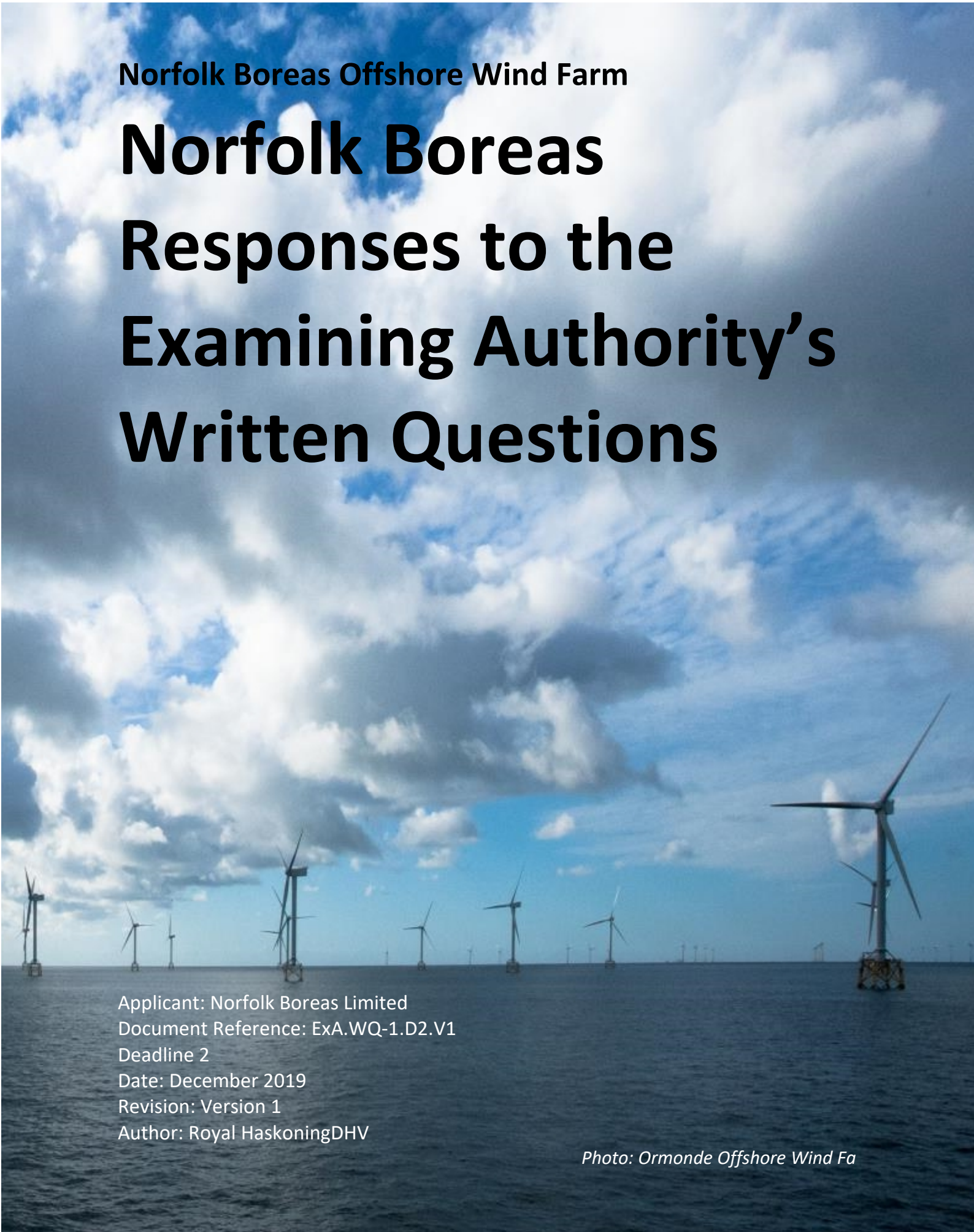
Norfolk Boreas Offshore Wind Farm

Norfolk Boreas Responses to the Examining Authority's Written Questions



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Glossary of Acronyms

ADR	Alternative Dispute Resolution
AEoI	Adverse Effect on Integrity
ALC	Agricultural Land Classification
BAP	Biodiversity Action Plan
CAA	Civil Aviation Authority
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
DCO	Development Consent Order
dDCO	Draft Development Consent Order
DML	Deemed Marine Licence
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMP	Ecological Management Plan
EPS	European Protected Species
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
HoTs	Heads of Terms
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IPMP	In Principle Monitoring Plan
JNCC	Joint Nature Conservation Committee
km	Kilometres
LMS	Landscape Management Scheme
LSE	Likely Significant Effect
LVIA	Landscape and Visual Impact Assessment
MCA	Maritime and Coastguard Agency
MGN	Marine Guidance Note
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
NCC	Norfolk County Council

NE	Natural England
NFFO	National Federation of Fishermen's Organisations
NNDC	North Norfolk District Council
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
OLEMS	Outline Landscape and Ecological Management Strategy
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
PSR	Primary Surveillance Radar
PTS	Permanent Threshold Shift
PVA	Population Viability Analysis
RAF	Royal Air Force
RR	Relevant Representation
RSPB	Royal Society for The Protection of Birds
RYA	Royal Yachting Association
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
TH	Trinity House
TMP	Traffic Management Plan
TWT	The Wildlife Trusts
UKHO	UK Hydrographic Office
UXO	Unexploded Ordnance
WDC	Whale and Dolphin Conservation
WHO	World Health Organisation
WSI	Written Scheme of Investigation

Glossary of Terminology

Array cables	Cables which link wind turbine to wind turbine, and wind turbine to offshore electrical platforms.
Cable logistics area	Existing hardstanding area 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.
Cable pulling	Installation of cables within pre-installed ducts from jointing pits located along the onshore cable route.
Ducts	A duct is a length of underground piping, which is used to house electrical and communications cables.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and information to support the HRA.
Interconnector cables	Offshore cables which link offshore electrical platforms within the Norfolk Boreas site.
Jointing pit	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	Where the offshore cables come ashore at Happisburgh South.
Landfall compound	Compound at landfall within which HDD drilling would take place.
Landfall compound zone	Area within which the landfall compounds would be located.
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing low voltage electrical earthing links.
Mobilisation area	Areas approx. 100 x 100m used as access points to the running track for duct installation. Required to store equipment and provide welfare facilities. Located adjacent to the onshore cable route, accessible from local highways network suitable for the delivery of heavy and oversized materials and equipment.
Mobilisation zone	Area within which a mobilisation area would be located.
National Grid new / replacement overhead line tower	New overhead line towers to be installed at the National Grid substation.
National Grid overhead line modifications	The works to be undertaken to complete the necessary modification to the existing 400kV overhead lines.
National Grid overhead line temporary works	Area within which the work will be undertaken to complete the necessary modification to the existing 400kV overhead lines.
National Grid substation extension	The permanent footprint of the National Grid substation extension.
National Grid temporary works area	Land adjacent to the Necton National Grid substation which would be temporarily required during construction of the National Grid substation extension.
Necton National Grid substation	The grid connection location for Norfolk Boreas and Norfolk Vanguard.
Norfolk Boreas site	The Norfolk Boreas wind farm boundary. Located offshore, this will contain all the wind farm array.
Norfolk Vanguard	Norfolk Vanguard offshore wind farm, sister project of Norfolk Boreas.
Offshore service platform	A platform to house workers offshore and/or provide helicopter refuelling facilities. An accommodation vessel may be used as an alternative for housing workers.
Offshore cable corridor	The corridor of seabed from the Norfolk Boreas site to the landfall site within which the offshore export cables will be located.

Offshore electrical platform	A fixed structure located within the Norfolk Boreas site, containing electrical equipment to aggregate the power from the wind turbines and convert it into a suitable form for export to shore.
Offshore export cables	The cables which transmit power from the offshore electrical platform to the landfall.
Offshore project area	The area including the Norfolk Boreas site, project interconnector search area and offshore cable corridor.
Onshore cable route	The up to 35m working width within a 45m wide corridor which will contain the buried export cables as well as the temporary running track, topsoil storage and excavated material during construction.
Onshore 400kV cable route	Buried high-voltage cables linking the onshore project substation to the Necton National Grid substation.
Onshore cables	The cables which take power and communications from landfall to the onshore project substation.
Onshore infrastructure	The combined name for all onshore infrastructure associated with the project from landfall to grid connection.
Onshore project area	The area of the onshore infrastructure (landfall, onshore cable route, accesses, trenchless crossing zones and mobilisation areas; onshore project substation and extension to the Necton National Grid substation and overhead line modifications).
Onshore project substation	A compound containing electrical equipment to enable connection to the National Grid. The substation will convert the exported power from HVDC to HVAC, to 400kV (grid voltage). This also contains equipment to help maintain stable grid voltage.
Onshore project substation temporary construction compound	Land adjacent to the onshore project substation which would be temporarily required during construction of the onshore project substation.
Overhead Line	An existing 400kV power line suspended by towers.
Pre sweeping	The practice of dredging the seabed to prepare it for foundation or cable installation. It is either used to provide a level surface on which to place foundations or to allow cables to be installed at a sufficient depth to minimise the chance of them becoming exposed.
Project interconnector cable	Offshore cables which would link either turbines or an offshore electrical platform in the Norfolk Boreas site with an offshore electrical platform in one of the Norfolk Vanguard sites.
Project interconnector search area	The area within which the project interconnector cables would be installed.
Running track	The track along the onshore cable route which the construction traffic would use to access workfronts.
Safety zones	An area around a vessel which should be avoided during offshore construction.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations as a result of the flow of water.
The Applicant	Norfolk Boreas Limited
The Norfolk Vanguard OWF sites	Term used exclusively to refer to the two distinct offshore wind farm areas, Norfolk Vanguard East and Norfolk Vanguard West (also termed NV East and NV West) which will contain the Norfolk Vanguard arrays.
The project	Norfolk Boreas Wind Farm including the onshore and offshore infrastructure.
Transition pit	Underground structures that house the joints between the offshore export cables and the onshore cables
Trenchless crossing	Pairs of compounds at each trenchless crossing zone to allow boring to take

compound	place from either side of the crossing.
Trenchless crossing zone	Areas within the onshore cable route which will house trenchless crossing entry and exit points.
Workfront	A length of onshore cable route within which duct installation works will occur, approximately 150m.

The Applicant's Responses to ExA's First Written Questions with regard to the Norfolk Boreas application

Following the issue of First Written Questions by the Examining Authority (ExA) outlined in the Rule 8 Letter of 20 November 2019 to Norfolk Boreas Limited (the Applicant) and other Interested Parties, the Applicant has subsequently responded to each of their relevant questions.

The Applicant's responses are detailed in numerical order in sections 1 to 13 of this document.

1 Archaeology and Heritage Assets

1.0 Offshore and intertidal archaeology and cultural heritage

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q1.0.1	The Applicant, Historic England Norfolk County Council Marine Management Organisation North Norfolk District Council Interested Parties	**Draft DCO and DML Archaeological WSI in intertidal zone** 1. Does the dDCO adequately cover archaeological requirements regarding the intertidal zone? (The onshore Archaeological WSI extending to Mean High Water is secured by dDCO Requirement 23.) 2. How is it proposed to secure mitigation measures for the intertidal zone included in the outline offshore Archaeological Written Scheme of Investigation? The DMLs [Schedules 10 and 12 Part 4 Condition 9(1)(h)] secure the offshore Archaeological WSI covering land seaward of Mean LOW Water which therefore excludes the intertidal zone. 3. IPs to confirm they are content with the intertidal zone being excluded from the responsibilities defined via outline Onshore and Offshore Archaeological WSIs; or make suggestions for amendments, additions or deletions as appropriate.	The requirement for an archaeological written scheme of investigation in relation to the offshore Order limits seaward of mean low water is secured by dDML (REP1-008) condition 14(h). The Outline Written Scheme of Investigation (Offshore) (outline WSI) submitted as DCO Document 8.6, however, has been produced to set out the proposed approach to archaeological mitigation and investigations to be undertaken in association with the offshore and intertidal project areas below Mean High Water Springs. It is proposed that the dDML condition 14(h) be amended to refer to the offshore Order limits seaward of mean HIGH water. Further information is provided in the Applicant's answer to WQ 5.3.8.
Q1.0.2	The Applicant Historic England	**Offshore Archaeological Written Scheme of Investigation** Historic England to confirm via SoCG with the Applicant whether it is content with the outline offshore Archaeological WSI [APP-697] specifically regarding: 1. Definition of commencement; 2. Protection for archaeology during invasive pre-commencement survey works; 3. Protection for archaeology during invasive enabling works prior to primary works. 4. Archaeological assessment of UXO survey data; 5. Archaeological data acquisition and management post-consent; 6. Procedures and timescale for notification of new discoveries 7. Monitoring plans.	Points 1 to 7 of this question have now been agreed and are included within the Statement of Common Ground between Historic England and the Applicant submitted at Deadline 2 of the examination (ExA.SoCG-9.D2.V1).
Q1.0.3	Historic England	Acceptability of geophysical data to inform ES in offshore order limits Given the limitations of the geophysical data that are acknowledged by the Applicant in ES Chapter 17, paragraphs 57-	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		58, would Historic England comment on the acceptability of the geophysical data to inform the characterisation of the archaeological potential of the offshore area and hence the assessment of effects in the ES?	
Q1.0.4	Historic England	**Changes to setting of offshore heritage assets and historic seascape character** Is Historic England content with the Applicant stating in APP-574: 'The assessment of changes to the setting of heritage assets and historic seascape character section 17.7.6.4 in chapter 17) describes that a change will occur but does not provide a judgement on the significance of that impact.'	
Q1.0.5	The Applicant	**Potential effects of development on submarine wreck (ES reference 71480):** [APP-577] para 5.2.20 refers to: 'Wreck 71480 lies outside NV East but is included in this assessment as the recommended Archaeological Exclusion Zone (AEZ) extends into the NV East area by up to 30m (Figure 11). This feature is the wreck of a submarine and the UKHO (ID 79542) records that it was last observed in September 2014…' Clarify and confirm: 1. Location on a chart of this wreck in relation to the Order limits for the Norfolk Boreas application; and 2. if there are any other anomalies in the vicinity of this wreck that have the potential to be associated with it; and 3. what vessel this is considered to be and what assessment has been made of the potential for impact of the Proposed Development (separately or together with other nearby proposed developments) on the wreck of this submarine and what effects may need to be mitigated; and 4. if there are potential effects, is any mitigation proposed in addition to an AEZ; and 5. what dimension of AEZ is proposed for this wreck and why that dimension is considered appropriate; and 6. When the outline WSI would be updated to secure the mitigation proposed	Submarine wreck 71480 is located at the south eastern boundary of Norfolk Vanguard East, some 15km south of the Norfolk Boreas boundary and, therefore, excluded from assessment due to its distance from any element of the Norfolk Boreas scheme.
Q1.0.6	Historic England	**Xanthe wreck potential designation decision**	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Advise on the likely timescale for a decision on whether the historic wreck site identified within the proposed project development boundary 'Xanthe', has national importance, as flagged in RR-022.	
Q1.0.7	The Applicant	**Responsibilities for military remains finds** Signpost where in the application documents consultations were undertaken with the relevant executive agency of the Ministry of Defence (MoD) with regard to potential obligations under the Protection of Military Remains Act, and if no consultation has taken place, justify why such consultation was not considered necessary in preparing the application.	Consultation with the MoD on archaeological matters was not considered necessary as, within the area of study, there are no known controlled sites designated under the Protection of Military Remains Act 1986. Furthermore, there no records of aircraft crash sites which are automatically protected under the Act. In the event that aircraft crash sites were to be encountered during future archaeological works, the MoD would be informed.
Q1.0.8	The Applicant	**Archaeological Exclusion Zones (AEZs) in offshore works area** Explain why [APP-697] proposes a 50m AEZ around all known wreck sites and A1s and A3s with no differentiation; and why a differential AEZ dimension is not considered appropriate for certain A1s or known wrecks, with specific reference to Feature 70809, Seagull wreck and Feature 70834 Xanthe wreck	The extent of the AEZs as established in the outline WSI (APP-697, Section 9.3) are as recommended by Wessex Archaeology, a suitably qualified archaeological contractor with extensive experience of offshore renewables projects. It is important to note that there is no industry guidance on the size of an AEZ and Wessex Archaeology's recommendations at this time are based upon their interpretation of the geophysical data. The Model Clauses for WSI state that: AEZs are formed by establishing a buffer around the known extents of sites, or around geophysical anomalies for which the available evidence suggests that there could be archaeological material present on the seabed. The size of this buffer is not defined but is considered on a case by case basis. It is also important to note that, as specified in the outline WSI, AEZs can be reduced, enlarged or removed in agreement with the MMO in consultation with Historic England if further relevant information becomes available. For example, following the acquisition of higher resolution geophysical data post-consent, the nature and extent of AEZs will be updated, if required, to reflect the most up to date information on the nature and extent of sites within the Norfolk Boreas site and export cable route. With specific reference to 70809 *Seagull* and 70834 *Xanthe*, the Applicant is aware that these have now been designated under the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Protection of Wrecks Act 1978 although this has not yet been publicly announced due to purdah. The final agreed AEZs for Norfolk Boreas will need to be updated for the final, updated WSI to be agreed post-consent to reflect the final, designated areas defined by the Statutory Instrument for the designations.
Q1.0.9	The Applicant	**Accumulated Archaeological data as proposed mitigation** Clarify how the outline WSI (and dDCO 9(5)(h)) [AS-019] would secure within defined time periods the proposed mitigation with regard to cumulative data gathered from multiple projects, as discussed in the Applicant's response to Historic England [RR-022] regarding commitment to satisfactory completion of: '…archaeological analysis programmes, within defined time periods, to accepted professional standards with publication and access through public archives.'	The outline WSI (APP-697, para 55) specifies that all archaeological reports produced will be publicly disseminated via uploading to OASIS (Online Access to the Index of archaeological investigations') to include an overarching report (para 52) on the archaeology of the scheme which will be prepared and submitted to the MMO and Historic England to a timetable to be agreed with Norfolk Boreas Limited, the regulator and the archaeological curators. If appropriate, this public dissemination may include publication of important results in a recognised peer-reviewed journal or as a monograph (para 51). This will ensure that all data produced by the project will thereafter be publicly available allowing for full dissemination as part of the increasing body of cumulative data gathered from multiple projects.

1.1 Onshore archaeology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q1.1.1	Historic England, Norfolk County Council, The National Trust	**Outline Written Scheme of Investigation (WSI)** Are you content with the Outline Written Scheme of Investigation (OWSI) [APP-696], as secured in dDCO [AS-019] Requirement 23 in dealing with onshore archaeological matters? If not make suggestions for amendments, additions or deletions.	
Q1.1.2	The Applicant	**WSI Construction Stage Plan(s), Contractor Environmental Action Plan(s)**	Specific measures for Sensitive and Precautionary Approaches to Construction Works' [APP-696, Section 6.5, paras 111 to 114] may include the following, which are applicable to the project under both scenarios:

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Provide a list of specific measures that could be included in the "construction stage plans" and "contractor environmental action plans" for areas where sensitive and precautionary approaches to construction work would be required; such as the Old Quaker Burial Ground [APP-696, paras 112 to 114] supported by evidence/ consultation or proposed consultation before finalising.	- Hi-visibility temporary fencing or similar, and/or temporary barriers, demarcating e.g. the extent of and an appropriate buffer zone around the walled Old Quaker Burial Ground. - Warning-type on-site signage. - Defined access and egress points and plant and machinery tracking routes in the vicinity of the Old Quaker Burial Ground. - Identification and inclusion of the 'sensitive and precautionary' approach locations and explanations within and as part of site inductions and other relevant 'tool-box style talks' in advance of and during construction. All of which represent additional, sensitive and precautionary approaches to construction works with the aim of ensuring no accidental damage or accidental physical interactions occur with certain existing sensitive structures and features (of a historic nature) in identified areas. Where reference is made to '*Other constrained areas may be identified in the post-consent detailed design stages, and similar measures will need to be adopted, and would be detailed in a Construction Stage Plan(s), Contractor Environmental Action Plan(s), or similar*' [APP-696, para 114], within the Outline WSI [APP-696, Section 6.5] this was previously raised, requested and discussed in consultation with Norfolk County Council (NCC) Historic Environment Service (HES) and Historic England (HE) during the Norfolk Boreas specific Expert Topic Group Meetings for Archaeology and Cultural Heritage during the pre-application stage of the Project. Sensitive and Precautionary Approaches to Construction Works are included within the Outline WSI as one of a number of subsequent additional mitigation measures [APP-696, Section 6), which are anticipated to be required. These sensitive and precautionary approaches would be further discussed and formally agreed with the relevant LPAs, NCC HES and HE in the post-consent stages, and written into both the Construction Related

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			WSI and the most relevant contractor led/facing construction related management plan(s).

