been screened out from further consideration". The specified project working hours are not "intended to avoid or reduce the harmful effects of the envisaged project on the site concerned". They are an inherent feature of the onshore transmission works as set out in Requirement 26(1).

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			(iii) Mitigation for noise effects from piling and UXO clearance (Table 8.4) [APP-045] Table 8.4 states "lethal effects and permanent auditory injury from piling and the clearance of UXO will be mitigated and therefore there is no potential for LSE". In practice this mitigation has been considered as part of the assessment at 8.2.1 Mitigation. Paragraph 6.17 states "in addition to embedded mitigation, if further mitigation is required and possible (i.e. those measures to prevent or reduce any remaining potentially significant adverse effects) these are discussed in the relevant sections and the post-mitigation residual effect is provided. A summary of all proposed mitigation is provided in section 8.4." Under 8.2.1.1 Embedded mitigation, paragraph 6.20 describes the mitigation to reduce potential effects on marine mammals, comprising the use of a soft start and ramp up protocol. Under 8.2.1.2 Further mitigation, reference is made to the MMMP for piling (8.2.1.2.1), the MMMP for UXO clearance (8.2.1.2.2), and the in principle Site Integrity Plan (8.2.1.2.3). Paragraph 6.58 concludes that "the effective implementation of a UXO MMMP will reduce the risk of permanent auditory injury (PTS) to harbour porpoise during any underwater detonations at Norfolk Vanguard (alone) therefore there would be no potential adverse effect on the integrity of the Southern North Sea cSAC in relation to the conservation objectives for harbour porpoise". Paragraph 678 concludes that "the MMMP for piling will reduce the risk of permanent auditory injury to harbour porpoise as a result of underwater noise during piling at Norfolk Vanguard (alone) therefore there would be no potential adverse effect on the integrity of the

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			Southern North Sea cSAC in relation to the conservation objectives for harbour porpoise." (iv) Micrositing to avoid permanent habitat loss (Information for the HRA Report paragraph 67) [APP-045] Paragraph 67 states "It was agreed through the EPP that there would be no permanent loss of Annex 1 reef due to the embedded mitigation to microsite where possible to avoid reef and the fact that S. Spinulosa is ephemeral and can be expected to recover from cable installation works". In practice this mitigation has been considered as part of the assessment at 7.3.1 Embedded mitigation. Paragraph 314 states "as discussed above should important seabed features or obstacles (eg Annex 1 reef and UXO) be identified on the proposed cable routes during the pre-construction surveys, micrositing will be undertaken where possible "to minimise potential impacts". Paragraph 410 concludes that "due to the considerable width available for micrositing to avoid core S. Spinulosa reef where identified during pre-construction surveys it is likely that no temporary physical disturbance will occur in the offshore cable corridor. The export cable corridor is approximately 4km wide at the point where S. Spinulosa reef has been recorded to date. A total width of approximately 1.35km is required for Norfolk Vanguard and Norfolk Boreas; therefore 2.65km is likely to be available for micrositing at this location within the cable corridor. As a result based on the likely scenario that micrositing is possible there would be no adverse effect on the integrity of the Haisborough Hammond and Winterton SAC in relation to the conservation objectives for Annex 1 S. Spinulosa reefs due to temporary physical disturbance during construction."

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			Paragraph 428 concludes "therefore given the very small proportion of temporary disturbance and the high recoverability, the conservation objective of maintaining or restoring extent would be sustained. It is therefore reasonable to conclude that there will be no adverse effect on the integrity of the Haisborough Hammond and Winterton SAC in relation to the conservation objectives for Annex 1 S. Spinulosa reefs due to temporary physical disturbance during construction".
23.16	Applicant	Please confirm the mechanism through which it will be ensured that seabed material would be retained within the HHW SAC.	The Applicant has committed to disposing of seabed material arising from the Haisborough, Hammond and Winterton SAC during cable installation back into the SAC. This is secured through the cable specification, installation and monitoring plan, to be agreed with the MMO, which is required under dDCO Schedules 9 and 10 Part 4 Condition 14(1)(g) and Schedules 11 and 12 Part 4 Condition 9(1)(g). The Haisborough, Hammond and Winterton SAC is not a closed system and it presently has sediment both entering and leaving it around the boundaries. The movement which occurs in and out of the Haisborough SAC at present will continue, irrespective of the proposed dredging or disposal activities as discussed in Information to Support HRA report Appendix 7.1 ABPmer Sandwave Study.
23.17	Applicant	Please confirm whether the proposed buffer zone from *Sabellaria* reef, within which disposal of sediment would be restricted, is 100m (as indicated in paragraph 324 of the Information for the HRA report) or 50m (as indicated in paragraphs 432, 435, 470 and Table 7.4 of the Information for the HRA report)?	A 50m buffer from *S. spinulosa* reef is proposed for disposal of sediment, in accordance with advice provided by Natural England by email on 13th February 2018.
23.18	Applicant	In response to NE's concern about the scale of the buffer zone, please justify your proposed 100m/50m buffer zone, when an appropriate buffer zone for offshore designated sites is usually 500m.	Please see the Applicant's response to Q23.17.

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23.19	Applicant	Please set out the mechanism through which the buffer zone will be secured in the dDCO.	The buffer zone will be secured through the Cable Specification, Installation and Monitoring Plan, submitted to the MMO for approval pursuant to condition 14(1)(g) (Generation DML, Schedules 9-10) and condition 9(1)(g) (Transmission DML, Schedules 11-12). In particular, through requirement 9(1)(g)(ii) which includes a detailed cable laying plan incorporating a burial risk assessment to ascertain suitable burial depths and cable laying techniques, including the appropriate cable protection.
23.20	Applicant	Can you confirm whether or not the measures detailed in paragraph 201 of the Information for the HRA report [APP-045], which you have suggested are necessary to offset in-combination collision mortality, are relied upon to reach your conclusion of no AEOI.	The additional conservation measures outlined in paragraph 201 were not included in the conclusion of no AEoI, but rather represent additional measures which could be undertaken to enhance the status of the population.
23.21	Applicant	In response to the concerns raised by NE regarding the potential impact of cable laying operations on red-throated divers of the Greater Wash SPA, are you willing to impose restrictions on the timing of cable laying operations and, if so, please set out how these restrictions could be secured in the dDCO.	The assessment of the potential impact on red-throated divers in the Greater Wash SPA due to cable laying assumed 100% displacement and 5% mortality affecting birds within a 2km radius of up to 2 vessels. The number of individuals at risk was estimated from the density estimates presented in Natural England and JNCC (2016). Cable laying was assumed to occur during the period of peak RTD presence (i.e. mid-winter). This assessment was highly precautionary, since the mortality rate of 5% is probably five times higher than a realistic precautionary rate for displaced red-throated divers (see Appendix 3.1 Red-throated diver displacement note, document reference ExA; WQApp3.1; 10.D1.3). Even on this basis, no adverse effects on the integrity of the SPA were predicted as a result of cable laying. Therefore, there is no requirement for timing restrictions on cable laying.
23.22	NE, MMO, TWT and WDC	The Applicant has proposed a number of mitigation measures within the draft Marine Mammal Mitigation Protocol [APP-037], and the Draft SNS cSAC Site Integrity Plan [APP-041], and it has also proposed that a Marine Pollution Contingency Plan be produced post-consent. The successful delivery of these plans is relied upon for concluding no AEOI,	

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		and yet there remains some doubt about the nature and efficacy of some of the proposed measures. Therefore can you please confirm to what extent you are satisfied that the measures referred to in these plans are sufficiently well-defined and deliverable?	
23.23	Applicant	Please respond to NE's assertion in its RR [RR-106] that adopting a condition to prevent piling if 20% of the SAC is at risk of disturbance would not be sufficient to be Habitats Regulations compliant.	The Applicant understands that NE is referring to the requirement for a mechanism to be identified and implemented to control the number of piling events to ensure that thresholds are not exceeded. The In Principle Site Integrity Plan (document reference 8.17) provides the mechanism, provided that other projects also have comparable conditions, as has been proposed by the Review of Consents (BEIS[13], 2018). It has been agreed in the SoCG with NE (document reference Rep1 -SOCG -13.1) that the Site Integrity Plan, in accordance with the In Principle Site Integrity Plan provides an appropriate framework to agree mitigation measures for effects on the Southern North Sea cSAC/SCI with the MMO in consultation with the relevant SNCBs prior to construction.
23.24	NE, MMO and WDC	In regard to the Applicant's proposed MMMP for UXO clearance, please indicate the degree of confidence you have in the efficacy of mitigation measures that are yet to be defined.	
23.25	NE	Do you agree that an AEOI can be ruled out for any of the features of any of the European sites for which a LSE has been identified?	
23.26	Applicant	Can you provide reasons to explain and demonstrate why, having regard to the precautionary principle, your PVA approach as described in the ES and HRA is sufficient to support a finding of no AEOI, and how	The Population Viability Analysis (**PVA**) models referred to in the assessment were produced with a view to generating predictions which balance precaution with realism. In most cases these models, which have been used in previous wind farm applications, were developed in consultation with NE and thus were