1.2 Onshore heritage assets

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q1.2.1	The Applicant	**Construction stage effects on listed buildings** Notwithstanding your responses on the traffic and cumulative traffic effects in Cawston in your response to RRs [AS-024, Table 19, Nos. 3 and 4] respond to the specific points made regarding construction stage effects on listed buildings in Cawston by certain Interested Parties [RR-018], [RR-019], [RR-105]. Where are the construction stage effects on listed buildings and Conservation Areas assessed in the Heritage assessment and the visual and setting effects assessed in the Landscape and Visual Impact assessment?	Within the Norfolk Boreas Environmental Statement, construction stage effects on designated heritage assets (including listed buildings and conservation areas), both direct physical impacts and those associated with a change in setting affecting heritage significance are assessed within [APP-241] Environmental Statement - Chapter 28 Onshore Archaeology and Cultural Heritage, specifically Sections 28.6.2, 28.7.1, 28.7.2 and 28.7.5.3 (APP-241). However, the assessment is focused on impacts and effects with respect to the proposed Onshore Project Infrastructure within the Order Limits. This specific matter, 'construction stage traffic effects on listed buildings and the conservation area in Cawston', was raised and addressed during the course of the Norfolk Vanguard Examination. A Joint Position Statement with Broadland District Council on the Cawston Conservation Area was submitted at Deadline 8. As the construction stage impacts for Norfolk Boreas would be consistent with those identified for Norfolk Vanguard, the information and assessment contained in this position statement is also relevant to Norfolk Boreas and is included as Appendix 2 of the Broadland District Council SoCG document reference ExA.SoCG-3.D2.V1. The Position Statement includes a Heritage Statement for Cawston Conservation Area in respect to Traffic Management Measures proposed along the B1145 in Cawston. The heritage statement ultimately concluded that '*The increase in traffic is considered to represent temporary harm to the character and appearance of the Conservation Area … and represents a temporary adverse*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			impact on the ability of people to experience and appreciate the area and the significance of its associated heritage assets. However, this harm will be temporary and reversible and the road resurfacing and pathway widening is considered to offer a longer-term legacy benefit to improve the ability for people to experience the Conservation Area along the B1145.' The Position Statement (Appendix 2 of the SoCG document reference ExA.SoCG-3.D2.V1) states *'Broadland District Council is generally in agreement with the contents of the Applicant's Heritage Assessment as this recognises that there will be temporary damage to the character and appearance of the Conservation Area caused by the increase in Heavy Goods Vehicle (HGV) traffic in the area.'* Concerns were raised with respect to footpath widening near Grade II Whitehouse Farm resulting in a narrowing of the carriageway and increasing the risk of potential collision. These concerns regarding the footpath widening are being reviewed as part of the development of the highway mitigation scheme.
Q1.2.2	Norfolk County Council, Breckland Council	**Listed buildings in Cawston** Further to RRs [RR-018], [RR-019], [RR-105], Additional Submission [AS-038] and the Applicant's response to RRs [AS-024, Table 19, No.3] are you: 1. Satisfied that construction stage effects on listed buildings in Cawston have been adequately assessed; 2. Content with the findings in terms of the significance of any identified impacts upon those assets and their settings and the level of any harm and loss of heritage significance?	
Q1.2.3	Norfolk County Council, Breckland Council	**Listed buildings in Cawston** The Applicant has quoted part of your SoCG for Norfolk Vanguard in its response to some RRs which raise matters to do with construction traffic and listed buildings in Cawston. 1. Do the "changes" referred to in the SoCG extract include traffic impacts on historic buildings in Cawston?	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		2. If so, have the "work in progress" amendments arrived at a satisfactory solution? 3. If not, what are the outstanding issues for the listed buildings and conservation area in Cawston?	
Q1.2.4	The National Trust	**Blickland Estate** Further to the Applicant's response to your comments in your RR [RR-084], [AS-024, Table 123, No.1] are you satisfied that the wording set out in the WSI secures an appropriate method to ensure that information from thorough preservation by record, if excavation is necessary, is made available to visitors and the community in a way that enriches experience and understanding of the Blickling Estate? If not is there anything further that you consider needs to be secured in the WSI or elsewhere?	
Q1.2.5	Historic England	**Reference to Norfolk Vanguard** Regarding point 6. of [RR-022], ensure that any evidence that you may refer to from the Norfolk Vanguard, or any other Examination, is submitted to this Examination.	
Q1.2.6	The Applicant	**Clarification of non-designated heritage asset** 1. Is it possible that part of the Bylaugh Park wall [APP-674, RHDHV ID: 1274/ NHER Pref ref: 30496] does in fact enter the red line boundary? The ExA observed on an Unaccompanied Site Inspection, what seems like an estate wall at a point north of the River Wensum on Elsing Lane, the minor road north of Mill Street, where the cable corridor would appear to cross the location of this wall. 2. If not Bylaugh Park, does this wall have heritage value? 3. If Bylaugh Park wall, or another heritage asset carry out an assessment.	The Norfolk Historic Environment Record (NHER) records the location of Bylaugh Park (NHER Pref ref: 30496 / RHDHV ID: 1274) as approx. 300m to the north of the 45m wide Norfolk Boreas onshore cable route at its nearest point. The HER description for NHER Pref ref: 30496 contains the following summary description '*This landscape park is associated with Bylaugh Hall (NHER 3006), [a Grade II* Listed Building]. It was laid out during the mid-19th century and included a 14.4km long boundary wall, gardens, lodges and a Georgian style house….*' The mapped extent of the polygon within the NHER for Pref ref: 30496 equates to an area of approx. 300 Ha and a total perimeter length of approx. 7.2 km. Given this length discrepancy it is possible that the 'boundary walls' extend beyond the NHER mapped polygon area. The extent of the walls of and within Bylaugh Park were not specifically identified and assessed as being within the Order Limits as part of the Archaeological Desk-

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Based Assessment [APP-666] or in the Onshore Archaeology and Cultural Heritage Chapter [APP-241 / APP-478 / APP-674], as the mapped extent of Bylaugh Park as recorded within the NHER shows no direct physical interaction with the Order Limits. However, it does appear that the onshore cable route will need to cross a surviving stretch of historic 'assumed former parkland' estate wall (which retains heritage value, including historic, architectural and aesthetic interest) at this location. This can also be seen by referencing Google Earth Street View Imagery. Section 5.6 of the Outline Written Scheme of Investigation (OWSI) (Onshore) [APP-696] does, however, make provision for such occurrences through the inclusion of Investigation and Recording of Standing Buildings or Structures, as one of the 'Initial Informative Stages of Mitigation'. Therefore, this non-designated heritage asset will be added to OSWI Onshore at Section 13 Appendix 4 Outline Schedule of Archaeological Requirements for Above Ground Heritage Assets [APP-696], and will be identified for and subject to Built Heritage Survey / Historic Building Recording in the post-consent stages of the project. At construction, a stretch of this historic estate wall (with heritage interest) would need to be temporarily removed to facilitate the proposed open-cut trench crossing of Elsing Lane. The working width of the onshore cable route at this location could, however, be reduced from 45m to at least 20m (if not more) in order to limit the length of wall impacted and requiring temporary removal and subsequent reinstatement. This work, including any preceding specialist recording and succeeding specialist monitoring of the removal and later reinstatement would be undertaken under survey-specific and subsequent additional mitigation related Written Schemes of Investigation (WSIs), see Section 5.6 of the OWSI (Onshore) [APP-696]. These documents as referenced in the OWSI (Onshore) [APP-696], and secured in dDCO Requirement 23, would be agreed in consultation with Breckland Council, NCC HES and HE, as required. Impacts will be reduced wherever possible, and measures applied for the sensitive and appropriate like for like reinstatement (including re-use of the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			original bricks and use of suitable bonding materials) of the length of historic wall affected, following the completion of construction at this location. See also the response to Q12.0.4 on cable route works where boundary barriers exist.

2 Biodiversity, Biological Environment and Ecology

2.0 General

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q2.0.1	The Applicant	The Applicant [AS-024] explained that it has updated numerous assessments and/or plans relevant to ecological matters. The ExA has noted the following are proposed: • Updated red throated diver displacement assessment • Updated gannet displacement assessment • Updated kittiwake collision risk assessment • Assessment of combined collision and displacement (alone and incombination/cumulatively) • Assessment of impacts to seabird assemblage of Flamborough and Filey Coast SPA • Updated ornithological in-combination/cumulative assessment • Revised population viability analysis (PVA) for gannet, kittiwake and greater blackbacked gull (at the EIA scale) • Revised PVA for Flamborough and Filey Coast SPA • Updated Haisborough, Hammond and Winterton SAC Site Integrity Plan • Interim Cable Burial Study • Updated Scour and cable protection plan • Updated offshore operations and maintenance plan • Updated Outline Landscape and Ecological Management Strategy • Drilling fluid breakout clarification note. The Applicant is requested to submit these at	The Applicant confirms that the updated ornithology assessment has been submitted at Deadline 2 (ExA;AS-1,D2.V1). With respect to the list of topics the following aspects have been included which address the requests for further information and assessment made by Natural England in their relevant representation (REP-099). For all topics this has included additional consideration of impact estimates using the 95% confidence intervals of abundance for project alone assessments. Topic specific additions are noted below. • Updated red-throated diver assessment: this includes a project alone assessment for the Environmental Impact Assessment (EIA) and a 'like-for-like' assessment for the cumulative assessment (EIA). • Updated gannet displacement assessment: this includes a project alone and cumulative assessment for the EIA and project alone and in-combination assessment for the Habitats Regulations Assessment (HRA). • Assessment of gannet combined displacement and collision assessment: this includes project alone and cumulatively for EIA and project alone for the HRA (the HRA in-combination was provided in APP-201 and was not requested by Natural England in REP-099). • Assessment of impacts to the seabird assemblage of Flamborough and Filey Coast SPA: this has been included in the update and was also included in the updated Screening and Integrity matrices submitted at Deadline 1 (REP1-012, 5.3.5.3 - Norfolk Boreas Updated Appendix 5.3 Habitats Regulations Assessment Screening Matrices (Version 3) and REP1-014, 5.3.6.1 Habitats Regulations Assessment - Appendix 6.1 - Integrity Matrices) . • The in-combination and cumulative assessments for all relevant species and impacts have been updated throughout. • Revised Population Viability Analyses (PVA) for EIA populations of gannet, kittiwake and lesser black-backed gull have been provided.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Deadline 2 of the Examination	• Revised PVA for Flamborough and Filey Coast SPA: Natural England did not request updates to the PVA for the SPA populations assessed and therefore this has only been undertaken for one species (guillemot) for which an increased range of impact magnitudes was required. • The Interim cable burial report has been submitted to the examination as Appendix 2 of the updated outline Haisborough Hammond and Winterton SAC site integrity plan at deadline 1 (REP1-033). • Updates to the Outline Scour and Cable Protection plan (REP1-031), Outline Operations and Maintenance Plan (REP1-027) and Outline Landscape and Ecological Management Strategy (REP1-020) were all submitted at Deadline 1. • A drilling fluid breakout clarification note (titled Clarification Note Trenchless Crossings and Potential Effects of Breakout on the River Wensum) was also submitted at Deadline 1 (REP1-039).
Q2.0.2	The Applicant, Natural England	**Project Description** NE [RR-099] states "Many of the volumes assessed in the Environmental Statement project description (disposal, cable protection and scour protection) do not appear to match those used in the DCO/DMLs. Clarification should be requested from the Applicant on these issues." The Applicant to identify with NE where these discrepancies are and provide corrections.	The Applicant discussed this written question with Natural England on the 28th November 2019. The Applicant advised Natural England that the apparent discrepancies may be explained by the EIA and DCO Reconciliation document (6.7, REP1-016). Natural England agreed to review this document and provide further detail to the Applicant on any discrepancies identified. Following receipt of the outcome of this review the Applicant will provide a response to any points which Natural England have raised.
Q2.0.3	The Applicant	**Enhancing biodiversity** Explain the consideration that has been given to identifying opportunities to enhance biodiversity through the design of the Proposed Development and how any such opportunities are secured.	The Applicant has identified opportunities to enhance biodiversity where relevant with the design of Norfolk Boreas. In instances where there is scope to improve habitat for selected species or for its own intrinsic value, this has been undertaken. For example, the following habitat enhancements are proposed: • **Hedgerows –** Replanting of all hedgerows removed for construction with the aim of providing improved habitat from that removed; • **Great crested newts** – An option to undertake great crested newt mitigation has been retained. Should this be used, then offsite ponds

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			will be enhanced as an alternative to mitigating localised impacts using traditional methods; • **Watercourses** – Localised improvements to the geomorphology and in-channel habitats will be considered where watercourses are crossed using open cut techniques; and • **Landscaping** – Planting proposals at the onshore project substation and National Grid substation extension are designed to increase the area of land given over to wildlife. Other habitats directly affected are proposed to be reinstated in-line with Norfolk Biodiversity Action Plan, which will mean enhancement from their current habitat quality (e.g. ponds). These biodiversity enhancements are set out within the Outline Landscape and Ecological Management Strategy (APP-698), and are to be detailed within the Written Landscape Management Scheme and Ecological Management Plan to be produced post consent, which are secured through Requirements 18, 19 and 24 of the draft DCO (AS-019). A separate note has been provided (Exa.AS-6.D2.V1) which signposts details of biodiversity enhancements described within the Environmental Statement, Information to Support Habitats Regulations Assessment (APP-201) and Outline Landscape and Ecological Management Strategy (REP1-020).
Q2.0.4	The Applicant, Natural England, Environment Agency	**Net gain** While it is accepted that net gain is not a mandatory requirement for NSIPs, do NE and EA accept that the Applicant's response to the RRs [AS-024] reflect no loss to biodiversity and some elements of net gain? The Applicant may wish to comment.	In addition to the response provided to the RRs (AS-024), it should be noted that habitat enhancements which would count as the creation of habitat units using the Defra biodiversity metric have been included within the Outline Landscape and Ecological Management Strategy – see response to Q2.0.3.
Q2.0.5	Natural England, Norfolk County Council	**Ecological data** Comment on the acceptability of the onshore ecological survey data [APP-235], in particular the assumptions made by the Applicant in areas which were not accessible for the 2017 and 2018 field survey.	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q2.0.6	Natural England	**Norfolk Vanguard SoCG** NE is requested to submit the final SoCG for Norfolk Vanguard and include any changes in NE's position since submission of the SoCG	

2.1 Offshore benthic and marine mammals

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q2.1.1	Marine Management Organisation, The Applicant	**Worst Case Scenarios** MMO [RR-069] recommends a table that highlights the worst-case scenarios within each development consent option. The Applicant [AS-024] stated that it is in discussions with the MMO as to what further information it required. 1. What is the additional information required? 2. Would the parties give an update regarding agreement of worst cases?	The Applicant and the MMO discussed this matter on the 27th November 2019 and have agreed that this information is not required. The Applicant has highlighted to the MMO where the required information on combined worst case scenarios can be found within the application; for example, within the Site Characterisation report (APP-706) and the Cumulative Impact Assessment (CIA) sections of the ES chapters. On the 27th November 2019 it was agreed that a table such as the one suggested by the MMO was no longer required.

2.2 Onshore ecology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q2.2.1	The Applicant	**Workfront** Has the 150m work front defined in the ES [APP-235, APP-236] been relied upon in the assessment and how can the Applicant guarantee that this is implemented?	The 150m workfront described within Chapter 22 and 23 of the ES (APP-235 and APP-236) has been used within the impact assessment presented within these chapters. The worst case parameter used within the assessment is the maximum two week duration during which works will occur in any one area. As noted in Table 22.21 in Chapter 22 (APP-235), workfronts will be approximately 150m, and will be reinstated where possible. The worst case used for the impact assessment within these Chapters has assumed that the workfronts could be

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			longer than 150m in some instances, and may not be reinstated immediately, but that works would not extend beyond two weeks at each location. The 150m workfront is secured by being detailed in section 4 Embedded Mitigation within the Outline Landscape and Ecological Management Strategy (REP1-020), and will therefore be detailed in the Ecological Management Plan which is produced post consent, secured under Requirement 24 of the draft DCO.
Q2.2.2	The Applicant	**Cable depth** How would the depth of onshore cable burial be secured?	The minimum depth of onshore cable burial has been included in the private land agreements being sought for all affected land interests. The minimum depth would be included in Construction Method Statements as required by the OCoCP (document 8.1, APP-692) and secured in Requirement 20 of the dDCO. Through consultation with the Land Interest Group and National Farmers Union, the Applicant has committed to a minimum depth of 1.2m to the top of duct across all land, which supersedes the minimum depth of 1.05m to the top of duct in 'normal' agricultural land as detailed in Chapter 5 Project Description (document 6.1.5, APP-218). This commitment has been made to appreciate that land may be subject to 'deep ploughing' in the future and to simplify the installation process and specification. The additional minimum depth does not impact on the assessments as no additional materials are required and the time required to excavate a further 0.15m of trench depth is negligible to the works programme.
Q2.2.3	Natural England	**Post Construction Monitoring** NE in its RR [RR-099] notes that there is no onshore post construction survey or monitoring proposed to ensure protected habitats and species have been successfully reinstated post construction. The Applicant outlines its post construction monitoring proposals in [AS-024]. Is NE content with these proposals?	
Q2.2.4	The Applicant	**Norfolk hawker dragonfly**	As background on the Norfolk Hawker dragonfly, the species is associated with drainage ditches for watercourses within Norfolk and Suffolk. Prior to the pre-

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		The Applicant to confirm: 1. How it would be determined whether there is any risk to the Norfolk hawker dragonfly (a Norfolk LBAP priority species) from any changes to the project, 2. How further surveys in these instances would be secured, and 3. What would be the consequences should surveys identify breeding is taking place? 4. Should these be referenced in the outline CoCP or OLEMS?	construction ecological surveys undertaken for the Norfolk Vanguard and Norfolk Boreas project, the species had only been recorded in one location within 2km of the onshore project area. During the baseline ecological surveys, one individual was observed along a drainage ditch adjacent to the River Bure (TG 20027 28654) adjacent to the onshore project area, however the use of trenchless crossing techniques now means the suitable habitat for this species is avoided during construction. In response to the questions raised: 1. There would be a risk to the Norfolk Hawker dragonfly should the project be interacting with suitable habitats for this species within the onshore project area. This includes drainage ditches associated with the River Bure. In the project design, all suitable habitats are crossed using trenchless crossing techniques, and are therefore avoided. The use of a trenchless crossing at the River Bure is secured through dDCO Requirement 16 (13) (d). 2. In the event that the project design changes post-consent from that presented within the ES, and involves interaction with the habitats identified under point 1., a further dragonfly survey would be required within the suitable habitats within the onshore project area. This would follow the British Dragonfly Society criteria for establishing breeding presence (see ES Chapter 22, section 22.5.3 (APP-235)). These further surveys would be detailed within the Ecological Management Plan, secured under Requirement 24 of the dDCO. 3. Should breeding Norfolk Hawker be recorded during these surveys, then in the first instance an alternative design would be considered, which would not interfere with the ditch(es) where breeding was recorded. If this is not possible, then a programme of translocation accompanied by localised habitat creation (i.e. the creation of ditches and grazing marsh) would be undertaken. In the project design and secured through dDCO Requirement 16 (13) (d), interaction with suitable habitat for the Norfolk Hawker dragonfly is not

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			proposed, therefore mitigation is not proposed within the Outline Landscape and Ecological Management Strategy (APP-698).
Q2.2.5	Natural England	**Barbastelle bats** The Applicant responded [AS-024] to NE's concerns expressed in Appendix 4 of its RR [RR-099] about how the zone of influence has been applied for Barbastelle bats. Is NE content with this explanation?	
Q2.2.6	The Applicant	**Paston Great Barn SAC and SSSI** What progress has been made regarding the landowner agreements to leave hedgerows important for commuting bats to become overgrown as set out in the Schedule of mitigation [APP-688, item 170] for the Paston Great Barn SAC and SSSI?	The Applicant can confirm that all of the landowners with landowning interests where there are hedgerows for which it is important for commuting bats to become overgrown, have signed HoTs for an Option agreement with the Applicant. This applies to both Scenario 1 and Scenario 2. The draft Option Agreement requires *"The Landowner will enter into all necessary planning/consent agreements (including but not limited to any easement, habitat management agreements, wayleaves etc.) in connection with the Project subject to the Landowner's prior approval (not to be unreasonably withheld or delayed) of the form of such agreements. Vattenfall will indemnify the Landowner against any costs, expenses, actions or proceedings arising from such agreements."* The Applicant will seek to obtain prior approval for this mitigation in accordance with the Option Agreement.
Q2.2.7	Natural England	**Paston Great Barn SAC and SSSI** Is NE content with the mitigation provided by the Applicant in Table 17 [AS-024] for commuting and foraging areas for bats in relation to the removal and reinstatement of hedgerows, particularly for Paston Great Barn SAC and SSSI?	

2.3 Onshore ornithology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q2.3.1	The Applicant	**Razorbill and guillemot**	The Applicant acknowledges that the response referred to erroneously made reference to SPA populations and the assessment thereof. However the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		The Applicant (Table 8 row 33 of [AS-024]) stated it did not agree with NE in relation to cumulative operational displacement to razorbill or guillemot at the EIA scale. The Applicant refers to SPAs, as opposed to EIA scale populations. The Applicant to further justify its position in relation to these species at the EIA scale.	Applicant can confirm that the same response also applies to the EIA populations in relation to predicted cumulative operational displacement of razorbill and guillemot. Specifically the Applicant did not agree with Natural England's position at the end of the Norfolk Vanguard Examination (that a significant cumulative effect could not be ruled out) and the Applicant was able to conclude that there would not be a significant effect due to cumulative operational displacement on these species. The Applicant reached this conclusion through the application of evidence based methods while Natural England applies what the Applicant considers to be highly precautionary approaches. Details on these precautions are provided in the updated ornithology assessment submitted at Deadline 2 (ExA; AS-1.D2.V1).
Q2.3.2	Natural England	**Post-construction monitoring** Is NE content with the Applicant's explanation [AS-024] of why there is no postconstruction monitoring of bird habitat temporarily disturbed during construction?	