[13] Record of the Habitats Regulations Assessment undertaken under Regulation 65 of the Conservation of Habitats and Species (2017), and Regulation 33 of the Conservation of Offshore Marine Habitats and Species Regulations (2017). Review of Consented Offshore Wind Farms in the Southern North Sea Harbour Porpoise SCI. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/753026/RoC_SNS_cSAC_HRA_5.0.pdf

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		your approach has overcome the issues identified by NE in this regard.	considered robust and fit for purpose. There are two key pieces of Natural England advice which have changed since these model outputs were previously accepted. The first relates to how the models are run, with simulations either paired (i.e. using identical demographic rates) with one of the pairs subject to additional mortality and the other run in the absence of impact. These are referred to as matched-pairs. Comparison across the pairs provides an estimate of the predicted impact. Previously impact and non-impact simulations were completely independent (i.e. did not share sequences of demographic rates) and these are referred to as non-matched simulations. The other piece of revised advice is how the results are presented, with the preferred option being the ratio of impacted to non-impacted population size and population growth rate now requested (referred to as counterfactuals). Previously alternative impacts such as the probability of decline were provided (although counterfactuals often have also been provided). Extensive analysis undertaken for the kittiwake PVA used in the Hornsea Project THREE assessment has demonstrated that the results obtained from matched-pairs and non-matched simulations are the same in terms of the average predictions obtained (for density independent simulations). This is not a surprising result since with sufficient numbers of iterations (e.g. >=1,000) there is no reason for the two approaches to generate different results, and the suggestion that they would appears to indicate a flaw in the work on which this is based. It is worth noting that density dependent simulations cannot be run as strictly matched-pairs because by their nature, the population size of each of the pair will diverge (i.e. impacted will decline relative to non-impacted) and this means the strength of density dependence will also diverge. Thus, the PVA results referred to in the Norfolk Vanguard assessment remain reliable despite having been produced before NE adopted the matched-pair advice. The Applicant acknowledges that some of the PVA referred to did not include counterfactual outputs, as they pre-dated that advice. However, the relative magnitude of outputs and context in which they are used is relevant. For

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			example, the gannet PVA was produced on the basis of populations which were around 1/3 smaller than they are currently, and this clearly will have a big effect on the relative scale of predicted effects.
23.27	NE	Can you set out the extent to which you consider it necessary for your advocated PVA approach to be implemented by the Applicant, and also provide your views on how the approach you advocate may affect the Applicant's findings of no AEOI for the species and sites concerned.	
23.28	Applicant	Please specify the extent to which you are willing to undertake the PVA, taking into account the factors requested by NE.	Notwithstanding the response to Q 23.26, if, following revisions to the impact assessment, any impacts are considered sufficiently large to warrant further investigation using PVA, and such model outputs are not already available (and considered robust), then the Applicant will undertake the additional modelling required.
23.29	NE	As your RR [RR-106] did not make any mention of the Humber Estuary SAC, The Wash and North Norfolk Coast SAC or Winterton-Horsey Dunes SAC, please can you confirm whether or not you concur with the Applicant's assessment of no AEOI for these sites. If you do not agree, then please set out your specific areas of disagreement.	
23.30	NE	Do you have any comments to make on the Applicant's screening and integrity matrices submitted in the Applicant's Response to Section 51 Advice from the Planning Inspectorate [AS-006].	
23.31	Applicant	Can you update the integrity matrices to include specific paragraph references from the Information to Support HRA report [APP-045] which support the conclusions you have reached. The matrices should also explain how the mitigation measures you propose are to be secured.	Updated HRA Integrity matrices are provided in Appendix 23.1 of this submission (document reference ExA; WQApp23.1; 10.D1.3).

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23.32	Applicant	Please respond to the comments made in the Regulation 32 consultation response from the French Ministry, and in particular justify why you did not identify the Bancs des Flandres SPA and the Cap Gris-Nez SPA in regard to cumulative impact assessment.	**Offshore ornithology** These French SPAs were not identified in the consultation responses, hence were not previously brought to the Applicant's attention. The impacts of concern identified in the response from the French Ministry with regards ornithology are ones which have been assessed thoroughly in the assessment. The Applicant will provide additional screening responses (and subsequent assessment if necessary) for the two named SPAs. Bancs des Flandres SPA (175km from Norfolk Vanguard) was designated in January 2010 for 25 species of birds. Most of these species have not been seen within the Norfolk Vanguard site during offshore ornithology surveys. However, the species list includes gannet, kittiwake, fulmar, razorbill, red-throated diver, little gull, Arctic skua, great skua, common tern, Arctic tern, guillemot. Migrations of birds from that SPA are likely to result in very small numbers from those populations passing through Norfolk Vanguard during migration, relative to the size of regional populations. Cap Gris-Nez SPA (210km from Norfolk Vanguard) was designated in January 2005 for 75 species of birds. Most of these species have not been seen within the Norfolk Vanguard site during offshore ornithology surveys. However, for the species that may migrate through the Norfolk Vanguard site, migrations of birds from that SPA are likely to result in very small numbers from those populations passing through Norfolk Vanguard during migration, relative to the size of regional populations. **Marine mammals** The Applicant notes the comments on marine mammals and agrees that French sites were included in the screening process and were screened out on the basis of Norfolk Vanguard having no Likely Significant Effect (as detailed in Appendix 5.1 of the Information to Support HRA Report). Mitigation for marine mammals will be delivered through the Marine Mammal Mitigation Protocol (required under Schedules 9 and 10 Part 4 Condition 14(1)(f) and Schedules 11 and 12 Part 4 Condition 9(1)(f), in accordance with the draft MMMP, document 8.13) and the Southern North Sea cSAC/SCI SIP (required under Schedules 9 and 10 Part 4 Condition 14(1)(m) and Schedules 11 and 12 Part 4 Condition 9(1)(l) in

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			accordance with the draft Site Integrity Plan, document 8.17). The requirement for monitoring is secured through the Construction Programme and Monitoring Plan (required under Schedules 9 and 10 Part 4 Condition 14(1)(b) and Schedules 11 and 12 Part 4 Condition 9(1)(b)), in accordance with the In Principle Monitoring Plan (document 8.12). **Commercial Fisheries** The Applicant notes Direction Interregionale de la Mer (DIEM) Manche Est – mer du Nor comments in relation to the cumulative assessment and their view that in line with the assessment presented in the EIA, cumulative impacts on the French fleet would be of minor significance. With regards to the potential for some displacement of Dutch fishing vessels to areas within the French 6-12nm limit, the wide operational range and associated fishing opportunities of the Dutch vessels active in areas relevant to the project should be noted.
23.33	French Ministry	Can you please identify which European sites within your jurisdiction you consider there could be a LSE from the proposed development, and set out your reasoning with full justification.	
23.34	NE and RSPB	In terms of the seasonal apportioning of impacts for the Alde-Ore Estuary SPA and Ramsar site, what figure do you consider should be applied to lesser black-backed gulls?	
23.35	Applicant	Please provide evidence to justify the approach you have taken in regard to the apportioning of impacts for lesser black-backed gulls at the Alde-Ore Estuary SPA.	Tracking data (Thaxter *et al*. 2015) indicate very low connectivity between breeding lesser black-backed gulls at Orfordness (Alde-Ore Estuary SPA) and the Norfolk Vanguard site. Connectivity appears to vary across years between zero and very low, presumably depending on variations in food availability in different years. Tracking data show a time budget overlap with the entire East Anglia Round 3 Zone of 3.7% in 2010, 1.1% in 2011 and 0.2% in 2012 (Thaxter *et al.* 2015 Supplementary material Appendix A). The Norfolk Vanguard site forms a small part of the entire East Anglia Round 3 Zone. The tracking data indicate that much less than 0.5% of the foraging time of lesser black-backed gulls is spent within the Norfolk Vanguard site plus 2 km buffer. For the population of about 2,000 breeding pairs at Alde-Ore Estuary

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			SPA that would represent considerably fewer than 10 birds (0.5% of the total number of pairs) at any point in time (assuming that under normal circumstances one adult is at the nest site while the other is away on a foraging trip). Given that there were on average about 300 lesser black-backed gulls in the Norfolk Vanguard site plus 2 km buffer during counts in June, July, August (the main months when collisions were predicted), fewer than 10 birds during the chick-rearing period from the Alde-Ore Estuary SPA would represent less than 3.5% of the lesser black-backed gulls present. The low numbers originating from the Alde-Ore Estuary SPA that the tracking data indicate are likely to reach Norfolk Vanguard suggest that less than 3.5% of the lesser black-backed gulls seen at Norfolk Vanguard during the chick-rearing period are likely to originate from the Alde-Ore Estuary SPA breeding population. Tracking data cover the chick-rearing period, so do not necessarily apply at other times during the breeding season. However, lesser black-backed gulls show more marine foraging behaviour during chick-rearing and more terrestrial foraging behaviour earlier in the breeding season, so the overlap with Norfolk Vanguard is likely to be highest during the latter part of the breeding season when birds have chicks to provision, and is probably lower than this during the early breeding season. Thus, estimated rates of connectivity with marine sites derived from tracking of chick-rearing adults will be higher than those obtained during other periods of the breeding season. The Applicant has apportioned 25% of breeding season impacts on lesser black-backed gulls to individuals from the Alde-Ore Estuary SPA which, as can be seen, is highly precautionary given the tracking evidence. In reality, the tracking data indicate that considerably less than 25% of impacts are likely to be apportioned to Alde-Ore Estuary SPA and most likely less than 3.5%. Given the low numbers indicated by tracking but the higher numbers observed to be present at Norfolk Vanguard this raises the question of where those birds come from if not Alde-Ore Estuary SPA. Tracking data from birds in the Netherlands strongly indicate that no breeding adults from the populations in the Netherlands visit the Norfolk Vanguard site. However, it is known that there are large numbers of immature lesser black-backed gulls in the populations