3 Compulsory Acquisition

3.0 Compulsory Acquisition

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q3.0.1	The Applicant	**Compulsory Acquisition schedule** The Applicant is requested to complete columns 7 to 11 of the Compulsory Acquisition Objections Schedule found at Appendix A to these questions, and make any additions, or delete any entries that it believes would be appropriate, giving reasons for any such additions or deletions.	The completed Compulsory Acquisition schedule has been submitted at Deadline 2 (ExA.CA.D2.V1).
Q3.0.2	The Applicant	**Protective Provisions** The Book of Reference (BoR) [APP-026] includes a number of Statutory Undertakers with interests in land. 1. Provide a progress report on negotiations with each of the Statutory Undertakers listed in the BoR, with an estimate of the timescale for securing agreement from them. 2. State whether there are any envisaged impediments to the securing of such agreements. 3. State whether any additional Statutory Undertakers have been identified since the submission of the BoR as an application document.	1. The Applicant has engaged with relevant statutory undertakers and will continue to do so with a view to agreeing the protective measures or, where appropriate, to agreeing terms for such provisions outside of the DCO. The Applicant has produced a table to track the progress with each statutory undertaker and this is included with the Deadline 2 submissions as document reference ExA; AS-10.D2.V1. 2. The Applicant is confident that agreement will be reached with all relevant statutory undertakers by the end of the examination. 3. The Applicant can confirm that no additional statutory undertakers have been identified since the application submission version of the Book of Reference in June 2019.
Q3.0.3	Crown Land	Consent is required for any other provision in the dDCO which relates to Crown Land or rights benefiting the Crown in accordance with s.135(2) PA2008. Among other things this includes consent for any Temporary Possession sought over Crown Land. Indicate whether consent for any provisions affecting Crown land or rights is forthcoming and if so, when.	

4 Cumulative effects of other proposals

4.0 General cumulative effects, including phasing

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Note this section of questions does NOT include those on in-combination effects that are relevant to Habitats Regulations Assessment. Those are dealt with below in the relevant section.			
Q4.0.1	The Applicant, All Interested Parties	**Relevant projects for cumulative assessment** 1. A number of the ES aspect chapters explain that the projects identified for potential cumulative impacts were agreed as part of the PEIR consultation (November 2018). Taking into account the time that has elapsed since the PEIR consultation and the potential for developments that might have cumulative effects to have come forward since this date, IPs are asked to confirm that they are content that all the relevant projects have been included in the cumulative effects assessment. If not, list those projects which you think should be included. 2. Specifically, the ExA notes that extensions to the existing Dudgeon and Sheringham Shoal have been received by the Planning Inspectorate for a scoping opinion. Comments in respect of these projects are specifically requested. 3. The Applicant is invited to comment and to set out how the cumulative effects relating to the proposed extensions to the existing Dudgeon and Sheringham Shoal have been considered, 4. With either proposed option, the Dudgeon and Sheringham Shoal onshore cable would cross the Norfolk Boreas onshore cable. How have these cumulative effects been considered?	Due to the long lead in times required to produce a DCO application it is necessary to set a cut-off date for incorporating new information in the application. As stated in the Environmental Statement (ES) Chapter 6 EIA methodology (APP-219): "*Only projects which [were] reasonably well described and sufficiently advanced at [the] time [of] writing (the 20th March 2019) to provide information on which to base a meaningful and robust assessment [were] included in the CIA*". At the time of submission (June 2019) The Planning Inspectorate Advice Note Nine and its complementary guidance in Advice Note 17 (which has subsequently been updated, August 2019) provided guidance on plans and projects that should be considered in the Cumulative Impact Assessment (CIA) including: • Projects that are under construction; • Permitted applications, not yet implemented; • Submitted applications not yet determined; • Projects on the Planning Inspectorate's Programme of Projects; • Development identified in relevant Development Plans, with weight being given as they move closer to adoption and recognising that much information on any relevant proposals will be limited; and • Sites identified in other policy documents as development reasonably likely to come forward. Consultation regarding the projects identified for CIA with Norfolk Boreas has been ongoing throughout the application process. This has been undertaken, for example, through the Norfolk Boreas Evidence Plan Process with key

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			stakeholders; through the Scoping Report; and through the Norfolk Boreas Preliminary Environmental Information Report (PEIR) (October 2018). During consultation under Section 42, the Applicant sought feedback from stakeholders on projects and plans that should be included within the cumulative impact assessments and specifically whether any additional projects and plans (from those included within the PEIR) should be included. The ES summarises the consultation responses received with respect to CIA and how these have been addressed (see Appendix 32.1 (APP-683) for Offshore, and Table 33.2 of ES Chapter 33 (APP-246) for onshore). Following the PEIR consultation and prior to the completion of the ES a review of the projects to be considered as part of the CIA was undertaken in March 2019. A review was undertaken to update the status and information of any projects already identified and to identify any new developments which should be considered. The result was the projects and information identified in ES Appendix 32.2 (APP-684) for offshore, and ES Appendix 33.1 (APP-685) for onshore. With respect to the cumulative offshore ornithology assessment (which was updated for Deadline 2, see document reference ExA; AS-1.D2.V1), the list of wind farms included in the assessment has been updated to address comments from Natural England (REP-099) and the list is considered to be complete. The list includes the final submission estimates for East Anglia ONE North and East Anglia TWO and the Preliminary Environmental Impact Report (PEIR) estimates for Hornsea Project Four. The Dudgeon and Sheringham Shoal extensions, both being developed by Equinor, submitted a scoping report to the Planning Inspectorate in October 2019, after the Norfolk Boreas application had been accepted for examination. The scoping report illustrates two landfall areas being considered in the Weybourne and Bacton areas with subsequent potential onshore cable routes to a single grid connection location at Norwich Main which could accommodate

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			both projects. The exact locations for the cable routes have not been finalised and preliminary environmental assessment for the projects has not been undertaken or reported. Site selection activities are ongoing and it can be anticipated that responses to the Scoping Request and an ongoing program of consultation will inform the refinement of the projects as the Environmental Impact Assessment (EIA) for the projects is progressed. In this respect, the Executive Summary of the scoping report for the Dudgeon and Sheringham Shoal extensions states: *"The exact locations of the offshore and onshore infrastructure are not yet finalised. Site selection activities are ongoing and responses to the Scoping Request and an ongoing program of consultation will help to inform the refinement of the projects as the EIA is progressed."* And: *"This scoping report is the first stage of the assessment process, outlining all of the receptors that will be considered and the planned approaches to characterising the existing environment and assessing potential impacts associated with the projects."* With respect to cumulative impact, the Dudgeon and Sheringham Shoal extensions will be required to undertake a cumulative assessment as part of their EIA, taking into consideration all potential activities and timescales from other projects in development, including Norfolk Boreas. As outlined in ES Chapter 33 Onshore Cumulative Impacts (APP-246) only projects that are reasonably well described and sufficiently advanced to provide information, on which to base a meaningful and robust assessment should be included in the Norfolk Boreas CIA. The scoping report for the Dudgeon and Sheringham Shoal extension projects was not submitted until after the Norfolk Boreas application was accepted, and in any event the information provided in

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			the scoping report is not sufficiently developed to enable inclusion of the extension projects within the Norfolk Boreas CIA at this stage. For example, with respect to the cumulative impact assessment for offshore ornithology, there are no data available to include in a cumulative assessment, for either impacts at the wind farm site itself (e.g. collisions or displacement) or due to construction of the wind farm or installation of the export cables. Therefore any potential cumulative impacts of the projects with Norfolk Boreas will need to be considered as part of the Dudgeon and Sheringham Shoal extensions EIA and subsequent application.
Q4.0.2	Interested Parties	**Cumulative assessments and other infrastructure users** Provide any comments on the Applicant's cumulative assessments offshore [APP-245] and onshore [APP-246] and/or comments on the assessment of infrastructure and other users [APP-231].	
Q4.0.3	Equinor UK Ltd.	**Relationship with Dudgeon** As current operator of the Dudgeon Offshore Windfarm asset are there any specific areas (offshore or onshore) where you have concerns about the cumulative effects of the Proposed Development with the Dudgeon Offshore Wind farm, which have not been considered by the Applicant in its cumulative effects assessments and/ or its baseline?	
Q4.0.4	The Applicant	**Offshore and onshore phases** Provide flow diagrams for Scenarios 1 and 2 which illustrate which offshore solutions can lead to which onshore phases as described in the Project Description [APP-218] and the Design and Access Statement [APP-694].	The requested flow diagrams are contained within Appendix 4.1. The diagram illustrates the following key points: 1. Under Scenario 1 all three electrical solutions (a to c) could be implemented. 2. Under Scenario 2 only electrical solution a) could be implemented. 3. As electrical solution a) is the only solution that would require Norfolk Boreas to install two pairs of HVDC cables this is the only solution which

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			could result in two phases of cable installation (this applies to both offshore and onshore).
Q4.0.5	The Applicant	**Phasing** More clarity is required on the proposed phasing of the offshore and onshore works for Norfolk Boreas Scenarios 1 and 2 in relation to how other proposed development might progress. Set out what activities from other proposed developments (if approved) would be critical to phasing decisions for this proposed development. In terms of onshore, refer to the points in the Savills', NFU's and the LIG's RRs on behalf of landowners regarding cable laying.	Onshore and offshore phasing is not dependant or affected by other proposed developments. The phasing considerations for Norfolk Boreas are the same, irrespective of Scenario 1 or Scenario 2. Offshore phasing relates to the potential for developing the Norfolk Boreas site in up to two discreet phases, acknowledging the large size of the site and the potential electrical infrastructure approaches which may better suit one or two phases (see Section 5.4.12 of ES Chapter 5 Project Description, document 6.1.5, APP-218). Indicative offshore programmes for one and two phase development are presented in Table 5.26 and Table 5.27 respectively of ES Chapter 5 Project Description (document 6.1.5, APP-218). Onshore phasing relates to the number of cable pull phases along the onshore cable route and electrical plant installation at the onshore project substation. There are a maximum of two separate phases for Norfolk Boreas, irrespective of Scenario 1 and Scenario 2, as illustrated in the indicative construction programmes of Table 5.39 and Table 5.43 respectively of ES Chapter 5 Project Description (document 6.1.5, APP-218). Phasing of the onshore cable pull and electrical plant installation will be guided by the electrical infrastructure approach and offshore phasing, with consideration also for any applicable supply chain constraints such as cable supply availability and cable jointer capacity. For completeness, an outline programme illustrating all onshore activities for Norfolk Vanguard and Norfolk Boreas, under Scenario 1 is provided in Appendix 4.2 of this document.

4.1 Onshore cumulative effects of other proposals (construction)

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q4.1.1	The Applicant	**Inter-relationship with Hornsea Project Three Offshore Windfarm** 1. Provide plans (for Scenario 1 and Scenario 2) on an OS base map, which show where the cumulative construction activities would occur associated with the proposed Hornsea Three Offshore wind farm cable corridor and that of the Proposed Development. The plans to show clearly which are associated with Hornsea Project Three and which with the Proposed Development. Plans to include (but not limited to) mobilisation zones and compounds, cable logistics area(s), cable running tracks, public roads used for HGVs, Public Rights of Way closures and trenchless crossing compounds. (Terminology may differ for the Hornsea Three project). 2. What assumptions have been made in the assessment with regards to the timings of Hornsea Project Three?	1. As requested additional figures showing the potential cumulative construction activities between Norfolk Boreas and Hornsea Project Three for each of the scenarios have been produced and are presented in Appendix 4.3. The figures are focused on the two main areas of cumulative impacts: • Cable Crossing Point of the two project cable routes near Reepham; • Area of the Norfolk Boreas Cable Logistics Area, mobilisation area 7 (Scenario 2 only) and Hornsea Project Three Main Compound near Oulton. In addition, ES Figure 24.15 (APP-466) shows the full extent of both projects onshore cable routes (APP-466) and ES Figure 24.16 (APP-466) shows all highways links jointly used by Norfolk Boreas and Hornsea Project Three. The figures contained in Appendix 4.3 show the construction infrastructure associated with both projects in these two areas for each scenario including highways links and Public Rights of Way. The figures have been drafted using the available information on Hornsea Project Three i.e. their onshore order limits, main compound location and access routes. Plans are not available showing more detailed information on the location of their secondary compounds or trenchless crossing compounds. The figures also identify the highways links which would be shared by both projects under each scenario. **Figure 1a shows the cable crossings location under Scenario 1** Under Scenario 1 the Norfolk Boreas ducts would have already been installed by Norfolk Vanguard, therefore the cumulative impacts would only occur if Hornsea Project Three are undertaking onshore cable works (either duct installation or cable pulling) at the same time as Norfolk Boreas cable pulling works (indicative dates 2026 and 2027). **Figure 1b shows the cable crossing location under Scenario 2** Under Scenario 2 Norfolk Boreas will install ducts and subsequent cable puling therefore cumulative impacts could occur if Hornsea Project Three are undertaking onshore cable works at the same time as either Norfolk Boreas

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			ducts installation (indicative dates 2023 to 2024) or Norfolk Boreas Cable Pulling (indicative dates 2025 and 2026). **Figure 2a shows the Norfolk Boreas cable logistics area and Hornsea Project Three Main Compound near Oulton under Scenario 1** The cable logistics area will be used during the cable pulling works under Scenario 1 (indicative dates 2026 and 2027), therefore potential cumulative impacts could occur along shared highways links if Hornsea Project Three undertake any onshore cable works during this time. Further details regarding the purpose, use and potential cumulative traffic overlap including mitigation measures in this area are provided in the Norfolk Boreas Clarification Note on the Cable Logistics Area submitted at Deadline 2 (ExA.AS-4.D2.D1). **Figure 2b shows the Norfolk Boreas cable logistics area. Mobilisation area 7 and Hornsea Project Three Main Compound near Oulton under Scenario 1** Under Scenario 2 cumulative impacts could occur along the shared highways links if Hornsea Project Three are undertaking any onshore cable works at the same time as either during the duct installation to access mobilisation area MA7 (indicative dates 2023 to 2024) or whilst using the cable logistics area during the cable pulling (indicative dates 2025 and 2026). 2. The assumptions with respect to the timings for Hornsea Project Three have been based on the high level programme provided in the Hornsea Project Three DCO application, which indicates a planned start date of 2021. The programme identifies the project may be installed in either a single phase or two phases. For a single phase installation the Hornsea Project Three onshore export cables will be installed in 2022 to 2024. Under Scenario 1 there would therefore be no overlap of construction activities on the onshore cable route. Under Scenario 2 there could be an overlap with the cable duct installation for Norfolk Boreas (2023 to 2024). The potential overlap of Scenario 2 duct installation activities with Hornsea Project Three onshore export cable works is assumed as the worst-

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			case cumulative impact in the Norfolk Boreas Environmental Impact Assessment. If Hornsea Project Three was installed in two phases for the onshore export cable, then the first phase will be as outlined above and a second phase of onshore export cables would be undertaken in 2027 to 2028. Under Scenario 1 Norfolk Boreas should have competed all construction works prior to these works commencing. Under Scenario 2 there is the potential for overlap with the Norfolk Boreas cable pulling works in 2027, however potential effects will be less than those identified for the potential overlap with duct installation.
Q4.1.2	The Applicant	**Inter-relationship with Hornsea Three Offshore windfarm: construction traffic** Orsted [RR-102] refers to consistent approaches to construction traffic management to minimise cumulative adverse effects with Hornsea Three for both Scenarios. The Applicant states it would continue to work together with Orsted on areas of overlap and cable route interaction [AS-024, Table 19, No. 7]. 1. What steps have been taken to ensure consistent approaches to construction traffic management and where are these secured in the dDCO? 2. How would ongoing cooperation during the construction phases of the two Proposed Developments be secured should the SoS consider granting development consent for both? 3. Set out how the mitigation would address the moderate adverse significant effects of the Proposed Development on the B1149 – Norwich road (Link 32), B1145 - west of Cawston (Link 34) and B1149 – Holt Road (Link 36) when considered in combination with Hornsea Project Three. 4. What is the Applicant's role in the development	1 and 4. During the application and examination of Hornsea Project Three and Norfolk Vanguard, Vattenfall and Orsted worked closely to ensure that a consistent approach for the management of construction traffic was agreed. Key matters included: • Agreed HGV traffic restriction and caps as mitigation for 'shared links' that are forecast to be subject to concurrent traffic demand from both projects. • Joint adoption of the highway intervention scheme designs for The Street, Oulton and B1145 Cawston. • Agreement that the first project to proceed to construction would deliver the full scheme of highway intervention (Oulton and Cawston) and the second project would be responsible for removing the measures once both projects' construction phases are complete. This has also been adopted for the Norfolk Boreas Project and are secured as commitments in the revised OTMP [REP1-022 to 026], para. 3.2.1 (Cumulative HGV restrictions), para. 3.5 (Delivery Periods), section 4.3 (Highway Mitigation Schemes) and summarised in Table 4.3.

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		and implementation of the proposed package of measures? 5. Is the local highway authority content with the detail of the proposed mitigation package?	2.The revised OTMP [REP1-022 to 026], para. 23, contains a commitment to a Communication Plan to set out the process of continued engagement between the Applicant, Orsted and Norfolk County Council. This will ensure that as construction programmes are refined this information is regularly shared (with particular regard to shared links) and that commitments to manage cumulative construction traffic are fully delivered. In addition, a co-operation agreement is being advanced between Orsted and Vattenfall. The Statement of Common Ground with Orsted submitted at Deadline 2 (ExA.SoCG-27.D2.V1) identifies the matters this covers, which includes working together to share information and agree mitigation, such as traffic management measures and plans. 3. B1149 Norwich Road (Link 32) The revised OTMP [REP1-022], Table 3.3, details a cumulative HGV cap of 289 daily HGV movements of which it has been agreed with Orsted, Hornsea Project Three would contribute a maximum of 153 movements (as included in the Hornsea Project Three Outline Construction Traffic Management Plan, submitted as Deadline 9 reference REP9-048). This road is classified in the Norfolk County Council Road Hierarchy as a 'Main Distributor' and therefore has been deemed suitable to accept a level of HGV traffic. The highway environment is in keeping with this classification in that Link 32 routes through the villages of Holt and Edgefield where at least one footway is provided adjacent to the road. A speed limit of 30mph is in force throughout the village extents. The cap has been agreed with Norfolk County Council as an acceptable daily HGV demand, in addition, the Applicant has agreed to a cessation to HGV deliveries during the morning network peak hours of 07:30 and 09:00.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Accordingly, the residual magnitude of effect has been assessed as low on a medium sensitive receptor, with a resultant impact of minor adverse. B1145 - west of Cawston (Link 34) The Applicant's response to ExA Q14.0.6 contains a comprehensive review of the mitigation package for Link 34 and the assessed residual impacts. B1149 Holt Road (Link 36) The revised Outline Traffic Management Plan [REP1-022], Table 3.1 contains a commitment to divert Norfolk Boreas cumulative HGV traffic away from Link 36. The diversion route would utilise Link 39 (A140) and Link 37 (B1145) ensuring that traffic remains on a road of similar or greater standard, in terms of the road hierarchy (compared to Link 36) and does not significantly impact on sensitive collision clusters. With this mitigation implemented the residual impact on Link 36 would be minor adverse. 5. Norfolk County Council's position on the package of mitigation proposed for Norfolk Boreas and Hornsea Project Three is captured in the SoCG [ExA.SoCG-19.D2.V1] submitted at Deadline 2. In summary: • The Street, Oulton (Link 68) highway mitigation scheme is supported. • B1149, Edgefield (Link 32) proposed mitigation is acceptable. • B1145 at Cawston (Link 34) further refinement required to the mitigation designs to address issues raised by an independent Road Safety Audit (also see response to ExA Q14.0.6.). • B1149, Holt Road (Link 36) no objection to the alternative route but it needs to be for all HGV traffic not just cumulative traffic.
Q4.1.3	The Applicant	**Cumulative effects with Norfolk Vanguard: Cable pulling**	Consideration was given to cable pulling for both Norfolk Vanguard and Norfolk Boreas at the same time, however this would not be feasible due to technical requirements and supply chain constraints.