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			(Furness 2015 estimated from demographic data that about 40% of the population will be immature birds and 60% will be breeding age adults). While younger immature birds may remain in the wintering area, in spring and summer older immatures move towards breeding areas and may form a significant part of the population at sea in areas such as Norfolk Vanguard. So a substantial proportion of the birds present at Norfolk Vanguard is likely to comprise immature birds which originate from a variety of populations. The birds present may also include breeding adults from non-SPA colonies. The Alde-Ore Estuary SPA population of lesser black-backed gulls has decreased considerably, the most recent published counts being 640 pairs at Orfordness in 2012 and 1,668 pairs at Havergate in 2016. By comparison, there were 743 pairs at Great Yarmouth in 2012, 467 pairs at Southtown/Gorleston in 2012, probably about 2,000-3,000 pairs at Lowestoft in 2008-2011, and a few hundred pairs at other sites in Norfolk and Suffolk (Piotrowski 2012). This suggests that the Alde-Ore breeding numbers represent less than 50% of the breeding numbers in East Anglia. There are no published data that the Applicant could find on how breeding numbers have changed between 2012 and 2018, but the Applicant contacted Steve Piotrowski who carried out the census of breeding numbers in 2012 and he stated that efforts to deter urban nesting gulls have largely been ineffective and do not seem to have resulted in significant reductions in the population in urban sites overall. Urban nesting lesser black-backed gull numbers in Suffolk increased by over 1000% between 1995 and 2012 (Piotrowski 2012) at a period when numbers breeding in the Alde-Ore Estuary SPA decreased by about 70% so the proportion of lesser black-backed gulls nesting in urban sites may well have continued increasing since the 2012 census; if so, the proportion of lesser black-backed gulls at Norfolk Vanguard that originate from Alde-Ore Estuary SPA may be decreasing further since 2012, but this is uncertain. At a qualitative level, the situation revealed by the 2012 census appears not to have changed much since then. The Applicant understands that a repeat census of breeding gull numbers may be carried out as part of the current national census of breeding seabirds.

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			Tracking data and diet data for urban nesting lesser black-backed gulls suggest that those birds feed to an extent in marine habitat, especially when rearing chicks, and do not suggest that urban nesting gulls are any less marine than those nesting in rural colonies. Lesser black-backed gulls nesting in urban colonies in East Anglia include marine fish in their breeding season diet as well as earthworms, small mammals and urban food waste (Piotrowski pers. comm.) so clearly forage at sea to some extent, just as rural nesting gulls do. In the migration seasons the Applicant apportioned the impact on the basis of the relative sizes of the BDMPS population (Furness 2015) and the Alde-Ore Estuary SPA population; the latter is about 3.3% of the BDMPS number. Apportioning 3.3% of the impact to Alde-Ore lesser black-backed gulls during migration assumes that the Alde-Ore Estuary SPA birds are randomly mixed among the whole BDMPS population, which seems to be a reasonable assumption given that these birds migrate from the UK to southern Europe/north Africa so are very unlikely to remain segregated by colony of origin during migration. Although the numbers of lesser black-backed gulls present in winter are small, and so the impact in winter is assessed to be small relative to that at other times of year, the Applicant assumes that it is likely that birds from the Alde-Ore Estuary SPA population may make up a somewhat higher proportion of the winter BDMPS population because these birds may tend to winter closer to their breeding colony; so for the winter impact assessment the Applicant estimated a precautionary 10% of the impact attributed to Alde-Ore Estuary SPA birds. That is a precautionary estimate, as the Alde-Ore Estuary SPA population is likely to be nearer to 3.3% of the total population. Furness, R.W. 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for BDMPS. Natural England Commissioned Report Number 164. Piotrowski, S. 2013. Lesser black-backed gull and herring gull breeding colonies in Suffolk. Suffolk Bird Report, 62, 23-30. Thaxter, C.B., Ross-Smith, V.H., Bouten, W., Clark, N.A., Conway, G.J., Rehfisch, M.M. and Burton, N.H.K. 2015. Seabird–wind farm interactions during the

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			breeding season vary within and between years: A case study of lesser black-backed gull *Larus fuscus* in the UK. Biological Conservation, 186, 347-358.
23.36	Applicant	Having regard to Flamborough and Filey Coast SPA can you explain why the very low presence of breeding birds means that you consider it appropriate to define the breeding season as the migration free breeding period and how this accords with the precautionary principle. What would the difference in the outcome of the assessment of impacts to gannet be if the breeding season as presented in Furness (2015) was used rather than the migration-free period?	The assessment applied an evidence-based approach for this aspect. The timing of annual activities of breeding of gannets is fairly well established. A few adults can return to nest sites in UK colonies from as early as January, but most return in March and some not until April (Furness 2015; Furness *et al*. 2018). Adults mostly depart from UK colonies in late September (although this starts in August and may continue until November; Furness 2015). On the basis of evidence, Furness (2015) defined the UK gannet breeding season as March to September. Kober *et al*. (2010) in a review by JNCC, defined the gannet breeding season as May to September, and the nonbreeding season as October to April, so there is some difference in interpretation among studies, in part due to the fact that the occupation of nest sites at colonies overlaps with the main migration periods of gannets. Migration periods are well defined, but also somewhat protracted and differing between individual birds (Furness *et al*. 2018). Gannet spring migration into and through UK waters from their wintering areas off west Africa and southern Europe occurs mainly in December to March. Autumn migration from colonies to the wintering area occurs mainly in September to November (Furness 2015). Therefore, there is overlap between the full breeding season of UK gannets and the main period of migration of gannets (some of which originate from colonies in Norway, Faroes and Iceland) through UK waters. Numerous studies that have tracked foraging breeding adult gannets have shown that the majority of foraging breeding gannets travel less than 100 km from the nest site (Thaxter *et al*. 2012, Wakefield *et al*. 2013); longest trips tend to occur from the largest colonies due to greater competition with conspecifics, and gannets from Flamborough & Filey Coast SPA show foraging trips predominantly within 200 km of the colony (Wakefield *et al*. 2013). Since Norfolk Vanguard is ca. 200 km from Flamborough & Filey Coast SPA, connectivity between Flamborough & Filey Coast SPA breeding gannets and Norfolk Vanguard appears to be low, and tracking of foraging trips by gannets breeding at Flamborough & Filey Coast SPA has suggested that those birds do

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			not normally forage in the vicinity of Norfolk Vanguard (RSPB annual reports on gannet tracking from Flamborough & Filey Coast SPA). The Applicant fully supports the use of the precautionary principle where there is a lack of evidence to permit a clearly evidence-based approach. However, in the case of the timing of gannet migrations and breeding season, in the case of gannet population sizes and demography, and in the case of foraging behaviour of breeding gannets from their colonies, the Applicant has better evidence than for many other seabirds. For that reason the Applicant considers that an evidence-based approach is appropriate. The evidence indicates that breeding gannets from Flamborough & Filey Coast SPA have low connectivity with Norfolk Vanguard, and that the peak numbers seen at Norfolk Vanguard occur during the autumn migration. Those birds are therefore most likely to be birds from many different colonies with a low representation from Flamborough & Filey Coast SPA. During the breeding season (whether defined as the migration-free or the 'full' breeding season) gannet numbers at Norfolk Vanguard are low, and that is consistent with low connectivity with Flamborough & Filey Coast SPA breeding gannet population. Furness (2015) estimated that about 55% of the UK gannet population comprises breeding adults and about 45% is immature birds. It is known that immature birds move towards colonies later than established adults and that many of the younger immatures do not reach breeding colonies, but range widely at sea often in areas not used greatly by breeding adults (Wernham *et al*. 2002, Furness 2015). It is, therefore, highly likely, based on the evidence, that gannets seen at Norfolk Vanguard in summer are mostly birds that are migrating through the area (including immature birds not yet attached to particular colonies), rather than breeding adults from Flamborough & Filey Coast SPA. For that reason, the Applicant has taken this evidence-based approach. However, the Applicant agrees that it is useful to consider the precautionary approach of assuming greater connectivity to reassure stakeholders that this does not greatly alter the conclusions.