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		Was consideration given in Scenario 1 to pulling cable for both Norfolk Vanguard and Norfolk Boreas at the same time? If not, why not?	The onshore cables must be installed in line with the installation and commissioning of the entire offshore wind farm connection including the relevant National Grid extension, onshore project substation, offshore cable installation, offshore substation and offshore wind turbines. This ensures that the cables are energised soon after installation. If the cables were to be installed a notable period prior to energisation (in the order of years if installed with Norfolk Vanguard) then there would be a high likelihood of degradation of the cables which can occur at low temperatures, shortening the life of the cables and being more susceptible to failures. This would include during the pre-operation commissioning period which would result in additional impacts to rectify faults and replace cable sections. Furthermore, the availability and capacity of both cable production and cable jointing teams to supply, install and joint all onshore cables for both Norfolk Vanguard and Norfolk Boreas (over 480km of cabling and over 600 joints) in a maximum 2 year period as allowed for in the Norfolk Vanguard assessment, is considered to be unfeasible.
Q4.1.4	The Applicant	**Mitigation for construction traffic** Moderate significant, adverse effect is predicted on B1149 – Norwich road (link 32), B1145 - west of Cawston (link 34) and B1149 – Holt Road (link 36) in combination with Hornsea Project Three. The OTMP outlines proposed mitigation in the form of coordination, and extension of the Norfolk Boreas Scenario 2 programme relating to the two week primary and secondary peak traffic periods to ensure combined HGV numbers do not meet significant threshold criteria. This reduces the impact to not significant. Explain how such mitigation measures would be agreed and would be implemented taking into account the independence between the Proposed Development and Hornsea Project Three.	Please refer to the Applicant's response to ExA Q4.1.2 (1,2 and 4).

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q4.1.5	Norfolk County Council	**Norfolk County Council's Relevant Representation [RR-037] states that it has assessed the traffic implications arising from scenarios 1 and 2.** 1. Have the cumulative traffic implications should the Hornsea Three Offshore Windfarm be granted development consent by the SoS been assessed? If not, why not? 2. If so, what are the conclusions from this assessment? What steps have been taken to ensure consistent approaches to construction traffic management and where are these secured in the dDCO?	
Interested Parties to note that many of these questions formed the basis of the detailed agenda for the Issue Specific Hearing (ISH) on the DCO held on 13th November 2019 [EV???]. Not all were explored at that ISH. Although questions are mostly directed to the Applicant other Interested Parties are invited to comment if relevant to their case.			

5 Development Consent Order and Deemed Marine Licences

Interested Parties to note that many of these questions formed the basis of the detailed agenda for the Issue Specific Hearing (ISH) on the DCO held on 13th November 2019 [EV???]. Not all were explored at that ISH. Although questions are mostly directed to the Applicant other Interested Parties are invited to comment if relevant to their case.

5.0 General

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.0.1	The Applicant	**Confirm that the submitted DCO:** 1. Has been drafted using the Statutory Instrument (SI) template; 2. Follows guidance and best practice for SI drafting (for example avoiding "shall/should") in accordance with the latest version of guidance from the Office of the Parliamentary Counsel.	1. The Applicant can confirm that the dDCO has been drafted using the Statutory Instrument template. 2. Reference to the word "shall" is predominately used in the Protective Provisions schedule at Schedule 17 of the dDCO. These Protective Provisions are either agreed with statutory undertakers or are still under discussion. Where the protective provisions are in draft form then the Applicant will seek to agree revised wording (replacing use of the word "shall"), which will be reflected in the agreed form of protective provisions and inserted into the dDCO in due course. Otherwise, outside of Schedule 17, the Applicant will review reference to the word "shall" and will make any amendments considered necessary in the circumstance that "shall" is used to place an obligation on the Applicant or another party. The Applicant has reviewed the use of the word "will" throughout the dDCO and considers that this is used appropriately in the dDCO. Reference to the word "will" is generally used in the context of expressing a future intention rather than imposing a strict obligation or requirement on the Applicant. In the Applicant's view it is appropriate to use the word "will" in this context. For example, the aids to navigation management plan (condition 14(1)(k) of Schedules 9 and 10) is to include details of how the undertaker will (in the future) comply with the provisions of condition 10 (Aids to Navigation) for the lifetime of the scheme. It is not appropriate to substitute "will" with "must" in this circumstance as the aids to navigation management plan shows the Applicant's intention of how the Applicant proposes to comply with the Aids to

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Navigation conditions. It is then for the MMO to determine whether this 'intention' is acceptable, and the MMO will decide when it comes to approval of the aids to navigation plan under condition 14(1)(k). The imperative element of the condition is provided for by the introductory text within Condition 14(1) which stipulates that licensed activities must not commence until the [following] plans and documents have been submitted to and approved by the MMO. The Applicant's interpretation of paragraph 3.3 of the Advice Note is that "shall" or "will" should not be used when attempting to place an obligation on the Applicant. The Applicant considers that the use of the word "must" has been applied correctly within the dDCO in these circumstances, as has the use of the word 'will'. Accordingly, the Applicant does not propose to amend the dDCO further in this respect. The Applicant considers that its approach to drafting in this respect complies with the guidance contained in Advice Note 15. The Applicant has also had regard to the best practice guidance and the Applicant is further reviewing the latest guidance from the Office of the Parliamentary Counsel.
Q5.0.2	The Applicant	**References and footnotes** Ensure that when amended versions of the dDCO are submitted as the Examination progresses, all internal references and legislative footnotes are checked and updated as necessary.	The Applicant notes this request and will ensure that the footnotes and references are checked accordingly.
Q5.0.3	The Applicant	**Explanatory Memorandum** Update the Explanatory Memorandum so that it follows best practice drafting guidance from the Planning Inspectorate set out in Advice Note 15 – Drafting development consent orders providing in tabular format, an explanation of how the Explanatory Memorandum addresses each aspect of Advice Note 15.	The Applicant will update the Explanatory Memorandum accordingly for submission alongside the next version of the dDCO.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.0.4	All discharging authorities	**Discharging Requirements and Conditions** All discharging authorities are requested to check Schedules in the dDCO for accuracy and provide the ExA with any suggested corrections and amendments.	

5.1 Articles

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.1.1	The Applicant	**Definition of commence** 1. The ExA understands that this definition follows the East Anglia 3 DCO. What are the implications of the included exclusions? 2. Should 'tree protection measures' be added to the operations which can be carried out before commencement and whether the erection of temporary amphibian or reptile fencing should be added – or if this is covered? 3. What is the definition of 'remedial work'? 4. Justify the flexibility afforded by the 'carve outs' for exempted works such as site clearance, demolition etc. Clarify any impacts for these works so that the ExA can consider whether they are justified and/or need to be controlled by requirements.	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 /REP1-041.
Q5.1.2	The Applicant	**Definition of maintain:** Explain how this accords with 'maintenance of landscape' used in Requirements 18 and 19. Whether 'landscape maintenance' needs a separate definition.	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.
Q5.1.3	The Applicant	**Are definitions required for:** ***Part*** Should the interpretations include a meaning of	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		'part'? Does 'part' refer to a geographical part or could 'part' be replaced with alternative phrasing? ***Phase*** Should the interpretations include a meaning of 'phase'? Does phase refer to temporal, geographical or both? (This refers to Requirement 15). ***Stage*** Should the interpretations include a meaning of stage? Does 'stage' refer to temporal or geographical distinctions; or both? (Relevant for Requirements 15, 18, 20, 21, 23, 24, 25, 28, and the Outline Code of Construction Practice (OCoCP) and elsewhere). ***Plans*** Do the various plans secured by different requirements be defined here? Or is the definition of the outline plans sufficient?	
Q5.1.4	The Applicant	**Article 6: Benefit of the Order** Respond to the Transfer of Benefit concerns from MMO regarding mechanisms for two potential OWF developers working in close proximity; especially with regard to in-combination effects.	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041. Following Issue Specific Hearing 1 and Deadline 1, the Applicant has since discussed these matters further with the MMO and the Applicant understands that the MMO are content with the clarifications provided by the Applicant.
Q5.1.5	The Applicant	**Article 11: Stopping up of streets** 1. Explain the need for the widely drawn powers in 11(1) in terms of 'any street' and in terms of 'any other street' in 11(5)(b). 2. What is the meaning of 'temporary' and 'reasonable' in this context? 3. Is there a need for an article to include the power to alter the layout of streets?	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.
Q5.1.6	Local Planning Authorities and	**Article 12: Access to works** 12(2) confers deemed consent for means of access to	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
	others subject to this article	works if the relevant planning authority does not notify the undertaker of its decision within 28 days. Are the local planning authorities and other Interested Parties who may be subject to this deemed consent time limit content with this arrangement? If not set out why?	
Q5.1.7	The Applicant	**Article 16: Authority to survey and investigate the land onshore** Is it likely that entry to land might be for purposes other than trial holes e.g. excavation and/ or bore-holes, and if this so should be stated in the article?	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.
Q5.1.8	The Applicant	**Article 35: Felling or lopping trees and removal of hedgerows** 1. Is reference to Part 3 of the 1990 Act for the purposes of regulation 14 of the Town and Country Planning (Tree Preservation) (England) Regulations 2012(b) required? 2. It is necessary to confirm that the powers for lopping or felling trees or shrubs are limited to trees or shrubs within the Order Limits (as is stated for the hedgerows in 35(4)). 3. Should there be a mechanism for notifying landowners of the intention to lop or fell trees or shrubs? 4. Does power over-ride the mitigation set out in the OLEMS [APP-698] and elsewhere to reduce the working width of the cable corridor where hedgerows are crossed to 13m or 16.5m (for crossings at an angle)?	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.
Q5.1.9	The Applicant	**Article 39: Procedure in relation to certain approvals etc** 1. Should this article also refer to Requirements 12, 19, 31 and 32?	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		2. Should the list of organisations in 39(1) also include government departments and other organisations specified in the Requirements?	The Applicant can also confirm that version 3 of the dDCO submitted at Deadline 1 (document reference 3.1 / REP1-008) incorporates changes to Article 39(2) to include Requirement 32 and 35 within the list of requirements subject to Schedule 16, together with the addition of "*any other relevant discharging authority*" at Article 39(1) in order to address question 2.

5.2 SCHEDULE 1 PART 1: Authorised Development

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.2.1	The Applicant	**Schedule 1 – Part 1 – Authorised Development** 1. How could the dDCO drafting be improved to provide clarity in relation to the works that apply to the different scenarios, for example in relation to Associated Development? Make appropriate amendments in the next dDCO. 2. Should transition pits be included within the 'Authorised development' as described in Schedule 1 of the dDCO?	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.
Q5.2.2	The Applicant	**Work No. 12B:** 1. In connection with Work Nos. 4C to 12B (c) should the maximum heights for temporary office and welfare facilities be given in the description of 'further associated development'? 2. Should associated development which is only required under scenario 2 be cited as such?	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

5.3 SCHEDULE 1 PART 3: Requirements

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.3.1	The Applicant	**Requirement 5** The Project Description sets out parameters for cable protection which must not be exceeded [APP-218, Table 5.7]. It states that the worst-case footprint of export cable protection would be 25,500m2, but Requirement 5(4) [AS-019] states 76,436m3 or 132,086m2. Requirement 5(4) also sets out project interconnector cable protection of 74,000m2, but this figure does not appear in the ES Project Description Table 5.7. 1. Clarify these apparent discrepancies and confirm the value that has been assessed within the ES. 2. If as stated in Requirement 5(5), that under Scenario 1 Work 3A and Work 3B must not both be commenced, would it be clearer to have two tables in Requirement 5(4) clearly setting out the parameters for the different scenarios?	1. Document 6.7 (EIA and DCO reconciliation document) of the Norfolk Boreas Application (updated at Deadline 1, REP1-016) explains that the offshore EIA chapters generally adopt a geographical approach for the assessment with most of the offshore chapters establishing a baseline and assessing impacts using the following geographical areas (which are shown on many of the figures that accompany the assessment, such as Figure 5.1 of the ES, APP-265): • The Norfolk Boreas site; • The offshore cable corridor; and • The project interconnector search area. The DCO, and DMLs (Schedules 9 to 13) in particular, secure the infrastructure associated with function of the wind farm as follows: • Schedules 9 and 10 secure the ability to construct and operate all infrastructure associated with generating power; • Schedules 11 and 12 secure the ability to construct and operate infrastructure associated with transmitting that power to landfall; and • Schedule 13 secures the ability to construct and operate project interconnector cables that would connect Norfolk Boreas to the Norfolk Vanguard wind farm. Some of the infrastructure secured within the DMLs will cross between different geographical areas as defined in the EIA and therefore the maximum parameters secured within the DCO do not directly transfer to the EIA and vice versa. Table 5.7 in Chapter 5 presents dimensions for the "long term infrastructure footprints in the **Norfolk Boreas site**". The fourth line of that table shows the maximum amount of cable protection that would be required to protect the **section of export cable that would be located within the Norfolk Boreas site**. This is made up of two component parts; cable protection required due to the

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			fact that cable burial is not possible and cable protection required on the approach to an electrical platform. Based on the Applicant's assessment of the ground conditions within the offshore project area it is likely that the vast majority of the export cable will be buried, however for the purposes of the assessment it has been assumed that it will not possible to bury up to 10% of export cable within the wind farm site and that this cable would require cable protection. Up to 50km of the export cables would be located within the Norfolk Boreas site and the width of this cable protection would be up to 5m. Therefore, this would occupy up to 25,000m^2 of seabed. It is considered by the Applicant that the 10% would be ample contingency and it is likely that the final figure would be less than this. On the approach to the electrical platforms up to 100m length of cable would require protection. Again, the width of the cable protection would be 5m and therefore the area occupied would be 500m^2. The total amount of cable protection required to protect the section of the export cable located within the Norfolk Boreas site would therefore cover an area of **25,500m^2** and because the protection would be up to 0.5m high the volume of the material required to protect the cables would be 12,750m^3. Requirement 5(4) secures an area of cable protection of 132,086m^2. This is the maximum total area of cable protection that would be required to protect **all of the export cable** from the electrical platform to landfall. This includes the 25,500m^2 located within the Norfolk Boreas site and the remainder of the export cables which would be installed within the offshore cable corridor. As stated, above cable protection would be required where it is not possible to bury cables. Cable protection would also be required where the Norfolk Boreas export cables cross other existing cables or where they cross pipelines. The Norfolk Boreas export cables would also cross the Haisborough Hammond and Winterton SAC. Figures calculated for the ES and the 1st draft of the DCO submitted with the application (APP-020) assumed that it would not be possible to bury up to 10% of cable to the optimum depth and therefore 10%

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			of the cable length would require cable protection. Therefore Requirement 5(4) [APP-020] stated an area of 152,086m^2. Natural England have requested that the amount of cable protection placed within the SAC is reduced as far as possible and therefore an interim cable burial study was completed (the Report of the study is provided in Appendix 2 of the updated Haisborough Hammond and Winterton SAC Site integrity Plan (REP1-033)). This study demonstrated that it should be possible to bury the vast majority of the export cable within the SAC. However, to provide ample contingency, a figure of 5% for non-burial was suggested in the report. The Applicant therefore revised the commitment to the 5% figure suggested. The dDCO submitted in response to the ExA Rule 6 letter [AS-019] contains values which have taken account of this reduction in cable protection. The new figure secured in Requirement 5(4) [AS-019] therefore consists of the 25,500m^2 to protect the export cable within the Norfolk Boreas site as well as the area required for cable protection within the offshore cable corridor. Within the offshore cable corridor cable protection would be required due to: inability to bury cables (5% within the SAC and 10% outside of the SAC), cable crossings (of existing cables and pipelines), and protection where the cables would enter the duct at landfall. The EIA assesses for an area of cable protection within the offshore cable corridor of up to 126,086m^2 (see operation impact 1B in Chapter 10 benthic ecology (APP-223)) which is greater than that which is now secured within the DCO as the assessment in the chapter was based on 10% of cable length within the HHW SAC requiring protection and the DCO has been updated to secure only 5%. Table 3.6 of the EIA and DCO reconciliation (REP1-016) document demonstrates that parameters assessed in the EIA are equal to or greater than those secured within the DCO. Row (ID) 7 of that table demonstrates this for the total area occupied by cable protection and row 6 does the equivalent for the volume of cable protection. Requirement 5(4) also secures the total area of cable protection required for the project interconnector cable protection of 74,000m^2. As with the export

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			cable the project interconnector cable would be located in more than one of the geographical areas used in the EIA. The project interconnector cables, if used, would be located partly within the Norfolk Boreas site and partly within the project interconnector search area. The EIA assesses up to 60km of cable to be located within the Norfolk Boreas site which could be either interconnector cable (linking two platforms within the Norfolk Boreas site under electrical solution a) or project interconnector cables (linking a platform in the Norfolk Boreas site with a platform in one of the Norfolk Vanguard sites (East or West)). As there would never be a requirement for both interconnector cables and project interconnector cables, the 60km of cabling is sufficient to cover both. There are three different electrical solutions being considered for the Norfolk Boreas project. These are presented in section 2 of the EIA and DCO reconciliation document (REP1-016). One of these (electrical solution b) would require Norfolk Boreas array cables as well as project interconnector cables to be placed within the project interconnector search area. The EIA assesses for up to 66,000m^2 of cable protection to be placed within the project interconnector search area and 30,000m^2 of protection for project interconnector to be placed within the Norfolk Boreas site. Thus, a total of 96,000m^2 for cable protection for project interconnector cables has been assessed. The 66,000m^2 accounts for array cables and project interconnector cables placed within the project interconnector search area under electrical solution b). Schedule 13 of the dDCO secures only the realistic maximum amount of cable protection that could be required to protect the project interconnector cable, and the figure of 74,000m^2 does not include any cable protection associated with the array cables located within the project interconnector search area. This is why the area secured within Requirement 5(4) (74,000m^2) is less than what has been assessed within the ES (96,000m^2 (66,000m^2 in the Project interconnector search area and 30,000m^2 in the Norfolk Boreas site). The cable protection required to protect the array cables is secured under the generation DMLs (Schedules 9 and 10).

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			In summary the apparent discrepancies are due to the fact that the EIA takes an area-based approach to assessing impacts whereas the DMLs relate to different pieces of infrastructure. Some of the pieces of infrastructure would be located in more than one area and that is why the numbers are not easily reconcilable. The EIA and DCO reconciliation document has been written to explain how the apparent discrepancies can be reconciled and to demonstrate that the values that have been assessed within the EIA, either directly relate to that secured within the DCO and DMLs, or a larger value has been assessed than that which is secured within the DCO and DMLs. The DCO has been drafted on the principle that no more than the maximum parameters realistically required to build the project are secured. 2. Under Scenario 1 the undertaker/Applicant will not necessarily require the project interconnector (i.e. if electrical solution a were taken forward). If, as suggested, the table were split out into Scenario 1 and Scenario 2 there would be an element of duplication and double counting as, both Work No. 3A and Work No. 3B would need to be included in the Scenario 1 table, and this may lead to confusion. Requirement 5(4) should be read in the context of Requirement 5 as a whole – in which Requirement 5(2) and 5(3) secure the overall parameter for cable protection across the entire project; Requirement 5(4) then splits this out into work packages, and Requirement 5(5) inserts a restriction on Work No 3A and Work No 3B. The exact apportionment of cable protection is also split out and secured for each respective DML and Schedule 13 the project interconnector DML has been drafted specifically for the purpose of being an important control mechanisms for that asset and the control of the volume of cable protection which could be installed.
Q5.3.2	The Applicant	**Requirement 15: Scenarios and stages of authorised development onshore** 3. Should the title include the word 'phase'? 4. How could parties can be certain of the meaning of 'commence' in the Norfolk Vanguard DCO, when currently only the final draft dDCO is in the public	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		domain? 5. Does para (2) need rewording to avoid use of the word commence (as defined in article 2 of this dDCO) when referring to Scenarios 1 and 2? As proposed, could those other operations specified in article 2's definition of commence could be started for Scenario 2? 6. Should para (4) refer to planning authorities in the plural and whether it should require the written scheme's approval by the relevant planning authorities? If so, should there be inclusion of a definition for 'relevant planning authorities?	
Q5.3.3	The Applicant, Norfolk County Council, Breckland Council, Necton Parish Council, Necton Substation Action Group, other Interested Parties with opinions on the appearance and screening of the substations	**Requirement 16: Detailed design parameters** The ExA recognises the need for some flexibility in design parameters. The ExA is exploring the potential need for securing more detail because: there are residual, significant adverse visual effects; comments have been made in RRs and at the Open Floor Hearing [EV4-001] on the appearance and design of the substations; the SoS's scoping opinion stated that dimensions of buildings and site layout should be provided and approvals about the substations are contained in different requirements. Views are sought on: 1. whether this requirement contains enough detail on which the future approvals can be based; 2. whether more detail on the design approach for the buildings and surroundings than that contained in the Design and Access Statement [APP-694, section 5.3.3] should be secured in the dDCO; 3. whether the details of the substation required by the Outline Landscape and Ecological Management	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041. The Applicant responded to comments made at the Open Floor Hearing through the document titled Applicant's Response to the Open Floor Hearing (document reference ExA.OFH1.D1.V1 / REP1-036). The Applicant has also produced a note with Breckland Council in response to Action Point 12 of Issue Specific Hearing 1 on the Development Consent Order, in which the Examining Authority requested that the Applicant and Breckland work together to provide a response to what more detail on design and function could be secured for the substation and environment in the dDCO. This note has been provided at Deadline 2 (document reference ExA.WQ-1.D2.V1).

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Strategy (OLEMS) [APP-698, paras 65 to 67], secured in Requirement 18 should be consolidated in one place with those set out in Requirement 16. 4. Applicant to explain the different 'existing ground levels' in para (8) and the reference to paragraph (8) in para (10); or whether the reference is to para (9)? 5. Views are sought on whether limits should be contained in this requirement to restrict all but the converter halls to a maximum height of 13m, based on the description of the substation in the ES [APP-218, para 346]. It was explained by the Applicant at the DCO ISH on 13 November 2019 that in its opinion it is not necessary to limit all but the converter halls to 13m because the visual assessment has taken into account all the substation buildings development up to a height of 19m (parameter of the Rochdale envelope). The opinions of other IPs are requested. 6. Should any design parameters for link boxes be set in this Requirement? 7. Should the maximum sizes of temporary compounds (mobilisation areas and their compounds and the cable logistics area) which are set out in the ES be secured in this Requirement?	
Q5.3.4	The Applicant	**Requirement 17: Landfall method statement** Should there be a requirement in the dDCO for sea defences around the cabling at landfall in response to various Relevant Representations, in particular Norfolk County Council's [RR-037], and concerns regarding cliff erosion in Happisburgh?	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.3.5	The Applicant, Norfolk County Council, Breckland Council, Broadland Council, North Norfolk District Council	**Requirement 18: Provision of landscaping** 1. Resolve the timing of approvals and implementation with the article 2 definition of 'commence', in connection with sub para (2)(d) details of trees to be removed, details of trees and hedgerows to be retained and their protection measures – which might be required prior to 'commencement'. 2. Is the intention to submit the Landscaping Management Strategy (LMS) as one complete document for approval or in parts? 3. Should para (1) refer to approval by the relevant planning authorities (in the plural) as the OLEMS refers to agreeing standards with Breckland District Council and Norfolk County Council. 4. Should sub para (2)(a) set out more planting types than trees, such that it is clear that grass and ground flora areas are also covered? 5. Should sub para (2)(d) also secure an auditable system for compliance with approved protection measures? 6. Is it correct that under scenario 1, the existing trees to be removed surveys would have been undertaken by Norfolk Vanguard [APP-698 para 141]? Or does this refer only to areas of woodland? 7. How are hedgerow trees considered? Under R18 or under R24? How does this relate to article 35 (Felling or lopping of trees and removal of hedgerows) and Schedule 14? 8. Should sub para (2)(f) also refer to opportunities for advance planting. If so, should a definition of 'advance planting' be provided in article 2? 9. Does sub para (2)(h) give enough detail about the	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		maintenance operations and duration to be included for approval by the relevant local planning authority? And should it refer to an aftercare period as set out in the OLEMS? 10. Is it necessary to resolve discrepancies between the description of what the landscape management scheme (LMS) would include as set out in R18 and that in the OLEMS, which includes sustainable drainage design and guidance on materials and colour of the substations [APP-698, para 65]. (Also refer to comments under R16 11. Should the agreed procedure for joint annual inspection of all planting areas set out in the OLEMS be included as a sub para of R18 (2)? 12. Should reference be made to the adoption of all Norfolk Vanguard mitigation planting as set out in the OLEMS [APP-698, para 141] for scenario 1?	
Q5.3.6	The Applicant	**Requirement 19: Implementation and maintenance of landscaping** Explain why para (2) needs to be 'agreed in writing' rather than approved by the relevant planning authority in the context of Requirement 30.	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.
Q5.3.7	The Applicant and Interested Parties	**Requirement 20: Code of Construction Practice** 1. Should contact details of the Agricultural Liaison Officer [APP-692, Appendix B] be added to the list of details to be submitted prior to commencement? 2. Should relevant local authorities approve all pre-commencement site work and preparation and if so, how? 3. Should the OCoCP include details on controlling dust during construction (particularly on parts of the route that are in close proximity to homes and	The Applicant has provided a response to these questions in the 'Written summary of the Applicant' Oral Case at Issue Specific Hearing 1 – draft Development Consent Order' submitted at Deadline 1 (REP1-042), under Agenda Item 4 -Schedules of the dDCO, Part 3: Requirements, Requirement 20 points 1 to 4 on pages 31 and 32. The Applicant can also confirm that it has submitted a revised draft OCoCP at Deadline 1 (REP1-018) which, amongst other things, makes clear that the contact details of the Agricultural Liaison Officer will be included in the final Code of Construction Practice submitted pursuant to Requirement 20 of the DCO.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		businesses)? 4. Does the effect on private water supply needs to be given further consideration in this requirement?	
Q5.3.8	The Applicant	**Requirement 23: Archaeological written scheme of investigation** 1. Has the National Trust's request in its RR [RR-084] to be named in connection with the Blickling Estate as a consultee along with Norfolk County Council and Historic England in Requirement 23 been agreed? Update the ExA on progress if this point is not agreed? 2. How is Orsted's suggestion [RR-102] to manage archaeological impacts, if required, where the cable corridors cross with those proposed for the Hornsea Three Offshore Windfarm by adopting a consistent approach to targeted geophysical survey and trial trenching through a consistent approach to (Archaeological) Written Schemes of Investigation (WSI) being agreed with the relevant authorities prior to commencement of the consented works where the cables cross could be secured in the dDCO? Would the Requirement need to add a Hornsea Project Three party to those consulted in para (1)? 3. Does the dDCO adequately cover requirements for WSI regarding the intertidal zone, including needs for consultation with MMO? 4. How is it proposed within the dDCO to secure all mitigation measures included in the outline Archaeological Written Schemes of Investigations (offshore)?	1. & 2. The Applicant has provided a response to these questions in the 'Written summary of the Applicant' Oral Case at Issue Specific Hearing 1 – draft Development Consent Order' submitted at Deadline 1 (REP1-041), under Agenda Item 4 -Schedules of the dDCO, Part 3: Requirements, Requirement 23 points 1 and 4 on pages 32 and 33. In addition, the National Trust withdrew its objection to the Application on 28 November 2019. 3. & 4. The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 - draft Development Consent Order, submitted at Deadline 1 (REP1-042), under Agenda Item 4 - Schedules of the dDCO, Part 3: Requirements, Requirement 23 points 1 and 4 on pages 33 and 34 . Further to that response, the Applicant has re-considered its approach to securing mitigation measures in the intertidal area through the Outline Written Scheme of Investigation (Offshore) (document reference 8.6; APP-697) (OWSI), and proposes to amend the dDCO so that condition 14(1)(h) of Schedules 9 and 10; condition 9(1)(h) of Schedules 11 and 12, and condition 7(1)(g) of Schedule 13, refers to the offshore Order limits seaward of mean high water, such that any mitigation relating to the intertidal area and included in the OWSI (Offshore) is also secured.
Q5.3.9	The Applicant	**Requirement 24: Ecological management plan**	The Applicant has provided a response to this question in the 'Written summary of the Applicant' Oral Case at Issue Specific Hearing 1 – draft

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Should para (3) also refer to previously un-surveyed areas and surveyed areas for which existing surveys have time expired?	Development Consent Order' submitted at Deadline 1 (REP1-042), under Agenda Item 4 -Schedules of the dDCO, Part 3: Requirements, Requirement 24 page 34. The Applicant can also confirm that it has amended Requirement 24(3) in version 3 of the dDCO submitted at Deadline 1 (REP1-008) to refer to "post-consent ecological surveying" in order to encompass previously un-surveyed areas and surveyed areas which require re-survey, as set out in Section 5 of the OLEMS.
Q5.3.10	The Applicant, Environment Agency	**Requirement 25: Watercourse crossings** The EA's RR [RR-095] notes that Norfolk Vanguard dDCO committed to site-specific water crossing plans, but the Proposed Development's OCoCP does not, although dDCO requirement 25 'Watercourse crossings' does commit to a 'scheme and programme for any such crossing, diversion and reinstatement'. Do site-specific watercourse crossing plans need to be secured in the OCoCP for the Proposed Development as well as in Requirement 25? If not, why not?	The Applicant has provided a response to this question in the 'Written summary of the Applicant' Oral Case at Issue Specific Hearing 1 – draft Development Consent Order' submitted at Deadline 1 (REP1-042), under Agenda Item 4 -Schedules of the dDCO, Part 3: Requirements, Requirement 25 page 34. Site-specific watercourse crossing plans have been secured in the updated OCoCP submitted at deadline 1 (REP1-018).
Q5.3.11	The Applicant	**Requirement 26: Construction hours** Explain the approach to determining construction hours and what consideration was given to these in locations near to sensitive receptors.	The Applicant has provided a response to this question in the 'Written summary of the Applicant' Oral Case at Issue Specific Hearing 1 – draft Development Consent Order' submitted at Deadline 1 (REP1-042), under Agenda Item 4 -Schedules of the dDCO, Part 3: Requirements, Requirement 65 pages 34 to 36.
Q5.3.12	The Applicant	**Requirement 27: Control of operational noise during operational phase** dDCO [APP-020] Requirement 27 stipulates a rating level of 32dB must be achieved it at any 'noise sensitive location'. However, 'noise sensitive location' is not defined within the dDCO.	1. Sensitive locations, in the context of noise and vibration, are typically residential premises but can also include schools, places of worship and noise sensitive commercial premises. Noise sensitive locations being referred to are the noise sensitive receptors identified in the vicinity of the onshore project substation i.e. SSR1 to SSR11,

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		1. Clarify what is the definition of a 'noise sensitive location' in the context of dDCO [AS-019] Requirement 27. 2. Should a definition be included in the 'Interpretation' section in Part 1 of the dDCO [AS-019]?	as detailed in Table 25.27 of ES Chapter 25 (APP-238) and shown on Figure 25.2 (APP-471). 2. Given that the noise sensitive locations are clearly defined in the ES, and the ES is certified under Article 37 it is not considered necessary to define 'noise sensitive location' in the dDCO.
Q5.3.13	The Applicant and relevant planning authorities	**Requirement 31: Amendments to approved details** 1. The Applicant is requested to set out its justification for this Requirement. 2. Are local planning authorities and others responsible for post consent approvals content that the provisions in this Requirement for amendments and variations are justified? 3. If not explain the need for such a requirement and/ or propose alternative wording. 4. Specifically, is the wording "that the subject matter of the agreement sought is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement." is sufficiently tightly drawn?	The Applicant has responded to the first of these questions regarding the justification for this Requirement in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041. In relation to question 3. and 4., there is precedent for this approach in other offshore wind DCOs including East Anglia One (2014), East Anglia Three (2017), and Hornsea Two (2016), together with the draft Norfolk Vanguard Order and the draft Hornsea Project Three Order. The Applicant also considers that the flexibility provided for by this Requirement is necessary in order to help streamline the discharge of requirements related to nationally significant infrastructure projects. The wording at Requirement 31(2) provides that: "…*Such agreement may only be given in relation to changes where it has been demonstrated to the satisfaction of the relevant planning authority or that other person that the subject matter of the agreement sought is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement*." The decision maker therefore has discretion at the time to ensure that the change does not give rise to any materially new or different environmental effects from those assessed in the original environmental statement. If the relevant decision maker is not so satisfied then it will be necessary for the Applicant to provide further supporting information in order to demonstrate

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			that the change is in accordance with the principles and assessments in the environmental statement. The Applicant therefore considers that the meaning of Requirement 31 is sufficiently clear and the Applicant does not consider it necessary to amend the dDCO in this instance.
Q5.3.14	The Applicant	**Requirement 32: Operational drainage plan** How have allowances for climate change been considered and does the flood risk assessment take account of UK Climate Projections 2018 (UKCP18)?	The Applicant has provided a response to these question in the 'Written summary of the Applicant' Oral Case at Issue Specific Hearing 1 – draft Development Consent Order' submitted at Deadline 1 (REP1-042), under Agenda Item 4 -Schedules of the dDCO, Part 3: Requirements, Requirement 32 on pages 37.

5.4 OTHER REQUIREMENTS

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.4.1	The Applicant, Interested Parties	**Reinstatement** Is there provision to ensure reinstatement for areas used temporarily during construction. If not, why not? If so, where is this set out and secured in the dDCO?	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041. The Applicant has also submitted a revised OCoCP (document reference 8.1 / REP1-018) at Deadline 1 which deals with reinstatement and explains that specific replanting measures will be set out within the Ecological Management Plan (EMP) produced post consent for each stage of the works. The EMP is secured through Requirement 24, and the OCoCP is secured by Requirement 20 of the dDCO.
Q5.4.2	National Grid	**Electricity into local transmission** The Applicant's response to Norfolk County Council's RR [RR-037] request to work with National Grid to feed electricity into local transmission [AS-024, Table 28, No. 2] states that there are no planning or	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		regulatory mechanisms through which the Applicant could identify direct 'infeeds' into the regional distribution network in Norfolk. Advise whether there is precedent; whether such an arrangement could be secured in this dDCO.	
Q5.4.3	Interested Parties	**Any other requirements?** Interested parties are requested to set out any other areas which they consider should be covered by requirements and to provide initial drafting of such additional requirements. In so doing, IPs are advised that all requirements must be precise and enforceable, necessary, relevant to the development and reasonable in all other respects.	

5.5 SCHEDULES 9 to 13: Deemed Marine Licences

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.5.1	Natural England and The Applicant	**Natural England (NE) concerns in Relevant Representation** NE raised a number of concerns in its relevant rep [RR-099]. These concerns to be reviewed in the light of comments by the Applicant on Relevant Representations [AS024]	The Applicant and Natural have discussed Natural England's concerns relating to the DCO and DMLs during a meeting on the 28th November 2019. The Applicant has submitted an updated version of the SoCG with Natural England at deadline 2 (ExA.SoCG-17.D0.V2). This reflects the Applicant's understanding of the current position regarding these concerns. Table 7 of the SoCG contains a position on each concern that Natural England included within their Relevant Representation [RR-099].
Q5.5.2	The Applicant, Marine Management Organisation	**Review Applicant responses [AS-024] to MMO relevant rep [RR-069]:** 1. concurrent piling both within the project and between Norfolk Boreas and Norfolk Vanguard (underwater noise effects) with recommended consideration of inclusion of a cooperation condition between developers working in close proximity and	The Applicant and the MMO have discussed the MMO's concerns relating to the DCO and DMLs during a meeting on the 27th November 2019. The Applicant has submitted an updated version of the SoCG at deadline 2 (ExA.SoCG-10.D0.V1) to reflect the most recent position regarding these concerns. Table 8 of the SoCG contains a position on each concern that the MMO have and a full response to each of the four points raised in written question 5.5.2 can be found in that table.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		recommendation of DCO/DML amendment for a worst-case scenario if more than one pile is to be installed within a 24-hour period [Schedules 9-13 Condition 21] expanding on [AS-024 Table 26 row 54]; 2. implication that new cable protection works are considered, by the Applicant, to be licenced for deployment at any time during the operation of the works; [RR-069 2.1.33 to 39]; and proposed requirement for new cable protection and foundation replacement during operations to be separately licenced [Schedules 9-13 Condition 22] expanding on [AS-024 Table 26 row 63]; 3. request for removal of the appeals process in [Schedules 9-13 Part 5 Procedure for Appeals]; 4. 6 instead of 4 month timescale for submission of discharge documents [Schedules 913 condition 15(5)]; and 5. appeal process related to applications for discharge of conditions. [Schedules 9-13 Conditions 14 and 15]	In summary: 1. The MMO and the Applicant have reached agreement that the current condition and the use of the SNS SIP is acceptable to both parties. 2. The Applicant has amended the wording of the Outline Operation and Maintenance Plan submitted at Deadline 1 (REP1-028) to make it clear that deploying cable protection in new areas during operation would require a separate marine licence. The MMO have agreed the changes and the MMO and the Applicant have an agreed position. 3. The MMO and the Applicant are yet to agree a position or positions regarding the appeals mechanism.
Q5.5.3	Marine Management Organisation	**Disposal of any offshore non-natural material:** MMO to comment on Applicant's response [AS-024 Table 26 Row 11] to MMO's [RR-069]: 'The Applicant considers that all material dredged or drilled from the seabed would be of natural origin. Furthermore, all material would be disposed of within the vicinity of the dredge location and therefore would not be transported far from source. Therefore, the wording of the DCO should remain in keeping with the precedent set by previous DCO projects.'	
Q5.5.4	Marine Management	**Individual structure volumes and areas:** MMO to comment on Applicant's response [AS-024	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
	Organisation	Table 26 Row 49] to MMO [RR-069] recommendations that the volumes and areas should be included within the face of the DCO 'The Applicant's position is that as the DML conditions specifically require that the final plan must accord with the outline plan it is not necessary to include the level of detail sought by the MMO on the face of the DMLs…'.	

5.6 SCHEDULE 15: ARBITRATION RULES

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.6.1	The Applicant	1. Is there a definition in the dDCO for 'the Arbitrator' and if so, where? 2. Respond to the MMO's concerns highlighted in Section 2.1 of its RR [RR-069] relating to timescales for discharge document submission; and to an appeal process related to applications for discharge of conditions.	The Applicant has responded to these questions in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 / REP1-041.

5.7 SCHEDULE 16: PROCEDURE FOR DISCHARGE OF REQUIREMENTS

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.7.1	Interested Parties	1. Views of interested parties are sought in relation to the discharge of requirements as set out in Schedule 16. 2. The Applicant to clarify which the post-consent approving bodies would be for Requirement 16.	

5.8 CONSENTS, LICENCES AND OTHER AGREEMENTS

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q5.8.1	The Applicant	Comment on Norfolk County Council's suggestion that funds could be made available for the benefit of the resident and business communities affected by construction activities [RR-037].	As the Applicant outlines in its Comments on Relevant Representations, at row 4 of Table 28 (ExA.RR.D0.V1, AS-024), and also in the Applicant's Response to Open Floor Hearing (ExA.OFH1.D1.V1, REP1-036) wider benefits associated with the Project include opportunities for the local population across Norfolk in areas such as jobs, skills and employment. The Applicant has committed to producing a Skills and Employment Strategy which is secured through Requirement 33 of the dDCO and an outline Skills and Employment Strategy (document 8.22, APP-713) has been produced and submitted as part of the DCO application. From January 2017, extensive work has been undertaken by the Applicant to understand and contribute, where appropriate, to existing skills, training and education initiatives. The Applicant is working with education skills providers in the area (including the local authorities, NALEP, EEEGR) to develop an appropriate skills strategy, which will facilitate direct employment in the offshore wind industry and in its supply chain. The Applicant has been engaging with the potential local supply chain since Spring 2018. In September 2018, the Applicant held a successful stakeholder event which brought together stakeholders from the local authorities, business support organisations and skills providers to discuss how Vattenfall could promote the local supply chain capitalising on the opportunities that offshore wind will present in the East Anglia NALEP area. Work is ongoing to support the local supply chain to maximise the benefits that offshore wind will bring to the area. Only mitigation which addresses impacts directly associated with the Project should be considered in the planning and DCO process. The Applicant is and continues to address wider community benefit, however this will be undertaken separately and outside of the DCO process. Specific landowner compensation amounts will be addressed as part of the commercial agreements that the Applicant will negotiate with landowners.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			All claims in relation to reduction in value to property will be assessed in line with the Compensation Code. A useful set of Government guidance booklets set out the basics of the Code: https://www.gov.uk/government/collections/compulsory-purchase-system-guidance
Q5.8.2	The Applicant	Provide update on discussions regarding Protective Provisions, including with Cadent Gas Limited, National Grid and the EA.	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 /REP1-041. Since the response submitted at Deadline 1, the Applicant can confirm that it is continuing to engage with these statutory undertakers.
Q5.8.3	The Applicant	How should the Informative Note requested by The Coal Authority [RR-005] be addressed in the dDCO?	The Applicant has responded to this question in its Written Summary of the Applicant's Oral Case at Issue Specific Hearing 1 and the Applicant refers the ExA to document reference ExA.ISH1.D1.V1 /REP1-041. The Applicant can also confirm that the updated version of the OCoCP (document reference 8.1 / REP1-018) submitted at Deadline 1 incorporates the Informative Note from the Coal Authority, and that the Coal Authority has confirmed that this is acceptable to them.
Q5.8.4	The Applicant, The Environment Agency	**Disapplication of legislation relevant to the Environment Agency:** The Applicant to comment on the following statement in the SoCG with the Environment Agency [AS-026]: "The Applicant seeks to disapply various pieces of legislation. We are currently considering our position in relation to the legislation which is relevant to the Environment Agency. However, the draft protective provisions contained within part 7 of Schedule 17 of the draft DCO [AS-019] do not correspond with the latest version of the Environment Agency's model protective provisions."	The Environment Agency and drainage authorities have the benefit of protective provisions at Part 7 as a result of the disapplication of certain legislative provisions (Article 7 - Application and modification of legislative provisions) in relation to works within watercourses. The wording within Part 7 of Schedule 17 has precedent from The Triton Knoll Electrical System Order 2016. The Applicant does, however, note the Environment Agency's comment in the Statement of Common Ground [AS-026] and the Applicant has engaged with the Environment Agency accordingly. The Applicant has recently received further comments and/or drafting amendments on the protective provisions from the Environment Agency and is currently considering these.