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			If the full breeding season (March to September) is applied in place of the migration-free breeding season (April to August) the number of gannet annual collisions (total = 110) which are apportioned to the Flamborough and Filey Coast SPA population changes from 23 (April to August, as assessed in the HRA) to: Breeding season: 30 x 100% = 30 Autumn: 51 x 4.2% = 2 Spring: 30 x 5.6% = 2 Total = 34. The addition of 11 individuals to the project total would increase the background mortality by 0.36% and this would not alter the HRA conclusion that collisions at the project alone would not result in an AEoI. If the gannet breeding season defined by JNCC was used (May to September; Kober *et al*. 2010) the estimated collision mortality for Flamborough & Filey Coast SPA gannets would be slightly lower than in our original estimate, because Kober *et al*. (2010) defined more of the year as nonbreeding season. Furness, R.W. 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for BDMPS. Natural England Commissioned Report Number 164. Furness, R.W., Hallgrimsson, G.T., Montevecchi, W.A., Fifield, D., Kubetzki, U., Mendel, B. and Garthe, S. 2018. Adult gannet migrations frequently loop clockwise around British and Ireland. Ringing & Migration, 10.1080/03078698.2018.1472971 Kober, K., Webb, A., Win, I., Lewis, M., O'Brien, S., Wilson, L.J. and Reid, J.B. 2010. An analysis of the numbers and distribution of seabirds within the British fishery limit aimed at identifying areas that qualify as possible marine SPAs. JNCC Report No. 431. Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W. and Burton, N.H.K. 2012. Seabird foraging ranges as a

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			preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation 156, 53-61. Wakefield, E.D., Bodey, T.W., Bearhop, S., Blackburn, J. *et al*. 2013. Space partitioning without territoriality in gannets. Science 341, 68-70. Wernham, C.V., Toms, M.P., Marchant, J.H., Clark, J.A., Siriwardena, G.M. and Baillie, S.R. 2002. The Migration Atlas: Movements of the Birds of Britain and Ireland. T & AD Poyser, London.
23.37	RSPB	What value do you suggest should be apportioned to kittiwake breeding season apportioning in relation to the Flamborough and Filey Coast SPA?	
23.38	Applicant	Can you set out what the differences would be in the outcome of the assessment of collision risk to gannet and kittiwake of the Flamborough and Filey Coast SPA if the nocturnal activity rates as advised by NE and RSPB are utilised?	For gannet, application of the higher nocturnal activity rate of 25% would increase the Flamborough and Filey Coast SPA total collisions by 17% (from 34 above, to 40) and application of the 0% nocturnal rate would reduce the total collisions by 17% (from 34 to 28). For kittiwake, application of the higher nocturnal activity rate of 50% would increase the Flamborough and Filey Coast SPA total collisions by 42% (from 12, to 17) and application of the 25% nocturnal rate would increase the total collisions by 8% (from 12 to 13). Neither of these changes would materially affect the conclusions of no AEoI for the SPA populations.
23.39	Applicant	Please respond to the comments NE has made in its RR [RR-106] in regard to the in-combination displacement of auks utilising a range of mortality rates. If you conclude that there would be a LSE can you update the Greater Wash SPA integrity matrix to include this figure.	Note it is assumed that this question is with respect to the Flamborough and Filey Coast SPA, not the Greater Wash SPA, since it refers to species (auks) which are features of the former SPA but not the latter. The methods for estimating auk displacement are subject to ongoing discussions with Natural England (Operational Auk Displacement: update and clarification note, Appendix 3.3). Following this, a determination of the requirement to update the screening assessment will be made and further assessment provided as necessary.
23.40	NE	Can you please provide reasons in support of your statement that you cannot rule out an AEOI on auks at Flamborough and Filey Coast SPA, and confirm	

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		which impacts this would be in relation to.	
23.41	NE	Can you explain why you do not agree with the Applicant's approach in the Information for the HRA report [APP-045] in which a LSE for common scoter is screened out for the Greater Wash SPA.	
23.42	Applicant	Please confirm whether or not you concur with NE's views in relation to common scoter, and if so, please update the Greater Wash integrity matrix to include this feature.	A figure presenting the distributions of common scoter in relation to the export cable route will be provided and the integrity matrix for the Greater Wash SPA will be updated to reflect the comments NE make in their RR with respect to potential disturbance to common scoter by cable laying vessels along the export cable route. If this results in a determination that a likely significant effect for this feature cannot be ruled out, additional assessment will be provided.
23.43	NE	In relation to red-throated diver for the Outer Thames Estuary SPA, please clarify whether all of the concerns noted in section 4.2.6 of your RR [RR-106] apply or just the concern with regard to vessel movements.	
23.44	Applicant	Please clarify what Biologically Defined Minimum Population Scales (BDMPS) figure has been used in the non-breeding apportionment of gannets to the Flamborough and Filey Coast SPA.	The gannet BDMPS populations used to apportion impacts occurring in the nonbreeding season to the Flamborough and Filey Coast SPA population were those presented for the UK North Sea and Channel in Furness (2015): during autumn migration 456,298 and during spring migration 248,365.
23.45	Applicant	In relation to the in-combination assessment with the Hornsea 3 and Thanet Offshore Wind Farm projects, please set out how you intend to monitor the progress of these examinations and update your in-combination assessment as and when relevant information from these other examinations becomes available?	The Applicant has and will continue to monitor the examinations of Thanet Extension and Hornsea Project THREE by reviewing examination submission documents and attending hearings where possible. The Applicant also has regular meetings with Hornsea Project THREE (UK) Ltd and the Thanet Extension team within Vattenfall. The Applicant will consider the requirement to update the in-combination assessment following any significant updates to these projects during examination. The Applicant also expects that Natural England would identify potential required updates through their direct involvement in the examination of each project.

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23.46	Applicant	Please provide a detailed consideration of the specific features of the HHW SAC that could be impacted, both alone or in-combination with other relevant plans or projects, as a result of the various types of cable protection.	The designated features of the Haisborough, Hammond and Winterton SAC include Annex I Sandbanks which are slightly covered by sea water all the time and Annex 1 Reef. Section 7.4 of the Information to Support Habitats Regulations Assessment (document reference 5.3) provides the assessment of impacts associated with cable installation, including cable protection, both alone and in-combination with other relevant plans or projects. The worst case total area of cable protection installed within the SAC could be 0.05km^2, 0.003% of the total SAC area. Potential impacts considered in the Information to Support HRA report in relation to cable protection include the following: • Annex I Sandbanks ○ Permanent habitat loss from Norfolk Vanguard alone (section 7.4.1.1.2 of the Information to Support HRA report); ○ Introduction of new substrate from Norfolk Vanguard alone (section 7.4.1.1.2); ○ In-combination permanent habitat loss (section 7.4.1.2.2); ○ In-combination introduction of new substrate (section 7.4.1.2.3); • Annex I Reef ○ Introduction of new substrate from Norfolk Vanguard alone (section 7.4.2.1.2); ○ In-combination introduction of new substrate from Norfolk Vanguard alone (section 7.4.2.2.2). NB, it was agreed through the ETG that there would be no permanent loss of Annex I Reef due to the fact that *S. spinulosa* is ephemeral and can be expected to recover from cable installation works.
23.47	MMO, NE, WDC, TWT	In light of the information contained in the Change Report [AS-009], and in particular the amended proposal for up to 36 piles in total for the two offshore electrical platforms and an increase in the diameter of the pin piles from 3m to 5m, please confirm whether you concur with the findings contained in the ES and the Change Report.	

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23.48	Applicant Natural England	Confirm the extent to which you consider the HRA report is legally compliant in light of the judgment in People over Wind, Peter Sweetman v Coillte Teoranta Case C-323/17.	The Information to Support HRA Report (document 5.3) is considered to be legally compliant for the reasons set out in the response to question 23.15.
23.49	Applicant NE	Appendix 5.2 of the HRA Report screened out likely significant effects at Broadland SPA and Ramsar site on the basis of low numbers of wintering birds but, NE (Appendix 4 #12) [RR-106] suggests that the low numbers were due to the cropping regime at the time of the survey. (i) Please comment on the feasibility of conducting further surveys to optimise the accuracy of numbers of wintering birds by the time the examination closes. (ii) What would 'suitable mitigation measures' comprise and how would they be secured? (iii) If no additional measures were to be implemented, can NE confirm whether it agrees with the Applicant's conclusion of no LSE at Broadland SPA and Ramsar site? (iv) If the answer to (iii) is no, the ExA is mindful of the need to consider the Sweetman judgement which stipulates that mitigation should not be taken into account at the screening stage. As such, does NE suggest that there would be a LSE on the Broadland SPA and Ramsar site? If this is the case, for which features and which potential impacts? Is NE content that there would be no adverse effect on integrity?	It was agreed with NE during the Evidence Plan Process (Norfolk Vanguard - Onshore Wintering Bird Surveys Survey Methodology Approach Update Response March 2016) that one year of surveys was appropriate, and as such the Applicant does not intend to conduct further surveys for wintering birds. As part of this agreement NE recommended considering reviewing local cropping patterns to provide evidence to indicate what the likely area of available habitat will be during construction. The potential for local cropping patterns to influence the findings of the surveys was taken into account, however it was considered that although some fields were recently ploughed, the majority of crops in place over winter within the wintering bird survey area (winter crop, fallow (grass)) would provide suitable foraging habitat for pink-footed geese, and as such the survey results recorded over winter in 2016/2017 provided a robust estimate of the use of these habitats by qualifying features of the Broadland SPA and Ramsar site. Mitigation measures have been proposed to account for changes in cropping patterns and for wintering birds to use different habitats for foraging and resting on an interannual basis and are set out in Paragraph 224 and 225 of the OLEMS (document reference 8.7) and secured through DCO Requirement 24. This includes a commitment to not undertake winter works in any one area in consecutive years. The area of arable land located within 5km of the Broadland SPA and Ramsar site and within the onshore project area is approximately 20ha, which represents a negligible amount of the available arable land within 5km of the SPA (see Paragraph 196 of Chapter 23 Onshore Ornithology document reference 6.1.23 for further information), and therefore the use of the mitigation measures set on in the OLEMS (document reference 8.7) are considered appropriate.
23.50	Natural England	Do you consider there are potential likely significant effects for non-seabird migrants of Broadland and	

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		Breydon SPA and North Norfolk Coast SPA? If so, for which qualifying features and which potential impacts?	
23.51	Applicant	NE (Appendix 1 #4.3) [RR-106] points out there are qualifying species in the 'shadow' of the Vanguard sites – particularly Broadland and Breydon SPA and potentially North Norfolk Coast SPA. With reference to the collision assessment for migrant non-seabirds referred to in paragraphs 393 and 357 of ES Chapter 13 (Offshore Ornithology): Please comment on the extent to which migration modelling and CRM for Bewick's swan and avocet is required and whether the CRM for species modelled at the East Anglia THREE offshore windfarm project should be updated using Norfolk Vanguard turbine specifications and site location information?	The assessment of non-seabird collision risk has not been updated at this stage so the Applicant is not in a position to respond to this question at present. This aspect will be addressed for subsequent submissions. However, the Applicant anticipates that as a minimum such an assessment would need to consider the inclusion of the same species assessed for the nearby East Anglia ONE and East Anglia THREE wind farms, with the addition of those species identified by NE in their RR (Bewick's swan and avocet). The first stage of this will be to screen species for both project alone and cumulative collision risks, and it is anticipated that this will determine the need for further assessment both for the project alone and cumulatively.
23.52	Applicant	The Applicant is requested to revisit its in-combination assessment for the River Wensum SAC, Norfolk Valley Fens SAC and The Broads SAC and provide greater justification for a finding of no in combination effects, with reference to NE's Relevant Representations (4.5.11) suggesting that an 'in combination' assessment with Hornsea 3 OWF should also be undertaken as this cable route passes about 360m to east of Booton Common and construction periods may overlap.	**Norfolk Valley Fens SAC and The Broads SAC** A clarification note was provided to NE in response to NE's RR in relation to the need for further information regarding the effects upon the water supply mechanism to the Norfolk Valley Fens SAC and the Broads SAC. The clarification note is provided in Appendix 2 of the SoCG with Natural England (document reference Rep1 - SOCG - 13.1) and provides further information in relation to the water supply mechanism for Booton Common Site of Special Scientific Interest (SSSI) (part of Norfolk Valley Fens SAC, located 0.6km from the onshore cable route and Broad Fen, Dilham component SSSI (part of The Broads SAC, located 3.6km from the onshore cable route)). In summary, these sites, whilst predominantly surface water fed, are also partly groundwater fed – from the underlying chalk aquifer (based on the Environment Agency's WETMECs data). There is no direct pathway between the construction works and the underlying chalk aquifer that these sites are dependent upon, and the Applicant has determined that detailed groundwater assessment is not necessary and that the conclusions of no AEoI in the

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			Information to Support Habitats Regulations Assessment (document reference 5.3) for these two sites are appropriate. **River Wensum SAC** The Applicant avoids direct impacts to the River Wensum SAC through a commitment to cross this site using trenchless crossing techniques. Potential impacts relate to sediment management associated with construction related exposed soils outside of the footprint of the SAC. Sediment management measures to mitigate potential water quality impacts during construction are presented within the Information to Support HRA Report (document reference 5.3) at paragraph 1166. Following the implementation of these measures no AEoI has been identified for the River Wensum SAC. These measures will be included in an updated OCoCP and secured through Requirement 20. The Applicant has also committed to develop a detailed scheme and programme for each watercourse crossing, diversion and reinstatement, which will include site specific details regarding sediment management and pollution prevention measures. This scheme will be submitted to and, approved by the relevant planning authority in consultation with Natural England. This commitment is secured through Requirement 25 (Watercourse Crossings) of the draft DCO. With these commitments in place there will be sufficient control measures to safeguard designated sites in relation to sediment control, pollution prevention and reinstatement of all work areas at watercourse crossings. In light of the conclusion of the Information to Support Habitats Regulations Assessment (Document Reference 5.3) that no potential adverse effect on the integrity on the River Wensum SAC, Norfolk Valley Fens SAC and The Broads SAC outlined above, the Applicant does not consider that an in-combination assessment with Hornsea Project 3 is required as no pathway to give rise to potential effects for Norfolk Vanguard alone has been identified.
23.53	Natural England	Please clarify whether Likely Significant Effects (LSE) should be identified for Wash and North Norfolk Coast SAC, Winterton-Hersey Dunes SAC and Humber Estuary SAC and if so why?	

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		Confirm otherwise whether you agree with the onshore European sites and features screened in by the Applicant for which a LSE has been identified?	
23.54	Applicant	Explain the apparent discrepancy between the LSE identified in the screening matrix [AS-006] for Norfolk Valley Fens SAC for narrow-mouthed whorl snail (Disturbance due to groundwater / hydrology changes within 5km and Impacts from changing air quality within 5km), and the omission of this feature from the integrity matrix.	Effects on narrow-mouthed whorl snail of the Norfolk Valley Fens SAC from disturbance due to groundwater / hydrology changes and impacts from changing air quality (within 5km) are not screened in for further assessment within the Habitats Regulations Assessment Onshore Screening (document reference 5.3.5.2). Table 5.1 of that document states that only effects on the qualifying features of Alkaline fens, Northern Atlantic wet heaths with *Erica tetralix* and Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* only are screened in. As such, effects on narrow-mouthed whorl snail of the Norfolk Valley Fens SAC is not considered within the Information to Support Habitats Regulations Assessment (document reference: 5.3) and is not included within the Integrity Matrices (Section 2.3 of The Applicant's Response to Section 51 Advice from The Planning Inspectorate (Document Reference PB4476-008-001)).
23.55	Applicant	Construction hours are secured through Requirement 26 of the draft DCO and detailed in para 38 of the outline Code of Construction Practice (CoCP). Exceptions apply for 'essential and non-intrusive activities' which include concrete pouring, drilling and pulling cables, trenchless installation techniques and works at the landfall. Paston Great Barn SAC is 2.9km from the onshore project area and the Information for the HRA report (para 101) [APP-045] confirms that the colony uses six areas within the onshore project area as foraging routes. Explain whether the activities exempted from the construction hours would be likely to impact upon Barbastelle bats from the Paston Great Barn SAC.	Details of the potential effects of lighting outside of the secured construction hours upon commuting and foraging bats of the Paston Great Barn SAC is provided in Section 9.3.2.1.1 and Section 9.3.5.3 of Information to Support Habitats Regulations Assessment (document reference 5.3). This includes consideration of the potential effects in relation to the use of trenchless crossing techniques at the following locations: • Dilham Canal and land east of Dilham Canal • Witton Hall Plantation along Old Hall Road Mitigation is provided in relation to potential short-term impacts arising as a result of temporary construction lighting at these locations. In summary, this includes ensuring that the BCT's *Artificial lighting and wildlife guidance* (2014) is adhered to when designing lighting during temporary works at trenchless crossing locations. This BCT guidance includes provisions for the use of directional lighting only, which is angled away from sensitive ecological features. These measures are captured within the OLEMS (document reference 8.7) and secured through Requirement 24 of the dDCO. No potential adverse

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			effect on the integrity of the Paston Great Barn SAC in relation to the conservation objectives for the site has been identified.
23.56	Natural England	Please provide further clarification in relation to your RR (para 4.5.12) [RR-106]. In particular why, in relation to Norfolk Valley Fens SAC, should horizontal directional drilling be required for the watercourses which feed into Blackwater Drain, given that [RR-106] Appendix 4 para 90 states the qualifying features of the SAC at Booton Common are water sensitive habitats reliant on the groundwater supply and not surface water from the Blackwater Drain?	
23.57	Applicant	Please revisit the possibility of HDD method for Blackwater Drain in light of NE's comments.	Please refer to the Applicant's response to question 11.13 with respect to the careful consideration associated with the selective use of trenchless installation methods. The two HDD locations close to Blackwater Drain tributary crossings noted within the NE comments (Figure 9.6 of Document 5.03 Norfolk Vanguard Information to Support HRA) refer to a single HDD crossing with individual compounds depicted at each end of the crossing, for entry and exit of the HDD. This trenchless crossing is of the proposed Hornsea Project Three cables which may be required for technical requirements. NE suggest that HDD could also be undertaken for the watercourses that feed into Blackwater Drain rather than the trenched crossings which are proposed. Impacts at watercourse crossings are predominantly related to the introduction of temporary culverts to allow construction access either side of the watercourse. Whether the crossing technique is trenched or trenchless, a temporary culvert will be required for access either side of the Blackwater Drain. However, neither crossing method (whether trenched or trenchless) is considered to result in a significant impact when assessed individually. Impacts resulting from the use of temporary culverts would be reversible once the structures have been removed and the area reinstated. The natural hydrology would recover immediately upon structure removal, and geomorphology and