6 Fishing

6.0 Fishing

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q6.0.1	VisNed, National Federation of Fishermen's Associations	**Assessment of impact on Dutch beam trawling:** Submit a position statement to cover: 1. comments on the Applicant's assessment of impact on Dutch beam trawling as being of minor significance due to low magnitude and low sensitivity of the fleet to loss of grounds. 2. impacts on Dutch demersal fishing activity.	
Q6.0.2	Caister Fishermen's Association and Eastern Inshore Fisheries Conservation Association	**Potential impact of development on inshore fisheries and fishing:** Comment on the Applicant's responses [AS-024] to Relevant Representation [RR-091] in regard to the following issues: 1. Impacts of pile-driving: effect on sandbanks and marine mammal populations affecting fishing gear. 2. Cable installation: sedimentation effects on shrimp population affecting inshore fisheries of bottom-feeding fish, crab and lobster. 3. Increased marine traffic: effects of windfarm service vessel traffic on fishing gear and safety of fishing vessels.	

7 Grid connection

7.0 Grid Connection

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q7.0.1	The Applicant	**HVDC electrical solutions** ES Chapter 5 [APP-218, paragraph 166 and 167] explains that three High Voltage Direct Current (HVDC) electrical solutions are being considered., and also another solution that is a variation of solution (c). Provide further information on the specification of the offshore electrical platform solution (c), in order to provide further assurances that it would be within the design envelope assessed.	The Applicant can confirm that there would be no difference in the infrastructure installed by the Norfolk Boreas project under electrical solution c) or the electrical solution c) variant. The variant to electrical solution c) would result in the addition of a platform constructed by the Norfolk Vanguard project within the Norfolk Vanguard site. The applicant can confirm that the additional platform installed by the Norfolk Vanguard project would be within the design envelope for that project as the design envelope includes up to two electrical platforms. Therefore, under electrical solution c) and the electrical solution c) variant, the Norfolk Boreas project would install: • 1 electrical platform; • 1 pair of DC project interconnector cables connecting the electrical platform in Norfolk Boreas with an electrical platform in Norfolk Vanguard West; • 1 AC project interconnector cable connecting the electrical platform in Norfolk Boreas with an electrical platform in Norfolk Vanguard West. • 1 pair of DC export cables connecting the electrical platform within the Norfolk Boreas site to landfall at Happisburgh South. This is included within the design envelope and has been assessed within the EIA.
Q7.0.2	National Grid	**Substation location** IPs raise concerns in their RRs and at the Open Floor Hearing [EV4-001] in relation to the proposed expansion of Necton substation, questioning why Walpole substation is not considered to be the preferred location. The Applicant has set out its consideration of alternatives in the application documents [AS-024]. Provide further information in	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		relation to these matters.	
Q7.0.3	National Grid	**Necton substation and proposed extensions** 1. Confirm the current site boundary and function of the existing Necton sub-station. 2. Outline all proposed extensions to the Necton sub-station, and all proposed additional project substations on the same site. Specify the purpose of each extension and additional project substations. 3. Confirm if the parameters (height, boundary) assessed in the ES Chapter 29 Landscape and Visual Impact Assessment [APP-242], for the substations extensions and additional project substations represent the worst-case Scenario.	
Q7.0.4	National Grid CPRE Norfolk Interested Parties who made comment about ORM	**Offshore Ring Main** The Applicant has responded to matters raised in relation to an Offshore Ring Main (ORM) [AS-024, Table 28, No. 3]. Do IPs wish to comment further?	

8 Habitats Regulation Assessment

8.0 Habitats Regulation Assessment

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.0.1	The Applicant	**Screening and Integrity Matrices** A number of discrepancies have been identified between the features identified in the Applicant's matrices and NE's conservation objectives/the Ramsar Information Sheets. The Applicant is requested to perform an audit of its integrity and screening matrices to ensure the correct qualifying features/Ramsar criterion have been identified. Revised matrices, including the revised assessments that are proposed to be submitted by the Applicant, should be submitted where appropriate.	The Applicant has reviewed the features listed for English sites which are designated as both Special Protection Areas (SPAs) and Ramsar sites. The features listed for these designated sites in the screening and integrity matrices (APP-204 and APP-205) were identified through a review of data listed on the Joint Nature Conservation Committee (JNCC) website, however there appear to be some discrepancies between these data and those on the Natural England website (and the links to Ramsar information provided on the Natural England website) which resulted in the discrepancies identified by the Examining Authority. The Applicant has undertaken a review of the matrices using the Natural England information and the updated screening and integrity matrices will be submitted at a future deadline. The Applicant can confirm that following this review no additional Habitats Regulations Assessments were required for any designated feature for SPA or Ramsar sites.
Q8.0.2	Natural England	**Screening and Integrity Matrices** The Applicant [APP-201, AS-003, AS-004] has provided revised screening and integrity matrices for North Norfolk Coast SPA/Ramsar site, Broadland SPA/Ramsar site and Breydon Water SPA/Ramsar site which now include the potential effects of collision risk to non-seabird migrants. Does NE agree with the Applicant's conclusions in relation to these European sites?	
Q8.0.3	The Applicant	**Screening Matrices** How have in-combination effects been assessed by the Applicant at screening stage?	The HRA assessment considers both effects from the project alone and in combination with other projects. Other plans and projects included in the in-combination assessment were based on: • Approved plans; • Constructed projects; • Approved but as yet unconstructed projects; and

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			• Projects for which an application has been made, are currently under consideration and will be consented before the Norfolk Boreas consent decision. The classes of projects that could potentially contribute to LSE which were considered for the in-combination assessment offshore included: • Offshore wind farms; • Marine renewables (wave and tidal); • Harbour and port developments; • Marine aggregate extraction and dredging; • Licensed disposal sites; • Oil and gas exploration and extraction; • Subsea cables and pipelines; • Commercial marine fishing activity; • Recreational marine fishing activity; and • Onshore major residential, commercial and industrial development. And for those onshore included: • Construction or improvement of highways or roads; • Cycle tracks and other ancillary works; • Other major transport works; • Generating station development; • Above ground electrical line installation; • Pipeline development; • Water operations (abstraction or impounding); and • Major residential or commercial development. The Applicant has taken a precautionary but proportionate approach to screening and therefore, if there was any uncertainty as to whether the project could have any effect on a European or Ramsar site then these were screened in. Under this precautionary approach if it was determined that there was no connectivity or pathway for the project alone to have an effect on a European or Ramsar site then it was reasoned that there would also be

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			no potential for the project to have an in-combination effect on that European or Ramsar site. During stage 2 a full in-combination assessment was completed and further information can found within the Information to support HRA Assessment (document reference 5.3, APP-201). The Applicant consulted with stakeholders on the results of screening at the PEIR stage and through the Evidence Plan process (including with Natural England in April 2019), and there were no sites put forward at that stage which are not included within the Screening matrices (REP1-012).
Q8.0.4	The Applicant	**Conservation objectives** Can the Applicant provide the Conservation Objectives for Outer Thames Estuary SPA, Breydon Water SPA and Ramsar, Broadland SPA and Ramsar, North Norfolk Coast SPA and Ramsar or signpost to where these are provided in the application documents?	The Conservation Objectives for these SPAs have been downloaded from the Natural England website (https://designatedsites.naturalengland.org.uk/) and are provided in Appendix 8.1 of this document.
Q8.0.5	Natural England	**Mitigation** In several areas in the HRA Report, the Applicant has relied upon mitigation to exclude a likely significant effect e.g. trenchless crossing of the River Wensum and lethal effects and permanent auditory injury to harbour porpoise from piling. Can NE comment on whether it considers this interpretation to be consistent with the People Over Wind judgement?	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"*. The Court also stated that, *"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 123) [APP-203] Paragraph 123 of Appendix 5.2 Habitats Regulations Assessment (HRA) onshore screening [APP-203] states:

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			"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 boundary and therefore potential direct effects upon the SAC boundary are screened out from any further assessment." The trenchless techniques are inherent features of the onshore transmission works as set out in requirement 16(13). (ii) Mitigation for noise effects from piling (Appendix 5.2 Habitats Regulations Assessment (HRA) Offshore Screening [APP-202] Paragraph 123 of Appendix 5.2 Habitats Regulations Assessment (HRA) Offshore Screening [APP-202] states: *"Marine Mammal Mitigation Plans (MMMPs) for UXO and piling will be produced post-consent in consultation with relevant stakeholders and will be based on the latest scientific understanding, guidance and detailed project design. A draft MMMP for piling has been included with the DCO application (document 8.13). The MMMPs will contain adequate and effective mitigation measures that will reduce the risk of permanent auditory injury (Permanent Threshold Shift (PTS)) to harbour porpoise as a result of underwater noise. The commitment to the MMMP reduces the risk of permanent auditory (PTS) injury. The HRA will assess the potential effects of any permanent auditory (PTS) injury, taking into account embedded mitigation and the MMMPs."*
Q8.0.6	Natural England	**Cumulative/in-combination assessments for Fishing** In its RR [RR-040] TWT states that fishing has not	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		been included in any cumulative/incombination assessments within any chapters of the Norfolk Boreas application. As a principle, TWT considers fishing should not be considered in any assessments as part of the baseline. What is NEs view?	

8.1 Broadland SPA and Ramsar

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.1.1	The Applicant, Natural England	**LSE** NE's RR [RR-099] advised that a LSE for Broadland SPA and Ramsar be screened in and the same mitigation commitments incorporated within the Boreas OLEMS as was proposed for Norfolk Vanguard. 1. The Applicant responded in [AS-024]. Is NE content with this explanation? 2. Can the Applicant also explain if/how avoidance and reduction measures proposed by NE are to be secured? 3. The Applicant is requested to ensure that the screening and integrity matrix are updated to reflect any changes that result from its responses to parts (i) and (ii).	2. The measures proposed by Natural England are now detailed in an updated version of the Outline Landscape and Ecological Management Strategy (REP1-020) submitted for Deadline 1. 3. As per the response provided to Q8.0.1, the screening and integrity matrices have been updated and, this includes addressing comments raised by Natural England in their RR and including Broadland SPA and Ramsar site in the integrity matrices.

8.2 River Wensum SAC

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.2.1	Natural England	**Air Quality** In light of the People Over Wind Judgement, and NE's RR [RR-099] which states that mitigation is	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		necessary to reduce air quality impacts to River Wensum SAC, can NE confirm which features of the River Wensum SAC are susceptible to changes in AQ and whether they are likely to experience LSE as a result of the proposed development?	
Q8.2.2	Natural England, Environment Agency	**Air Quality** With regard to air quality impacts to protected sites; are NE and EA content with the Applicant's response to NE's concerns (Table 17 of [AS-024]) regarding no mitigation at designated sites?	
Q8.2.3	The Applicant, Natural England	**Drilling fluid breakout contingency** NE [RR-099] has requested HDD methodology be presented and the potential effects of drilling fluid break out on designated sites and species be assessed. Specifically, it states there is insufficient information on HDD tolerance monitoring, how quickly bentonite release can be stopped or an assessment of a worst-case scenario. It also states that conservation objectives require supporting processes to be maintained. The Applicant in its response [AS-024] states that it has agreed to produce a clarification note for Natural England, when will this note be available to the examination?	The Applicant has provided the 'Clarification Note Trenchless Crossings and Potential Effects of Breakout on the River Wensum' at Deadline 1 (RE1-039) to address the concerns raised by Natural England with regards to the drilling fluid breakout.

8.3 Norfolk Valley Fens SAC

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.3.1	The Applicant	**Narrow-mouthed whorl snail** The Applicant's screening matrix [AS-002] identifies a LSE for narrow-mouthed whorl snail for 'Indirect effects on ex-situ habitats functionally connected to	This is an error with the updated screening matrices – narrow-mouthed whorl snail has been screened out of further assessment on the same basis as the Desmoulin's whorl snail (i.e. that it is not present within the five sites located within 5km of the onshore project area). No LSE has been identified for this

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		the SAC'. However, this feature has not been identified in the integrity matrix nor has a LSE been identified in the HRA Report [APP-201]. The Applicant to clarify whether a LSE should have been identified and to provide revised matrices to clarify this discrepancy	feature. The matrices will be updated to correct this error (see response to Q8.0.1).
Q8.3.2	The Applicant	**Semi-natural dry grassland and scrubland** The Applicant's screening matrix [AS-002] identifies a LSE for in-combination effects to semi-natural dry grassland and scrubland facies on calcareous substrates, however a LSE has not been identified for this feature in the HRA Report [APP-201]. The Applicant to clarify whether a LSE should have been identified and provide revised matrices to clarify this discrepancy. If there is a LSE, the Applicant is requested to provide information to inform an appropriate assessment.	This is an error with the updated screening matrices – Semi-natural dry grassland and scrubland has been screened out of further assessment on the same basis as the Desmoulin's whorl snail (i.e. that it is not present within the five sites located within 5km of the onshore project area). This conclusion applies to the possibility for in-combination effects as well. No LSE has been identified for this feature. The matrices will be updated to correct this error (see response to Q8.0.1).

8.4 River Wensum SAC, Norfolk Valley Fens SAC and The Broads SAC

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.4.1	Natural England	**AEOI** NE has stated [RR-099] it cannot rule out an AEOI to River Wensum SAC, but does not make the same statement in relation to Norfolk Valley Fens SAC and the Broads SAC. However, it states there is insufficient detail in the CoCP for measures to safeguard all of these sites from bentonite breakout. Can NE therefore confirm its position in relation to AEOIs to all of these sites?	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.4.2	The Applicant, Natural England, RSPB	**In-combination assessments** In-combination assessments for the River Wensum SAC, Norfolk Valley Fens SAC and The Broads SAC have not been undertaken as the Applicant considers there is no potential for AEOI to these sites and no real potential of an in-combination effect occurring with other plans or projects [APP-201]. However, the Applicant has acknowledged the potential for small effects from a number of different projects to add up to an effect of greater magnitude in some of the HRA in-combination assessments e.g. Paston Great Barn SAC, HHW SAC, FFC SPA and Alde-Ore Estuary SPA. The Applicant is requested to provide greater justification for not undertake incombination effects for the River Wensum SAC, Norfolk Valley Fens SAC and The Broads SAC. Do any Interested Parties have comments on the in-combination assessments for these sites?	The general principle used to determine whether in-combination effects may occur in relation to a particular European site, as set out in Information to Support Habitat Regulations Assessment Report ('HRA Report') (APP-201) [para-1382], is that in order for Norfolk Boreas to be considered to have the potential to contribute to in-combination effects, there must be sufficient cause to consider that a relevant habitat or species is sensitive to effects due to the project itself (e.g. as a result of particular influence of sensitivity, or the presence of a species in notable numbers on at least one survey occasion, rather than simply being recorded within the site). With the exception of Paston Great Barn SAC, for each of the other onshore European sites considered within the HRA Report (APP-201) the qualifying features screened in for further assessment were either: (i) found, following targeted survey work, not to be not present within the onshore project area (e.g. Desmoulin's whorl snail in River Wensum SAC), or (ii) identified as being not sensitive to effects brought about by the project (e.g. otter associated with The Broads SAC). For Paston Great Barn, the information presented within the HRA Report shows that for the qualifying feature, barbastelle bats, effects generated by the project alone are likely to give rise to an effect upon this qualifying feature, but that these effects are small-scale, temporary and which, with mitigation, are not anticipated to result in any potential for adverse effect upon site integrity upon the qualifying habitats and species of the Paston Great Barn SAC [paras-1403 and 1409]. Therefore, an in-combination assessment has been conducted to determine whether these small-scale effects become larger in scale following the development of other nearby plans or projects.

8.5 Haisborough, Hammond and Winterton SAC

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.5.1	The Applicant	**Seabed Material** The Applicant to confirm the mechanism through which the commitments proposed in Table 3 of [AS-024]) to ensure seabed material would be retained within the Haisborough, Hammond and Winterton SAC would be secured.	The Applicant can confirm that the commitments made in Table 3 row 4 of the Applicant's comments on Relevant Representations have been included within Version 2 of the Outline Haisborough Hammond and Winterton (HHW) SAC Site integrity plan (SIP) which was submitted at Deadline 1 (REP1-033). This document is secured in Condition 9(1)(m) of the Transmission DMLs (Schedules 11 and 12).
Q8.5.2	The Applicant	**Plastic frond mattressing** In its RR [RR-069] MMO questioned the inclusion of plastic frond mattressing in the design envelope. The Applicant [AS-024] agreed to investigate the issue further. The Applicant to provide an update on its findings.	The Applicant has included plastic frond mattressing in the design envelope as there are some benefits of this method of scour protection which are not afforded by more traditional methods such as rock protection. For example, frond matressing will accrete sediment and therefore if located in a sediment dominated habitat would not alter the habitat type in the long term. The Applicant does recognise that plastic in the marine environment may not be desirable however if at the detailed design stage it was considered by the MMO and SNCB(s) that the benefits of this type of protection outweigh the negative effects the flexibility of the design envelope would allow its use. The approach to cable protection within the Haisborough Hammond and Winterton SAC would be agreed with the MMO through the HHW SAC SIP. This document is secured in Condition 9(1)(m) of the Transmission DMLs (Schedules 11 and 12). The approach to cable and scour protection for the offshore project areas outside of the HHW SAC would be agreed with the MMO through the Scour protection and cable protection plan. This document is secured in Conditions 14(1)(e) of the Generation DMLs (Schedules 9 and 10) and Condition 9(1)(e) of the Transmission DMLs (Schedules 11 and 12).
Q8.5.3	Natural England	**AEOI** NE does not agree to no AEOI to HHW SAC (both alone and in-combination). Does the Applicant's response in AS-024 satisfy NE's concern and if not, what are the outstanding issues?	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.5.4	Marine Management Organisation and Eastern Inshore Fisheries and Conservation Authority	**Fisheries Byelaws** MMO and EIFCA to provide an update on the likely timeframes for implementation of the proposed fisheries byelaws?	
Q8.5.5	The Applicant	**Compensation** If agreement cannot be reached between the Applicant and NE on no AEOI for HHW SAC, what would the Applicant's approach be to the provision of alternatives or compensation and the argument for IROPI?	The Applicant does not consider it appropriate to submit any further information relevant to consideration of alternatives, compensatory measures or information to inform an IROPI case at this stage, if at all. The Applicant considers that such a requirement would only arise (i.e. the engagement of the derogation provisions in Article 6(4) of the Habitats Directive) if the Secretary of State were to conclude that the project will adversely affect the integrity of this site, and if so, to what extent. In that event, the Applicant would then expect the Secretary of State, as competent authority, to revert back to the Applicant to ask the Applicant to consider the issue at that stage. At that point the Statutory Nature Conservation Bodies (including Natural England) would then need to be asked to advise on the nature of the appropriate compensation measures to the extent that an adverse effect on integrity (AEoI) was concluded, and to what extent. In summary therefore the Applicant's position is as follows: (i) Article 6(4) is not engaged as a result of Norfolk Boreas (either alone or in-combination). (ii) The Applicant's evidence demonstrates that there would be no adverse effect on the integrity of this European site. (iii) Article 6(4) would only be engaged if, contrary to the Applicant's position, an appropriate assessment were to reach a negative conclusion and it relied upon the nature and extent of any adverse effect on integrity having been identified through an appropriate assessment under Article 6(3). That would then underpin any

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			proper consideration of alternative solutions, IROPI and compensatory measures. (iv) Consideration of alternative solutions, IROPI and compensatory measures at this stage is therefore premature. Formally these matters would only arise if the Secretary of State did not accept the Applicant's position and were to identify an adverse effect on the integrity of the site. (v) Since the Applicant does not identify any adverse effect on integrity of this European site, and Natural England has not yet explained to what extent (in their opinion) there is an adverse effect on integrity, these considerations cannot be addressed by the Applicant. This can only be done if the precise nature and quantified extent of any contended adverse effect on integrity is identified. (vi) It is not considered reasonable to go further with any submission regarding Article 6(4) at this stage, given that it can only be on a speculative basis. (vii) In the event that the ExA and/or the Secretary of State were to produce a negative appropriate assessment or Natural England were to carry out a "shadow" appropriate assessment or provide further reasoning and quantitative analysis to support their conclusion of adverse effect on integrity in respect of this European site, the Applicant can legitimately expect the right to be afforded time to make further detailed representations at that stage.