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			associated physical habitats are also expected to recover rapidly. The use of these techniques is therefore not considered to result in significant adverse effects. In light of this, and the response provided to Q 11.13 regarding impacts associated with HDD, it is not considered that HDD would provide a more suitable option in this scenario. The design of all watercourse crossings will be submitted to and approved by the relevant planning authority in consultation with Natural England, prior to the commencement of each stage of the onshore transmission works. This is secured through Requirement 25 of the dDCO.
23.58	Natural England	Clarify what further detail in the outline Code of Construction Practice [APP-025] you consider necessary in relation to sediment control and reinstatement of work areas to safeguard designated sites, specifying the measures for each site where further detail is considered to be required,	
23.59	Applicant	Please review the outline CoCP [APP-025] and comment on whether this should be updated with regard to sediment control and reinstatement of work areas to safeguard designated sites, and if so how.	The approach to sediment management and water quality has been identified and described in Section 11.1 of the OCoCP (document reference 8.1). Requirement 20 of the dDCO sets out that no stage of the onshore transmission works may commence until for that stage a final CoCP has been submitted to and approved by the relevant local planning authority. This would provide site specific details for sediment management, based on the principles agreed in the OCoCP and informed by the detailed design and appointment of the Principal Contractor. In addition to the CoCP, the Applicant will develop a scheme and programme for each watercourse crossing, diversion and reinstatement which will include site specific details of the sediment management measures including their use and removal. This scheme will be submitted to, and approved by, the relevant planning authority in consultation with Natural England. This is secured through Requirement 25 of the dDCO.

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			With these commitments in place there will be sufficient control measures to safeguard designated sites in relation to sediment control, pollution prevention and reinstatement of all work areas at watercourse crossings. Notwithstanding the point above, the Applicant notes that the OCoCP does not include all of the mitigation measures set out in Section 9.3.5.1 of the Information to Support Habitats Regulations Assessment (document reference: 5.3), which include measures in relation to topsoil management and sediment management measures. The OCoCP will be updated to reflect this and an updated version will be submitted at a future deadline during the examination process. Further details regarding the Applicant's position in relation to the information required in relation to sediment control and reinstatement of work areas is provided within the Statement of Common Ground with Natural England (document reference Rep1 - SOCG - 13.1).
23.60	Applicant	NE suggests (para 4.5.7) [RR-106] a requirement for a mitigation plan to be developed and agreed with NE prior to the removal of hedgerows, which should be in place for 7 years or until the hedgerow has satisfactorily recovered. Do you agree to this suggestion and if not why not?	Hedgerow mitigation measures are captured out in the OLEMS (document reference 8.7) and refer to a period of recovery of up to 7 years. Requirement 24 of the dDCO requires that no stage of the onshore transmission works may proceed until an Ecological Management Plan (which accords with the OLEMS) is submitted and approved by the relevant planning authority in consultation with NE. In addition, Requirement 18 of the draft DCO requires that a Landscape Management Scheme for each stage of the works is produced (in accordance with the OLEMS), submitted and approved by the relevant planning authority. This would include details of soil restoration and ground preparation, species choice, stock size, spacing, protection and a program of weed control and aftercare to cover a period of 5 years. Whilst hedgerows may take up to 7 years to fully replace the hedgerow that was lost, the latter part of this period will simply be the hedgerow thickening as it continues to fill the gap. It will be apparent within the first 5 years of aftercare whether a replacement hedgerow has adequately established. As such, the Applicant believes that the Ecological Management Plan described in Requirement 24 and the Landscape Management Scheme described in

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			Requirement 18 includes sufficient measures to meet the hedgerow requirements requested in Natural England's relevant representation.
23.61	Natural England	In [RR-106] you state that you do not agree that adverse effects on integrity (AEOI) can be excluded for any of the sites assessed by the applicant. Do you agree that an AEOI can be ruled out for any of the features of any of the onshore European sites for which a LSE has been identified?	
23.62	Natural England	Confirm whether your concerns relating to Norfolk Valley Fens SAC and the Broads SAC and Ramsar apply to all features?	
23.63	Applicant	Paragraph 1162 of the Information for the HRA report [APP-045] states that a pre-construction botanical survey of the northern floodplain habitat of the River Wensum would be conducted. This is not included within the Outline Landscape and Ecological Management Strategy [APP- 031]. Confirm how the pre-construction surveys would be secured in the dDCO and/or what changes to the OLEMS should be made.	This pre-construction survey is captured in paragraph 196 of the OLEMS (document reference: 8.7).

1.24 Onshore Ecology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
24.1	Applicant	NE has raised a number of concerns in Appendix 4 of [RR-106] relating to terrestrial ecology. Please respond, with particular regard to the comments made in relation to (i) SSSIs where NPS EN-1 states that development consent should not normally be	The Applicant has noted the concerns raised in Natural England's Relevant Representation and have provided a detailed response to their concerns within the Statement of Common Ground with Natural England (document reference: Rep1 - SOCG - 13.1). A summary of the key points (in relations to SSSIs, protected species and habitats) is provided below.

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		granted where development is likely to have an adverse effect on a SSSI; (ii) Protected species; and (ii) Habitats.	**SSSIs** Clarification regarding the potential for the construction works to affect groundwater supply to the SSSIs identified by Natural England (Dereham Rush Meadow SSSI, Holly Farm Meadow SSSI, Whitwell Common SSSI and Booton Common SSSI) is presented within Appendix 2 of the Statement of Common Ground with Natural England (Document reference: Rep1 - SOCG - 13.1). In summary, the SSSIs mentioned above whilst predominantly fed by surface water are partially fed by groundwater from the chalk aquifer. The depth of the chalk aquifer in the vicinity of the onshore project area confirms that interactions with the chalk aquifer will not occur and therefore there is no direct pathway between the construction works and the underlying chalk aquifer, and a detailed groundwater assessment is not deemed necessary. Regarding the potential for the construction works to affect surface water flows at these SSSIs, the Applicant has committed to develop a scheme and programme for each watercourse crossing, diversion and reinstatement which will include site specific details of the sediment management measures and pollution prevention. This scheme will be submitted to and approved by the relevant planning authority in consultation with Natural England. This is secured through Requirement 25 of the dDCO (Document Reference 3.1). With these commitments in place there will be sufficient control measures to safeguard designated sites in relation to sediment control, pollution prevention and reinstatement of all work areas at watercourse crossings. Felbrigg Wood SSSI was identified as a designated site with the potential to be subject to air quality impacts due to its proximity to the nearest road network (A148 between King's Lynn and Cromer). A full assessment of the air quality impacts has been undertaken within Chapter 26 Air Quality, and the impact of the project upon sensitive habitats of Felbrigg Woods SSSI has been assessed as to be an impact of negligible significance. **Protected species** Clarification of the approach to assessment of the impacts on bats of the Paston Great Barn SAC (and the Old Hills barbastelle maternity colony) are provided in Appendix 3 of the Statement of Common Ground with Natural

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			England (Document reference: Rep1 - SOCG - 13.1). In summary, all hedgerows within 5km of Paston Great Barn SAC and the Old Hills barbastelle maternity colony that will be temporarily removed during construction were identified (130m in total). Detailed bat and hedgerow mitigation measures (for all hedgerows, not just those identified as important for barbastelle) are provided within Chapter 22 Onshore Ecology and captured within the OLEMS (document reference 8.7) and secured through Requirement 24 of the draft DCO (Ecological Management Plan), which will require consultation with Natural England prior to discharge. No potential adverse effect on the integrity of the Paston Great Barn SAC in relation to the conservation objectives for the site has been identified. **Habitats** Natural England's comments on habitats for nesting birds is addressed in the Applicant's response to Q24.18. Natural England's concerns regarding sediment management and pollutant release during watercourse crossings is addressed earlier in this response when discussing Natural England's comments on potential impacts to SSSIs. The mitigation outlined in relation to SSSIs will apply to all watercourse crossings.
24.2	Applicant	Please address the comments raised about discrepancies between dDCO parameters presented in the ES referred to in NE Appendix 5 [RR-106] and the MMO RR [RR-186].	Appendix 6.1 provides an explanation of the relationship between design parameters of the draft DCO and ES.
24.3	Natural England	Significant limitations to the onshore ecological surveys are identified in Paragraphs 82-83 of Chapter 22 ES –APP-347] due to landowner access not being possible for the entire onshore project area. A precautionary approach is said to be adopted where survey data is not available. Please confirm that, notwithstanding your comments on the River Wensum, Norfolk Valley Fens and The Broads SACs, you are satisfied that the Applicant's ecological assessment has been	

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		undertaken in a sufficiently precautionary manner and that appropriate mitigation has been developed and secured.	
24.4	Applicant	Confirm that the final Project Environmental Management Plan is to be based on the Outline Project Environmental Management Plan (OPEM) provided at Document 8.14 [APP-038] and detail how you propose to deal with uncertainty as to whether the assessment in the final plan would result in effects of greater significance than have been assessed in the OPEM.	As stated in section 1.2 of the Outline Project Environmental Management Plan (**PEMP**), the document provides the framework for the final PEMP (required under DCO Schedules 9 and 10 Part 4 condition 14(1)(d) and Schedules 11 and 12 Part 4 condition 9(1)(d)), including the controls that are proposed to manage the environmental risks associated with the construction and operation of the offshore components of Norfolk Vanguard. In accordance with the dDCO, the PEMP must be approved in writing by the MMO and therefore any works that would lead to effects that are greater than those assessed in the ES would not be permitted.
24.5	Applicant	Confirm, in respect of Table 34.15 Potential impacts identified for onshore ecology [APP-358], whether you consider that adverse impacts could be mitigated further or provide a robust justification as to why this is not possible.	Table 34.15 provides a summary of impacts and mitigation that are presented more fully in each relevant topic chapter. The impact assessment presented in Chapter 22 Onshore Ecology (document reference: 6.1.22) has considered all appropriate mitigation to reduce, as far as possible, all impacts to a non-significant level and these are captured in the OLEMS (document reference 8.7) and secured through Requirement 24. In the two instances where a residual significant impact remains following mitigation (temporary loss of hedgerow and impacts to bats (related the temporary loss of hedgerow), no other viable mitigation options are available to reduce the impact level further. For both of these impacts, with mitigation in place, the magnitude of effect has been reduced to low. However, since the receptors are considered to be of high importance, a residual significant impact remains. Solutions have been adopted to minimise the impact upon hedgerows as far as possible: • during site selection for the onshore cable route, efforts were made to minimise the number of hedgerow crossings made;

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			• the onshore cable route working width at hedgerows has been reduced from 45m to 20m to minimise the amount of hedgerow which needs to be removed; • where hedgerow gaps are required beyond the two-year duct installation phase (i.e. for the duration of the subsequent two-year cable pull phase), the number of gaps required will be minimised as far as possible and will be no wider than 6m; • during detailed design, the project will seek to avoid mature trees within hedgerows through the micro-siting of individual cables, in order to retain as many mature trees as possible, and • all hedgerows will be replanted following guidance within the Norfolk hedgerow BAP and will include appropriate species for north-east Norfolk (NBP, 2009), including ground flora planting designed to encourage insect biomass (BCT, 2012). Future hedgerow management will include allowing standard trees to develop to improve quality of the hedgerow as a foraging resource. Hedges will be double-planted with 2m grassland strips on both sides so there is always a leeward side to forage. This will ensure that the quality of the hedgerow resource is improved in the long term. Despite this, there is a short term loss of 20m sections of hedgerows at 165 locations, which is assessed as a moderate adverse impact, until the replanted hedgerows can reach maturity. It should be noted that this is a temporary impact which would reduce to negligible once the hedgerows have matured (up to seven years after construction).
24.6	Applicant	Provide an update on discussions with NE regarding monitoring measures to be relied upon and what corrective action it is envisaged would be taken in the event of an outcome during monitoring that is worse than anticipated.	The SOCG with Natural England shows that it is agreed that the In Principle Monitoring Plan (document 8.12), provides an appropriate framework to agree monitoring with the MMO in consultation with Natural England. Condition 14(1)(b) of the Generation DMLs (Schedule 9-10), and Condition 9(1)(b) of the Transmission DMLs (Schedule 11-12)), require a construction programme and monitoring plan to be submitted to and approved in writing by the MMO.

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			In discharging this condition, and before the MMO can approve the construction programme and monitoring plan, the Applicant must submit details (which accord with the offshore in principle monitoring plan, document reference 8.12), for approval by the MMO in consultation with relevant statutory bodies, of the proposed monitoring for the construction of the authorised scheme. The timings, methodologies, and details of further actions in the event of an unacceptable outcome of the monitoring would therefore be included in the final plan provided for approval by the MMO, pursuant to Condition 14(1)(b) or Condition 9(1)(b) of the DMLs.
24.7	Applicant	Table 23.3 in ES Chapter 23, Onshore Ornithology, [APP-347] refers to further sites identified by Natural England that should be considered, to include Cawston and Marsham Heaths, Foxley Wood, Honeypot Wood and Beetley and Hoe Meadows SSSIs designated as representative of rare habitats. You confirm in the table that these sites have been considered in sections 23.7 and 23.8 of the ES [APP-347], but this does not appear to be the case. Please clarify and explain how effects to these sites have been or will be considered and specify the information contained within the ES in this regard.	The Natural England comment in Table 23.3 was made in relation to the Scoping Report provided in 2016, in which a large search area (scoping area) for the onshore project area was provided. These four SSSIs were located within this scoping area. Following route identification and refinement, these sites are no longer located within the onshore project area, and are located 1.5km or more from the onshore project area. Given the distance of these sites from the onshore project area, potential effects upon these sites have not been considered further.
24.8	Applicant	Table 23.13 in ES Chapter 23 [APP-347] is divided into two parts and contains inconsistencies. Certain habitat types are duplicated in the first part of the table, and repeated in the second part of the table but with different hectare values. The second part of the table contains an additional column not present in the first. Explain these apparent discrepancies, confirming what are the appropriate values for each habitat type and explaining to what extent this may affect	The upper part of Table 23.13 has been included in error – this upper part is the habitat table which was included in Chapter 23 of the Norfolk Vanguard PEIR, which was subsequently updated following amendments to the onshore project area between PEIR and submission of the application. The habitat footprints provided in the lower part of Table 23.13 are the correct values and have been used to inform the subsequent assessment. These are the same as the habitat footprints provided in Table 22.11 of Chapter 22 Onshore Ecology (document reference: 6.1.22).

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		the findings in the ES?	
24.9	Natural England	Confirm, in light of your comments at Appendix 4, point 14 of your RR [RR-106] whether you agree with the Applicant's assessment of residual significance in the onshore ornithology chapter and, if not, why not?	
24.10	Applicant	Natural England's RR [RR-106] Appendix 4, point 13 states that no detailed assessment of noise on bird features appears to have been carried out, and advises that a detailed noise assessment is carried out for sites within 500m of the project area and mitigation provided for any impacts identified, or evidence provided to demonstrate that there will be no additional noise experienced from construction at the designated site boundary. Please comment on this advice and confirm whether, and if so how these issues will be addressed.	To account for potential noise disturbance upon notified features of SSSIs, a buffer of 300m from designated sites (where birds are qualifying features) was identified, within which potential noise impacts were considered. This buffer was agreed with Natural England in January 2017 (Onshore Wintering Bird Surveys Survey Methodology Approach Update). Using this criterion, the Applicant undertook further route refinement seeking to avoid sites, where possible, using the agreed noise buffer. With the exception of the River Wensum all other SSSIs have been avoided by at least 300m. Based on the agreed methodology there was therefore no requirement to assess potential noise disturbance effects. On this basis the assessment of impacts for construction, operation and decommissioning presented are consistent with the agreed assessment methodologies. The assessment of the effects of the project upon the notified features of the River Wensum SSSI considered those notified features which were recorded during the Breeding Bird Surveys (Appendix 23.4 of Chapter 24 Onshore Ornithology). No notified species were recorded roosting during the 2017 breeding bird surveys, and as such no potential impacts upon the notified features of the River Wensum SSSI were identified.
24.11	Applicant	The overarching National Policy Statement for Energy aims to secure a halting, and if possible a reversal, of decline in priority habitats and species. Confirm that whilst priority habitats are presented in ES Chapter 23, no such bird species have been identified.	The following 'priority species' (i.e. those listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) have been recorded during the Onshore Wintering Bird Surveys (document reference: 6.2.23.2), Breeding Bird Surveys (document reference: 6.2.23.4) and the Extended Phase 1 Habitat Survey (document reference: 6.2.22.1) undertaken for the project: • Bullfinch • Common Scoter • Dark-bellied Brent Goose