8.6 Offshore ornithology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.6.1	The Applicant, Natural England, RSPB	**CRM Assessment** The ExA has had regard to the RRs [RR-054, RR-099] raised in relation to offshore ornithology and is aware of the complex arguments and disagreement between the various parties. Noting these positions, the ExA requests that the Applicant, NE, RSPB and other relevant parties work collaboratively to respond effectively to each of the points raised in RR's on this issue.	The Applicant has been working closely with both Natural England and the Royal Society for the Protection of Birds (RSPB) with the aim of resolving outstanding issues of concern raised on the assessment wherever possible. With respect to the collision risk modelling assessment raised in this Written Question, the Applicant considers that the only outstanding methodological issue with both stakeholders relates to the use of the Marine Scotland Science stochastic collision risk model (sCRM). The Applicant has investigated the use of this model on several occasions, however the errors in the outputs identified by the Applicant (in September 2019) have still not been resolved and therefore it is not considered appropriate to use this model at present. However, it is important to note that the sCRM uses an identical model to the deterministic Band (2012) CRM used in the current assessment, with the only difference being that the model is run repeatedly with input parameters drawn at random from appropriately defined probability distributions for each model run. Therefore the mean output values obtained with the sCRM will be identical to the values obtained from the Band CRM using the mean parameter values as inputs. Therefore the current mean CRM outputs on which the assessment is based will be unaffected. Furthermore, the Applicant has undertaken an updated ornithology assessment which has been submitted at Deadline 2 (ExA; AS-1.D2.V1) which addresses the issues raised by Natural England in their Relevant Representation. This updated assessment also addresses those issues raised by the RSPB for which further assessment was required. The Applicant and Natural England and the RPSB do not agree the conclusions of the collision risk assessment due to the application by Natural England and the RSPB of what the Applicant considers to be overly precautionary assumptions (e.g. over-estimated model parameters for nocturnal activity and avoidance rates and use of consented wind farm designs rather than built ones in the cumulative and in-combination assessments). The Applicant considers that the methods used in its assessments have adopted a proportionate approach to precaution which takes into account reviews of available evidence.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			References: Band, W. (2012). Using a collision risk model to assess bird collision risks for offshore wind farms. The Crown Estate Strategic Ornithological Support Services (SOSS) report SOSS-02. SOSS Website. Original published Sept 2011, extended to deal with flight height distribution data March 2012.
Q8.6.2	Natural England	**CRM Assessment** NE to explain why it considers in [RR-099] the Applicant takes a more narrative approach to CRM assessment and considers the Option 1 outputs for gannet, kittiwake and great black-backed gull in the context of the relevant Option 2 figures for the 95% confidence intervals of the density data, as part of a more range-based approach to consideration of CRM impacts. How does NE consider this approach should be used by the ExA to inform its consideration of HRA matters?	Although this question is not addressed to the Applicant, the Applicant's response is as follows: The Applicant has discussed the request for consideration of Option 1 CRM outputs with Natural England and has clarified that this aspect is not required in the assessment as explained below. It was agreed during the Evidence Plan process that the assessment would be based on Option 2 outputs due to concerns which the aerial survey contractor raised about the potential for large errors in the methods used to estimate seabird flight heights from their images (this was new information which came to light during the survey period). As a consequence it was agreed with Natural England and the RSPB through the Evidence Plan Process that the assessment would use the flight height data presented by the BTO (Johnston et al. 2014a,b), calculated from a very large dataset, in conjunction with Option 2 of the Band collision model. As requested by Natural England and the RSPB, Option 1 results were also presented in the Norfolk Boreas technical appendix, however for the agreed reasons outlined above (and confirmed on a call between the Applicant and Natural England on the 10th September 2019) these outputs were not used in the assessment, and this position remains unchanged. Johnston, A., Cook, A.S.C.P., Wright, L.J., Humphreys, E.M. & Burton, E.H.K. (2014a). Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. Journal of Applied Ecology, 51, 31-41. Johnston, A., Cook, A.S.C.P., Wright, L.J., Humphreys, E.M. & Burton, N.H.K. (2014b). corrigendum. Journal of Applied Ecology, 51, doi: 10.1111/1365-2664.12260.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.6.3	Natural England	**Stochastic Collision Model** Confirmation is required from NE that it accepts the inability of the Applicant to use Marine Scotland Science's Stochastic Collision Model, due to issues with the model providing accurate outputs (no timescale for when this model will be fixed), and that NE accepts the Applicant's proposed modelling outputs.	Although this question is not addressed to the Applicant, the Applicant's response is as follows: The Applicant would like to note that several requests have been made to the relevant organisations (Marine Scotland Science and the sCRM developer) to investigate the error in the outputs identified by the Applicant in order that the sCRM can be used as per Natural England's request. However, to date no further updates to the sCRM have been made available (last checked on the 21st November 2019). Furthermore, as outlined in response to WQ 8.6.1., the mean model outputs from the Band (2012) model used in the Norfolk Boreas assessment and the mean outputs from the sCRM will be the same, since the models are identical in structure and will therefore generate the same results when the same input values are used.
Q8.6.4	The Applicant	**Reducing collision impacts** The Applicant to provide an update on the additional measures being considered for reducing collision impacts noted in [AS-024] in response to NE's recommendation for raising turbine draught height.	Notwithstanding the fact that the Applicant has been able to conclude that Norfolk Boreas will not have any significant impacts or AEoI due to collisions at the project alone, cumulatively or in-combination with other wind farms, the Applicant is giving consideration to options for further reducing the risk of collisions and this includes the possibility of raising the turbine draught height to reduce the proportion of bird flights at rotor height. The Applicant will provide further updates to the Examining Authority once options for additional mitigation have been considered further.

8.7 Alde-Ore Estuary SPA

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.7.1	Natural England	**Lesser black backed gull** The commentary that supports the Applicant's in-combination assessment for lesser black backed gull of Alde-Ore Estuary SPA infers that reliance has been placed on the as-built scenarios for other offshore wind farm developments. The RSPB has raised concerns with this Approach. What is NE's	Although this question is not addressed to the Applicant, the Applicant's response is as follows: The Applicant acknowledges that there are legal considerations with respect to the acceptance of reduced collision predictions for wind farms which have been built using less impactful designs than those for which consent was awarded. However, the Applicant also considers that there are very persuasive arguments in support of updating collision predictions for built designs which

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		advice?	preclude the suggestions (by Natural England and the RSPB) that there is a risk that the wind farm developer could revert to the original design (e.g. the developer would require additional planning consent for further construction work). Furthermore, there is a very straightforward method for calculating the change in collisions resulting from turbine design changes. This calculates a correction rate which can be applied to the original collision predictions to obtain updated estimates. Thus the reference by the Applicant to assessment based on as-built wind farms is a robust approach to assessment which more accurately reflects the potential risks posed by existing wind farms rather than those for highly precautionary assessments based on worst case design envelopes which are rarely, if ever, realised.
Q8.7.2	The Applicant	**Lesser black backed gull** NE [RR-099] and RSPB [R-054] do not agree to no AEOI to lesser black backed gull of Alde-Ore Estuary SPA and Ramsar. NE has concerns on the basis of the breeding season apportionment and advises a range of rates. RSPB does not agree no AEOI from collision mortality alone and in-combination. NE explains it could not agree to no AEOI from collision risk to LBBG for Norfolk Vanguard and Boreas adds more birds to these totals. The Applicant [AS-024] states that it will respond to these concerns, when will the response be available?	The Applicant has produced an updated assessment, submitted at Deadline 2 (ExA;AS-1,D2.V1), which responds to the points made. With respect to Natural England's request for assessment using a wider range of apportioning rates during the breeding season, the Applicant has discussed this with Natural England and confirmed that in fact the original assessment which covered values up to 30% was in line with previous Natural England advice and that no higher values are required. Additional assessment as per Natural England's relevant representation (RR-099) requests is provided in the updated assessment (ExA;AS-1,D2.V1) (this includes an assessment for the project alone using the 95% confidence intervals of abundance, additional wind farms in the cumulative and in-combination assessments and with and without the Hornsea Project Three and Four wind farms). However, it should be noted that the Applicant does not agree with either Natural England's or the RSPB's conclusions that an AEoI for Norfolk Boreas alone or in-combination cannot be ruled out. Through the application of evidence based methods the Applicant has been able to conclude that Norfolk Boreas will not have an AEoI on the Alde Ore Estuary Special Protection Area (SPA) population of lesser black-backed gulls either alone or in-combination.

8.8 Alde-Ore Estuary SPA and Flamborough and Filey Coast SPA

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.8.1	The Applicant	**Compensation** NE and RSPB advise that an AEOI cannot be ruled out for Alde-Ore Estuary SPA, Flamborough and Filey Coast SPA. It is acknowledged that NE and RSPB previously reached these conclusions for Norfolk Vanguard and that Norfolk Boreas is proposing to add additional mortalities to those figures. In light of this, the Applicant is requested to present information relevant to the subsequent stages of the HRA process; namely consideration of alternatives, compensation and information to inform an IROPI case for these sites.	The Applicant considers that Natural England's and the RSPB's conclusions that AEoI cannot be ruled out for these SPAs have been reached through the application of highly precautionary methods which over-estimate the magnitude of impacts to a large degree. These reasons have been set out in detail in ExA;AS-1.D2.V1, and in a report on precaution submitted to the Norfolk Vanguard Examination at Deadline 8 (REP8-067). The Applicant has concluded that when more proportionate levels of precaution are applied AEoI can be ruled out for these SPAs. The Applicant has set out its position in relation to alternatives/compensatory measures/IROPI in the response to Written Question 8.5.5 and this position applies equally to this question. As explained in response to Written Question 8.5.5, the issues of alternatives/compensatory measures/IROPI would only arise in the event that the Secretary of State were to produce a negative appropriate assessment which identified the precise nature and quantified extent of any contended adverse effect on integrity of these European sites.

8.9 Greater Wash SPA and Outer Thames Estuary SPA

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.9.1	Natural England	**Mortality Rates** NE [RR-099] states that definitive mortality rates are unknown, therefore a range of mortality rates between 1% and 10% should be presented. It disagrees with the Applicants evidence review and that a magnitude of 100% out to 4km is over precautionary. NE calculates 0.87-2.46% increase in baseline mortality during construction phase, which	Although this question is not addressed to the Applicant, the Applicant's response is as follows: Following further discussions with Natural England there is now agreement that, subject to proposed mitigation measures (included in the draft DCO), there will be no AEoI on red-throated diver at the Greater Wash SPA due to cable installation.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		it states is not insignificant. The Applicant [AS-024] states that the full range of outputs was presented in its assessment. Does NE have further comments?	
Q8.9.2	Natural England	**Red throated diver** In its response to NE's RR [AS-024] the Applicant provides proposed mitigation measures for red throated diver of the Greater Wash SPA and Outer Thames Estuary SPA during operation and maintenance. Does the commitment in Schedules 9 & 10 Condition 14(1)(d)(vi) sufficiently alleviate NE's concerns to enable it to conclude no AEOI?	Although this question is not addressed to the Applicant, the Applicant's response is as follows: The proposed mitigation measures referred to in this question were also adopted for Norfolk Vanguard and East Anglia THREE, and for both projects Natural England has accepted these measures would satisfy their concerns regarding potential disturbance by operation and maintenance vessels.
Q8.9.3	Natural England	**Red throated diver** NE [RR-099] recommends avoiding/reducing cable laying activities during the nonbreeding season/period of peak red throated diver numbers. The Applicant [AS-024] confirms that the same mitigation agreed for Norfolk Vanguard has been adopted for Norfolk Boreas, as included in the outline PEMP [APP-705]. Does the Applicant's commitment to mitigation for red throated diver of the Greater Wash SPA, as included in section 6.1.3 of the outline PEMP [APP-705] enable NE to agree to rule out an AEOI?	Although this question is not addressed to the Applicant, the Applicant's response is as follows: In the Statement of Common Ground (SoCG) (ExA.SoCG-17a.D2.V2) Natural England has confirmed that the adoption of the mitigation measures for offshore export cable installation, such as avoiding or reducing cable laying activities during the non-breeding season/period of peak numbers, would enable Natural England to agree with the Applicant that cable installation would not result in an AEoI on the Greater Wash SPA population of red-throated diver. The Applicant has included this mitigation, by way of restriction on cable installation construction works, within the draft DCO Version 3, (REP1-008) at Condition 19 of the Transmission DMLs (Schedule 11-12), which states: *"During the months of January to March inclusive, construction activities consisting of cable installation for Work No. 4A and Work No. 4B must only take place with one main cable laying vessel."*
Q8.9.4	Natural England	**Red throated diver** Can NE confirm whether its comments regarding cumulative operational displacement to red throated diver in section 6.2 of Appendix 1 of its Relevant Representation [RR-099] also apply to red-	Although this question is not addressed to the Applicant, the Applicant's response is as follows: Norfolk Boreas is located a minimum of 36km from the Greater Wash SPA and 40km from the Outer Thames Estuary SPA. Thus, the wind farm is predicted to have limited connectivity to these SPAs. Nonetheless, as requested by Natural

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		throated diver qualifying features of Greater Wash SPA and Outer Thames Estuary SPA?	England, the Applicant has undertaken a 'like for like' assessment (included in the update submitted at Deadline 2, ExA;AS-1.D2.V1) which has demonstrated the very small (0.1%) contribution of Norfolk Boreas to the predicted cumulative displacement of red-throated diver in the southern North Sea. Since the Greater Wash SPA and Outer Thames Estuary SPA between them account for a large proportion of the favoured habitat for this species in the southern North Sea the Applicant considers that the potential for AEoI on these SPAs can also be ruled out.
Q8.9.5	The Applicant	**Construction Vessels** The Applicant to explain how it would ensure that there would not be more than two construction vessels in use in any one non-breeding season.	In the Habitats Regulations Assessment (APP-201) the Applicant stated that the worst case impact for disturbance of red-throated diver due to cable installation through the Greater Wash SPA would result from the presence of a maximum of two main cable laying vessels during the non-breeding season. In the draft DCO submitted at Deadline 1 (Norfolk Boreas Updated draft DCO Version 3, REP1-008) it has been stated at pt. (4) Condition 19: *During the months of January to March inclusive, construction activities consisting of cable installation for Work No. 4A and Work No. 4B must only take place with one main cable laying vessel.* This commitment in the DCO thereby ensures that during the potentially most sensitive period of the year for red-throated diver disturbance, the maximum level of impact will in fact be half that which was assessed as the precautionary worst case (of two main cable laying vessels) in the original assessment (APP-201). Furthermore, this commitment mirrors that proposed and agreed with Natural England for Norfolk Vanguard.
Q8.9.6	The Applicant	**Little gull collision risk** NE states the Applicant has not considered variability/uncertainty and a range of collision impacts for little gull. What is the Applicant's response?	The Applicant has provided the additional assessment requested by Natural England in the ornithology update submitted at Deadline 2 (ExA;AS-1.D2.V1). The conclusions of this assessment remain that Norfolk Boreas will not have an AEoI on the little gull population of the Greater Wash SPA either alone or in-combination with other plans and projects.

8.10 Flamborough and Filey Coast SPA

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.10.1	The Applicant	**Kittiwake** 1. NE [RR-099] and RSPB [RR-054] do not agree the apportionment of 26.1% of kittiwakes to the FFC SPA to be appropriate. The IPs recommend that a range of apportionment rates should be considered, up to 100%. 2. NE was unable to rule out AEOI for Norfolk Vanguard from in-combination collision risk, and Boreas is adding more birds. 3. RSPB does not agree no AEOI from in-combination collision mortality. The Applicant to respond to these concerns.	1. The Applicant has updated the assessment of potential kittiwake impacts at the Flamborough and Filey Coast SPA in the update submitted at Deadline 2 (ExA.AS-1.D2.V1) and this includes consideration of apportioning of up to 100% of the breeding season collisions to the SPA population. This additional assessment notwithstanding, the Applicant considers that the estimate of 26.1% is appropriate and was based on a review of the available evidence, which included, but was not limited to, RSPB kittiwake tracking data. 2 and 3. With respect to Natural England's and the RSPBs conclusions on AEoI, the Applicant considers that these have been reached using highly precautionary methods and assumptions and that when more proportionate levels of precaution are applied to the assessment (e.g. built designs vs. consented, over-estimated nocturnal activity rates, over-estimate flight speed, use of density independent population models; these are discussed in more detail in ExA.AS-1,D2.V1) it is possible to reach the Applicant's conclusion that there is no risk of AEoI for Norfolk Boreas alone or in-combination with other plans and projects.
Q8.10.2	RSPB	**Gannet** RSPB [RR-054] does not agree no AEOI to gannets of Flamborough and Filey Coast SPA from collision mortality from the project alone and in-combination (but it may be able to rule out from the project alone through raising of draught height of turbines). Can the RSPB provide further details as to why it does not consider an AEOI to gannets of the Flamborough and Filey Coast SPA can be ruled out as a result of collision risk from the project alone?	Although this question is not addressed to the Applicant, the Applicant's response is as follows: The Applicant considers that the RSPB has reached this conclusion on the basis of highly precautionary assumptions and methods, including use of consented designs instead of as built projects, over-estimated nocturnal activity rates and the RSPB's use of a breeding season avoidance rate of 98% (in contrast to the Natural England advised rate of 98.9%). The Applicant has applied a more proportionate level of precaution in the assessment, and on this basis has been able to rule out AEoI for the project alone and in-combination with other plans and projects. Nonetheless, despite the Applicant concluding that there will be no AEoI for gannet from the Flamborough and Filey Coast SPA, consideration is being given to options for further reducing the magnitude of impacts, including through increases in rotor draught height.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.10.3	Natural England	**Breeding birds** RSPB [RR-054] advises a 98% avoidance rate for breeding birds as the review from which the SNCB advice of a 98.9% avoidance rate acknowledges the majority of evidence of gannet avoidance behaviour is from non-breeding birds and that breeding birds would behave differently. What is NE's advice regarding RSPB's assertion that a 98% avoidance rate is more appropriate for breeding gannets, than the 98.9% they have advocated?	Although this question is not addressed to the Applicant, the Applicant's response is as follows: There is good evidence to support the higher avoidance rate of 98.9% and this value is recommended by all the Statutory Nature Conservation Agencies. This value was derived from a comprehensive analysis conducted by the British Trust for Ornithology (BTO) on behalf of Marine Scotland Science (Cook et al. 2014). More recent empirical observations obtained through a study conducted for the Ornithology Research Joint Industry Programme (ORJIP) has given further support to the higher avoidance rate and in fact found evidence that the gannet avoidance rate should be increased to 99.5%, the same value accepted for large gull species (Skov et al. 2018). While it is acknowledged that much of the gannet observation data were collected in the nonbreeding season, there is no evidence that the Applicant is aware of which supports the RSPB's position, and there does not appear to be any robust basis for considering that gannet would have variable turbine avoidance depending on the time of year. Indeed, there is no indication that any species exhibits variable rates of turbine avoidance at different times of year. Therefore, overall the Applicant considers there to be a robust body of evidence in support of a higher avoidance rate than that advocated by the RSPB, and this is also the position held by the other relevant stakeholders involved in ornithology assessment for offshore wind farms. References Cook, A.S.C.P., Humphries, E.M., Masden, E.A., and Burton, N.H.K. (2014). The avoidance rates of collision between birds and offshore turbines. BTO research Report No 656 to Marine Scotland Science. BTO, Thetford. Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. (2018). ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp
Q8.10.4	Natural England	**Auk** In response to NE's [RR-099] relating to definitive	Although this question is not addressed to the Applicant, the Applicant's response is as follows:

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		mortality rates for auk (razorbill and guillemot), the Applicant [AS-024] notes that the full range of outputs was presented in the assessment as requested. Using its own preferred rates, does NE consider an AEOI to razorbill and guillemot of the FFC SPA as a result of displacement can be excluded?	Although Natural England has requested auk displacement mortality rates between 1% and 10%, Natural England has also stated that mortality 'is likely to be at the low end of the range' (REP—099) which indicates a value closer to 1% than 10%. In addition the Applicant considers that even a rate of 1% should be considered to be precautionary since there is no evidence to indicate that displacement will result in an impact of this magnitude. Estimates for breeding auks have indicated possible additional mortality of no more than 0.3% and possibly as low as 0.003% (Searle et al. 2017). Although nonbreeding auks may experience different pressures, it is considered very unlikely that these would result in an effect as much as three times higher (i.e. to reach 1% mortality) and if anything the effect is likely to be lower since the requirement to provision a chick is removed, as is the requirement to commute to and from foraging areas. References Searle, K.R., Mobbs, D.C., Butler, D., Furness, R.W., Trinder, M.N. and Daunt, F. (2017). Fate of displaced birds. CEH Report NEC05978 to Marine Scotland Science.
Q8.10.5	RSPB	**Auk** RSPB [RR-054] does not agree no AEOI to razorbill and guillemot from in-combination operational displacement. Following the Applicant's response [AS-024] does RSPB have any further concerns?	Although this question is not addressed to the Applicant, the Applicant's response is as follows: The Applicant notes the RSPB's position on in-combination displacement of auks from the Flamborough and Filey Coast SPA, however the Applicant considers these are based on highly precautionary assumptions about the rates of displacement and mortality. The Applicant has applied more proportionate levels of precaution in the assessment and reached conclusions of no AEoI for auk displacement both from the project alone and in-combination with other plans and projects.
Q8.10.6	The Applicant	**Puffin** The screening matrix for FFC SPA [AS-002] identify a LSE for puffin from operational displacement, however puffin is not included in the FFC SPA integrity matrix, nor is it identified in the HRA Report [APP-201]. The ExA understands that puffin forms	Puffin was recorded in the Norfolk Boreas wind farm and 2km buffer in only two months (February and March) and in very small numbers: the estimated population sizes in these months were 5 and 23. Apportioning of the peak estimate to the Flamborough and Filey Coast SPA using Natural England's advised rate for the nonbreeding season (0.041%) it is predicted that less than 0.1 individuals from the SPA are present on the Norfolk Boreas site. On this

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		part of the seabird assemblage feature of the FFC SPA, which has not been included on the screening matrix. The Applicant to confirm whether a LSE should be screened in for the seabird assemblage of FFC SPA, and if so, provide information to support the making of an appropriate assessment for this feature.	basis there is no risk of a Likely Significant Effect (LSE) for puffin and its original inclusion in the screening matrix for the Flamborough and Filey Coast SPA was erroneous. Puffin has now been removed from the updated Screening Matrices submitted at Deadline 1 (REP1-012, 5.3.5.3 - Norfolk Boreas Updated Appendix 5.3 Habitats Regulations Assessment Screening Matrices (Version 3)) and there is also no requirement for any additional assessment, therefore this species is not included in the updated assessment submitted at Deadline 2 (ExA;AS-1,D2.V1). On the advice of Natural England, the seabird assemblage feature of the SPA has been screened in (5.3.5.3 - Norfolk Boreas Updated Appendix 5.3 Habitats Regulations Assessment Screening Matrices (Version 3)) and consideration of this has been included in the Deadline 2 ornithology update (ExA;As-1.D2.V1) and summarised in the notes provided for this SPA in the integrity matrices submitted at Deadline 1 (REP1-014, 5.3.6.1 - Norfolk Boreas Updated Habitats Regulations Assessment Integrity Matrices (Version 3).
Q8.10.7	The Applicant	**Sea bird Assemblage** The Applicant to explain why it is unable to provide a submission of assessment of sea bird assemblage for FFC SPA as requested by RSPB [AS-030].	The seabird assemblage feature of the Flamborough and Filey Coast SPA comprises the named individual species (gannet, kittiwake, guillemot and razorbill) and five other species which are not named individually (herring gull, fulmar, shag, cormorant and puffin). Following advice from Natural England the Applicant has now included consideration of the potential for effects on the seabird assemblage feature in the updated assessment submitted at Deadline 2 (ExA;AS-1.D2.V1) and in the screening and integrity matrices submitted at Deadline 1 (REP1-012, 5.3.5.3 - Norfolk Boreas Updated Appendix 5.3 Habitats Regulations Assessment Screening Matrices (Version 3 and REP1-014, 5.3.6.1 - Norfolk Boreas Updated Habitats Regulations Assessment Integrity Matrices (Version 3)). The Applicant considers that there is no risk of an AEoI for the following reasons. 1) The species which are also features of the SPA in their own right (gannet, kittiwake, guillemot and razorbill) have been assessed in detail and the

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Applicant has concluded that there will be no AEoI for any species due to the project alone or in-combination with other plans and projects. 2) The other species in the assemblage feature are either considered to be at negligible risk of wind farm impacts (fulmar), have no likelihood of connectivity (herring gull, shag and cormorant), or were present in such low numbers (puffin) that there is no risk of an impact. On the basis of these considerations the Applicant has concluded that there will be no AEoI on the seabird assemblage feature due to the project alone or in-combination with other plans and projects.