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			• Dunnock • House Sparrow • Lapwing • Linnet • Marsh tit • Reed bunting • Skylark • Song thrush • Starling These species have been fully considered in the impact assessment presented in Section 23.7.6 and 23.7.7 of Chapter 23 Onshore Ornithology. With mitigation in place residual impacts to all bird species are no greater than minor adverse during construction and negligible during operation.
24.12	Applicant	ES Chapter 6: EIA Methodology [APP-330] states that a Rochdale Envelope approach has been applied, and the parameters of the Proposed Development provided represent the worst-case scenario. Having regard to the design parameters and assumptions used to inform the worst case assessment, explain how and to what extent the dDCO constrains the Proposed Development to ensure that effects greater that those assessed will not occur?	The Explanatory Memorandum sets out the approach of the draft DCO and DMLs to parameters on • Phasing of offshore works (4.5) • Phasing of onshore works (4.10) • Offshore flexibility (4.11 – 4.15) • Onshore flexibility (4.16 – 4.17) • Policy support for flexibility (4.18 – 4.19) • Parameters in the Order (4.20 – 4.21). A list of Order parameters is set out in Schedule 3 of the Explanatory Memorandum with DCO references and references to the offshore project components (offshore structures, offshore cables, foundations, scour protection, licenced marine activities), and onshore project parameters, to which they relate. These parameters together constrain the proposed development to ensure that effects greater than those assessed will not occur.
24.13	Applicant	Study areas not surveyed would be subject to surveys post-consent, as noted in the Outline	The worst case scenario was established based on the following approach:

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		Landscape Ecological Management Strategy OLEMS [APP-031]. Justify the robustness of your approach to address gaps in survey information, importantly those that relate to notable species, also explaining, in the absence of such information, how the worst case scenario used for the assessment has been established and the extent to which it is appropriately robust.	• For areas where survey data had been obtained, the baseline survey and desk-based data gathered for the onshore project area was used; • For unsurveyed areas, following CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland* (2018) a precautionary approach was used. For these areas, it was assumed that the relevant ecological receptor was present. The impact assessment was conducted based on this assumption and mitigation was proposed based on this assumption. In this way, the assessment has taken account of the worst case scenario for the ecological receptors which could be present within the onshore project area (and species-specific buffer zones surrounding it). This approach ensures that as far possible the impacts assessed are based on a detailed knowledge of the existing ecological baseline, but in those areas where data is incomplete, by using a precautionary approach the maximum potential impacts and maximum potentially required mitigation is captured. Additional desk-based data sources were also used to inform the baseline for the unsurveyed areas, such as the use of the Norfolk Living Map and Norfolk Barbastelle Study Group's radio-tracking data (as detailed in Chapter 22 Onshore Ecology). Whilst these data sources do not replace survey data they ensure that an overview of the ecological baseline within the unsurveyed areas can be understood.
24.14	Applicant	Explain how you propose to undertake future surveys of land not previously accessed, detailing methods applicable to land that is deemed inaccessible due to physical constraints, not subject to landowners' consent, or not previously surveyed for any other reason. Please explain how this will be secured in the dDCO.	Post-consent, survey access rights will have been secured for all landowners within the onshore project area as part of voluntary agreements or through powers authorised under the DCO (see Article 16). This will then provide survey access rights to 100% of the Order limits. There are no plans to undertake pre-construction surveys outside of the Order limits. Some small areas of the onshore project area will remain inaccessible due to physical barriers to entry. Based on the areas where access has been granted to date, physical restrictions to access represent less than 1% of the onshore survey area. This is inevitable to some degree for all ecological surveys. Following CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland* (2018) in these instances a precautionary approach will continue to be

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			used, and unless likely absence of a receptor can be determined, it will be assumed to be present and mitigation undertaken accordingly. Pre-construction surveys will be undertaken at the first available opportunity post-consent. The scope of the pre-construction surveys is captured within the OLEMS (document reference: 8.7) and secured through Requirement 24.
24.15	Natural England	Comment on the Applicant's approach to the assessment in light of the gaps to surveys identified.	
24.16	Applicant	Explain, having regard to (i) Natural England's comments at [APP-106] Appendix 4, point 15 and (ii) the Environment Agency's [RR-117] comments at paragraph 5.1 regarding sand martin: The extent to which impacts to sand martin, particularly in relation to noise and vibration, have been assessed, and specify where this information is presented in the ES.	Potential effects on sand martin have been considered in Section 23.7.6.3 of Chapter 23 Onshore Ornithology (document reference: 6.1.23). Information presented within Chapter 23 draws from the noise and vibration modelling presented within Chapter 25 Noise and Vibration. Noise effects –the nearest receptor (LFR4H) is located along the coastal path at Happisburgh and in proximity to the landfall works (refer to Figure 25.2 in ES Chapter 25 Noise and Vibration). Background noise was monitored at this location and recorded between 39 to 42dB (Appendix 25.1 of ES Chapter 25). Worst case construction noise levels were modelled for this location and the noise attributable to the landfall works along the coastal path at LFR4H was between 35dB and 45dB (Appendix 25.2 of ES Chapter 25)., i.e. a potential noise increase of 3dB along the coastal path. As the sand martins nest in the cliff face there would be further noise reduction as the cliff itself would screen noise effects. As such, any noise increase at the cliff face, associated with the landfall works, would be negligible. Vibration effects - The landfall area is underlain by sandy clay and sand to a depth of approximately 18m below ground level (Section 19.6.1.1 of Chapter 19 Ground Conditions and Contamination). Drilling through this relatively loose material would generate limited vibration effects as the material is a poor propagator of vibration. Vibration is best propagated through hard surfaces and the looser the material the more any potential vibration effect becomes dampened. As such there is no propagation pathway for vibration effects between the works (either 130m away or up to 20m below) and known sand martin nesting sites, and no impact is anticipated.

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			Lighting effects - The potential for effects arising from the use of 24hr lighting at the landfall compound has been identified, which has been classified as a minor adverse impact (low magnitude effect upon a medium importance receptor) within Chapter 23 Onshore Ornithology. As a non-significant impact, no specific mitigation has been proposed, however the design of all construction lighting will require approval prior to the commencement of any stage of the onshore transmission works through the development of an Artificial Light Emissions Management Plan that will form part of the final CoCP for each stage of the works, which is secured through Requirement 20. In addition, Requirement 24 of the draft DCO requires that no stage of the onshore transmission works may proceed until an Ecological Management Plan (which accords with the OLEMS) is submitted and approved by the relevant planning authority in consultation with Natural England. The OLEMS sets out that any artificial lighting must adhere to: • BCT's *Artificial lighting and wildlife guidance* (2014) when designing lighting during temporary works.
24.17	Applicant	Confirm whether it will be possible to avoid construction during the sand martin breeding season, as requested by Natural England. If not, then specify what additional mitigation measures you propose in regard to sand martins.	As set out in the response to Q24.16, no impact pathway has been identified between vibration effects and the sand martins nesting at Happisburgh cliffs. On this basis it is not proposed that works should specifically avoid the sand martin breeding season and no further mitigation measures are proposed.
24.18	Applicant	Confirm, having regard to Natural England's comments at [RR-106] Appendix 4, point 16, that nesting birds will be added to the protected species in paragraph 230 of the OLEMS such that works would stop immediately if nesting birds are found during construction. Does the OLEMS/ Requirement 24 make adequate provision for a survey for nesting birds (and other species) prior to construction by a qualified ecologist to be carried out? If not, then how will the presence or absence of nesting birds and other	Paragraph 230 of the OLEMS sets out the procedure if any protected species are unexpectedly found, i.e. that works will cease immediately. It does not provide a list of protected species where this applies, as all nesting birds are protected. Therefore, the Applicant does not propose to update the OLEMS on this element. Pre-construction surveys of protected species are set out in the relevant section of the OLEMS and secured through Requirement 24. Where vegetation removal is discussed within the OLEMS, the measures set out are that this should be undertaken outside of the breeding bird season where possible. However, the Applicant acknowledges that the OLEMS does not explicitly state that if vegetation clearance is undertaken during the

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		species be established?	breeding bird season then pre-construction checks for nesting birds will be undertaken. The OLEMS will be updated to make explicit reference to pre-construction checks for nesting birds in instances where vegetation removal is required within the bird breeding season. An updated version of the OLEMS incorporating this detail will be issued during the Examination process at a later date.
24.19	Applicant	With regard to the monitoring envisaged as noted in Section 23.7.3 of the ES to be agreed with relevant stakeholders and included within the Code of Construction Practice and Ecological Management Plan prior to construction works commencing, provide further information as to the monitoring envisaged, how this is to be secured and how it will influence the Proposed Development in terms of corrective actions as a result of monitoring data. For example, is there to be a pre-construction survey undertaken by a qualified ecologist, and is an ecological clerk of works proposed?	The potential need for monitoring has been identified for water voles and great crested newts. This is detailed within section 12 of the OLEMS (document reference: 8.7) and secured through Requirement 24. Monitoring would only be required should great crested newts or water voles need to be translocated (great crested newts) or displaced (water voles). The extent of monitoring will be confirmed once pre-construction surveys are completed. Pre-construction surveys are proposed for all protected species and these are set out in the respective sections of the OLEMS. The findings from the surveys will inform the final approach to mitigation and monitoring within the Ecological Management Plan secured through Requirement 24. The OLEMS also confirms that an Ecological Clerk of Works will be appointed (section 12) and sets out that their responsibilities, including implementation of the agreed ecological mitigation measures on site during construction, and specific post-construction monitoring commitments for water voles and great crested newts. Details of the post-construction monitoring will be agreed with Natural England post-consent through the Ecological Management Plan, secured through Requirement 24.