8.11 Marine Mammals

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.11.1	The Wildlife Trust	**Request for Consultation** TWT [RR-040] requests to be named for consultation on the Marine Mammal Management Plan and SIP. The Applicant [AS-024] agrees to consult with TWT during the process of developing the in-principle SIP [APP-708]. Can TWT confirm that it is content with this?	
Q8.11.2	The Applicant	**Harbour porpoise** Table 8.3 of the HRA Report states that lethal effects and permanent auditory injury to harbour porpoise from piling would be mitigation, however measures have not been specified. Can the Applicant provide further details on the mitigation measures to be employed?	Mitigation measures to reduce the risk of lethal effects and permanent auditory injury to harbour porpoise from piling are outlined in Section 8.2.1, Section 8.2.1.2.1 and Section 8.3.1.1.1 of the HRA report (5.3 Information to Support HRA report, APP-201). In addition, mitigation is set out in the draft Marine Mammal Mitigation Protocol (MMMP) for Piling, APP-704. The MMMP for piling will be developed post-consent in consultation with the MMO and relevant SNCBs and will be based on the latest scientific understanding and guidance, and detailed project design. The MMMP for piling will detail the proposed mitigation measures to reduce the risk of permanent auditory injury (PTS) to harbour porpoise during piling. For

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			example, the activation for acoustic deterrent devices (ADDs) for 10 minutes prior to a 30 minutes soft-start and ramp-up would enable harbour porpoise to move beyond the maximum predicted range for auditory injury (PTS).
Q8.11.3	Natural England, The Applicant	**Grey Seal** NE's RR [RR-099] raised concerns regarding potential impacts on up to 37% of the Humber Estuary SAC. The Applicant's response [AS-024] states that it is more appropriate to use a wider reference population for the assessment; this results in total of 6.6% of the grey seal population being temporarily disturbed, not all of which would be from the Humber Estuary SAC. The Applicant to explain why this figure differs so differently from the originally quoted 37%. Does NE have any comments on the Applicant's response?	As outlined in the Applicant's comments on Relevant Representations [AS-024] and specifically in response to Natural England's Relevant Representation (RR-099) on the in-combination assessment of grey seal, to take into account the wide ranging movements of the species and the large area covered by the in-combination projects that have been included, it is much more appropriate to use the wider reference population for assessment, which includes the South East England, North East England, South Coast Scotland MUs and the Waddenzee. Using this wider, more appropriate, reference population (22,290 grey seal) for the assessment results in a total of 6.6% of the grey seal population being potentially temporarily disturbed. The 37% referred to in Natural England's RR [RR-099] is based on the count of grey seal at the Humber Estuary SAC (3,964 grey seal) and that all grey seal that could be impacted from in-combination effects are only from the Humber Estuary SAC. However, not all grey seal that have been predicted to be temporarily affected from the in-combination effects could be from the Humber Estuary SAC, due to the large distances between the projects included in the in-combination assessment and the Humber Estuary SAC. Therefore, the maximum predicted effects of up to 6.6% of the wider grey seal population is more realistic and appropriate for the in-combination assessment.
Q8.11.4	Marine Management Organisation	**South North Sea SAC** Can MMO advise whether there is likely to be any impediment to granting the licence for UXO clearance?	
Q8.11.5	The Applicant	**Piling Hammer Energy** A maximum hammer energy of 5,000kJ for driven or part-driven foundations is stipulated in Condition 14(3) (Schedule 9-10), and Condition 9(3) (Schedule 11-12) of the dDMLs [AS-019]. This does not reflect the maximum hammer energies stipulated for quadropod or tripod foundations, as described in ES	Although the maximum hammer energy of 2,700kJ for pin-piles which could be used to install Jacket foundations is not listed within the dDCO, it is secured within document 8.13, the draft Marine Mammal Mitigation Protocol (APP-704). This document makes it clear that the worst case scenario for the hammer energy used to install pin-piles would be 2,700kJ and this is what has been assessed within the EIA and HRA.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Chapters 5 and 12. Applicant to comment.	The Applicant does not consider it necessary to include a maximum hammer energy for pin-piles within the DCO. This approach is consistent with other recent DCOs for wind farm projects both made (East Anglia THREE) and in draft (Hornsea Project Three and Norfolk Vanguard).
Q8.11.6	Marine Management Organisation, The Applicant	**Piling** Provide an update on discussions between the Applicant and MMO regarding the need to prevent concurrent piling between Norfolk Boreas and Norfolk Vanguard and restrict the number of piles to be installed per 24 hour period [AS-027].	The Applicant and the MMO are in agreement in principle that the development and management of the SNS SAC SIP and MMMP (both within and outside of designated sites) is where, if required, any issue of concurrent piling within the project and between Norfolk Boreas and Norfolk Vanguard and the number of piles to be installed in a 24 hour period can be assessed further to determine, if any restrictions or mitigation is required (ExA.SoCG-10.D0.V2). There are ongoing discussions regarding how this is currently secured.
Q8.11.7	The Applicant	**Piling** WDC [RR-056] and TWT [RR-040] advise that foundations requiring piling should not be used due to noise impacts. The Applicant to advise whether there are any areas in the array where piling could be excluded?	The Applicant is not currently able to commit to a particular foundation type, nor any potential combination of the foundation types currently described within the Project Description (See 6.1.5 Environmental Statement - Chapter 5 Project Description, APP-218) or the dDCO (as defined in Schedule 1, Part 9 of the dDCO, REP1-008). The worst case assumption regarding noise impacts as a result of foundation installation is therefore that monopiles (in terms of greatest spatial impact) and pin piles (in terms of greatest temporal impact) will be used to install all turbines throughout the site as assessed within Document 6.1.12 Environmental Statement - Chapter 12 Marine Mammals (APP-225). Final turbine type and locations will be driven by a number of constraints including, cost, availability, ground conditions, water depth, sensitive habitats, and existing infrastructure. There is potential for turbines to be excluded from a small part of the site due to a requirement for a Helicopter Refuge Area however the parameters for this would be defined post consent. Therefore, the Applicant is currently not in a position to exclude piling activity from any areas of the site. The Applicant also does not consider that such exclusions would allay WDC and TWT's concerns regarding piling activity.

8.12 Benthic Ecology

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.12.1	Natural England	**Baseline data** The Applicant [AS-024] has provided a response to NE's concerns regarding the baseline data in the HHW SAC. Does NE have any further comments to make regarding the baseline for the assessment of effects?	
Q8.12.2	The Applicant, Natural England	**Annex 1 Reef** The Applicant [AS-024] explains what action would be required in the event that Annex I reef encountered along the connection route was so extensive that micrositing was not possible. Can the Applicant explain how any such action would be consistent with the site's conservation objectives? Is NE in agreement with the Applicant that these proposals are consistent with the site's conservation objectives?	At the request of Natural England, the information to support HRA (document 5.3, APP-201) contains an assessment for a theoretical scenario where *S. spinulosa* reef spans the full 2km to 4.7km width of the offshore cable corridor and micrositing is not possible. The assessment concludes that due to the fact that the area of disturbance would only be a small percentage of the area occupied by reef in that theoretical scenario, there would be no AEoI. Within the conservation objectives for the HHW SAC site there are targets attached to the conservation objective for reef to recover. The targets acknowledge that, currently the extent of reef within the site is unknown stating that: "*due to the ephemeral nature of the reef its presence can be highly variable in both space and time and therefore estimating its total extent is not possible*"[1]. Therefore, it is currently not possible to quantify what would constitute favourable condition for reef extent. However, if reef were so extensive across the offshore cable corridor that there was no route through the reef, it is likely that the target for that conservation objective would have been reached, and in all likelihood exceeded. Therefore, a small amount of minimal impact would not reduce the reef extent sufficiently to bring the reef feature of the SAC into unfavourable condition.

[1] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030369&SiteName=hais&SiteNameDisplay=Haisborough%2c+Hammond+and+Winterton+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			If it was not possible to agree with the MMO and Natural England that, under conditions where the entire cable route supported *S.spinlulosa* reef, impacts from cable installation would not cause AEoI the Outline HHW SAC SIP (document 8.20, APP-711) contains the following statement: *"If such a finding could not be reached, construction could not commence and the onus would be on Norfolk Boreas Limited to consider alternative solutions. For example, this could include: minor amendments to the redline boundary in discrete areas where the cable route interacted with reef to provide space for micrositing…"* The minor amendments to the redline boundary would be made in order for the cable route design to have further room to microsite around *S.spinulosa* reef and therefore not inhibit the site's conservation objective to restore the reef. Noting that in such a scenario it is likely that the restore objective would have already been achieved and exceeded in any event.
Q8.12.3	Marine Management Organisation	**Annex 1 reef** The Applicant [AS-024] in response to MMO's concern that the IPMP only proposes monitoring of Annex I reef and not wider benthic impacts [RR-069], states that the findings of benthic ecology assessment do not warrant a full-scale programme. What is MMO's response?	
Q8.12.4	Natural England	**Annex 1 reef** What is NE's view of the Applicant's commitment regarding disposal of material within the HHW SAC (see Table 3 Row 8 of [AS-024])?	
Q8.12.5	The Applicant	**Sandwave levelling** NE [RR-099] request that areas of Annex I reef be avoided when depositing sediment from sandwave levelling. Is the Applicant willing to commit to this, and if so how would such a commitment be secured?	The Applicant can confirm that a commitment has been made within the HHW SAC SIP to not dispose of material within 50m of *Sabellaria reef* (REP1-033). The document states that: "*The location(s) of sediment disposal, must include a minimum buffer of 50m from S.spinulosa reef, and will therefore be informed by the pre-construction surveys*."

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q8.12.6	The Applicant, Natural England, Marine Management Organisation	**Haisborough, Hammond and Winterton SAC (HWW SAC)** NE [RR-099] and MMO [RR-069] advise that an AEOI cannot be ruled out for HHW SAC and that alternatives and/or compensation should be secured. However, it advises that it is unlikely agreement could be found for compensation for the permanent loss of Annex I reef. The Applicant [AS-024] considers that cable protection is a suitable habitat for Annex I reef communities. Can the Applicant, NE and MMO agree a joint position on AEOI for HWW SAC?	The Applicant has discussed this written question with both the MMO (27th November) and Natural England (28th November) and will continue working with both parties to attempt to agree a joint position during the examination. However, any joint position reached is likely to build on (or respond to) Natural England and the MMO's joint position statement on cable protection, which has not yet been submitted to the examination. Therefore following submission of Natural England and the MMO's joint position statement on cable protection, the Applicant will attempt to progress a joint position in relation to this matter with Natural England and the MMO.
Q8.12.7	The Applicant	**Offshore cable** Is the Applicant willing to commit to excluding certain parts of the HHW SAC from the cable route, in particular where known areas of Annex I reef are present and where fisheries byelaws are proposed?	As detailed surveys of the cable route have yet to be undertaken, the precise areas of Annex 1 reef within the cable route are not yet known. Even if areas of Annex 1 reef had been identified at this stage, due to their ephemeral nature these may change by the point of construction. Similarly, it is not known whether, and the extent to which, Annex 1 reef will recover in areas to be managed as reef or where fisheries byelaws are proposed. Detailed surveys will be undertaken to establish areas of Annex 1 reef within the cable corridor pre-construction. The HHW SIP secures mitigation for the HHW SAC, such as micrositing of the cable route to avoid identified areas of Annex 1 reef where possible. In addition, any impacts of installing cables on Annex 1 reef will be temporary. Whilst impacts from cable protection have been assessed as permanent impacts, the Applicant has submitted evidence (Annex 3 of the HHW SIP, document reference 8.20; REP1-033) which shows that cable protection is not likely to be required in areas to be managed as reef. Further, the Grampian condition in the dDCO (Condition 14(1)(m) of Schedule 11-12) requires the MMO to be satisfied that such mitigation as is necessary to avoid AEoI is secured in the final HHW SIP.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Therefore, it is not necessary or appropriate to exclude certain parts of the HHW SAC from the cable route at this stage and to do so would be unduly restrictive. Further, excluding parts of the HHW SAC from the cable route at this stage will reduce the area available for micrositing and therefore has the potential to inhibit the Applicant's ability to avoid areas of known Annex 1 reef during construction.
Q8.12.8	The Applicant	**Offshore cable** Confirm how often there would be post construction visual inspections of the cable corridor – via Sub Seas Remote Vehicle.	Routine cable burial surveys will be conducted using non-intrusive techniques. Such techniques include Ground-Penetrating Radar (GPR) and drop-down video. The interval between surveys is likely to be around 5 years, with a minimum of 3 years. Electrical faults in the export cables will normally take the form of line-to-ground short circuits. Faults will be detected automatically, and the cable system will immediately be isolated from all sources of electrical energy. (Note: This is standard practice for all high-voltage electrical systems; the required technical solutions are well-established and understood.) As a consequence of these measures, the possibility of 'stray' electrical currents persisting in the marine environment – and any associated impacts and hazards – is eliminated. Distributed Temperature Sensing (DTS), which uses strain in the communications cable as a measure of cable temperature, could also be used to identify the location of the fault. A proportionate risk-based approach would use the post construction geophysical survey(s) to build up evidence of sand wave mobility and erosion/deposition rates and find the area with the most variation, thus the surveys could then be made of cables in those areas with the highest risk of exposure.
Q8.12.9	Natural England	**Site Integrity Plan (SIP)** NE [RR-099] advises the SIP has insufficient detail to	

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		absolve the need for a scour and cable protection plan for the HHW SAC. The Applicant referred in [AS-024] to its assessment of scour and cable protection and its SIP. What further information does NE require in the SIP to absolve the need for a scour and cable protection plan?	
Q8.12.10	Natural England	**Disposal location and impacts** NE [RR-099] requested an assessment of the disposal location and impacts. The Applicant [AS-024] explained that the strategy for disposal can only be determined at the detailed design stage and that the HHW SAC SIP would provide an appropriate mechanism for further discussions and agreement. Does NE have remaining concerns, and if so, what are they?	
Q8.12.11	The Applicant	**Drill arisings** In response to MMO's concerns regarding worst case for drill arisings [RR-069] the Applicant [AS-024] states that the overall figure (16,305m2) is secured within the dDCO at Condition 1 and 3 of the Transmission DMLs. 1. Is this correct, or should this refer to the Generating Asset DMLs? 2. Where is the overall figure of 16,305m2 secured? 3. What is the consequence of greater than 50% of foundations having to be drilled?	1. The ExA is correct that the reference should have been to the Generation DMLs (Schedules 9 and 10). 2. The SoCG between the Applicant and the MMO (AS-027) contains, within Table 8 (page 67), a full answer to the MMO's question regarding how the drill arisings were calculated and how they have been secured. This has now been agreed with the MMO and the agreement is reflected in version 2 of the SoCG (ExA.SoCG-10.D2.V2) which has been submitted at deadline 2. 3. The ground conditions within the Norfolk Boreas site indicate that piling will be possible at the vast majority of foundation locations. Drilling may not be required at all. Therefore the 50% of locations is a very precautionary assumption which has been made for the purposes of the assessment. If more than 50% of foundations did require drilling, although the magnitude of that impact may increase, it is unlikely that significance of any impacts would change, because the drill arisings would remain in small discrete areas local to the site of each foundation.

9 Landscape and Visual Effects

9.0 The Applicant's landscape and visual assessment

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.0.1	Local Planning Authorities Natural England Interested Parties	**Methodology and its application** Provide comments on the Applicant's landscape and visual assessment methodology, clearly distinguishing between those on the actual methodology and those on its application as described in the ES and supporting documents [APP-242, APP-484 to APP582, APP-677 to APP-678].	
Q9.0.2	Necton Substation Action Group [RR-014] and [RR-006]	**Consideration of cumulative effects on landscape and visual** Has the Applicant's response to RRs [RR-014] and [RR-006] which questioned the way in which the baseline and cumulative assessments for landscape and visual effects have considered other existing and proposed substation infrastructure in the area proposed for the Norfolk Boreas substation works [AS-024, Table 1, No. 5] addressed concerns? If not set out what further information is required.	
Q9.0.3	The Applicant	**Localised significant effects** How extensive geographically can a "Localised significant effect" be [APP-242, assessment tables]?	On the subject of the geographical extent of effects, Guidelines for Landscape and Visual Assessment (GLVIA 3) makes the following comment; "*The extent of effects will vary widely depending on the nature of the proposal and there can be no hard and fast rules about what categories to use. In general effects may have an influence at the following scales, although this will vary according to the nature of the project and not all may be relevant on every occasion:* • *At the site level, within the development site itself;* • *At the level of the immediate setting of the site;* • *At the scale of the landscape type or character area within which the proposal lies;* • *On larger scale, influencing several landscape types or character areas."*

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			In respect of the LVIA, the term localised has been applied to describe geographical extent. The Oxford Dictionary definition of localised is "restricted to a particular place." In relating the term localised to the four scales presented in GLVIA 3, the intended meaning includes "*the level of the immediate setting"* and also "*the scale of the landscape type or character area within which the proposal lies*" but not "*the larger scale, influencing several landscape types or character areas."* While the effects do extend across more than one landscape type, they only affect part of each landscape type and so in respect of scale this is commensurate with the scale of the landscape types.

9.1 The Applicant's visual assessment

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.1.1	The Applicant	**Study area parameters** The study areas for the onshore project substation/ substation extension and the landfall site are defined as a 3km radius area and 1km radius area respectively [APP-242, paras 46-48] and [APP-677, para 7]. However, the study area is shown as 500m from all elements of the Proposed Development on most Figures. The representative viewpoints are mostly at or within 500m of the onshore project substation/ substation extension, with no discussion of potential impacts to more distant views. 1. Explain how the representative viewpoints were selected. 2. Why are there not more viewpoints within the areas of potential visibility shown on the Zones of Theoretical Visibility [APP-488], [APP-489], [APP-500] and [APP-501]?	1. The purpose of viewpoint selection is to determine those visual receptors with potential to undergo significant effects as a result of the project. Viewpoint selection, therefore, looks to identify publicly accessible settlements, routes and paths from which actual visibility of the project would occur. Furthermore, there needs to be a notable sensitivity attached to the visual receptors and the potential for a notable magnitude of change to occur, such that a significant effect would have the potential to arise. The representative viewpoints were identified during extensive study area investigations and selected to best represent the visual amenity of local visual receptors. The viewpoints were agreed through consultation with the statutory consultees. The relatively close proximity of many of the viewpoints reflects the enclosed character of the rural landscape surrounding the onshore project substation and National Grid substation extension. This has made finding appropriate viewpoints difficult as there are very few clear views apart from within the immediate setting of the project, and then from the more distant ridgeline 2.5 to 3 km to the south. Owing to the enclosure from mostly tree cover and

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			hedgerows in the rural areas, but also built form in the settlements, there are few available or appropriate viewpoints within the 1 to 2 km range. 2. There are not more viewpoints within areas of theoretical visibility shown on the Zones of Theoretical Visibility for the following reasons. Firstly, actual visibility is much more contained than theoretical visibility, owing to the enclosure of trees and hedgerows in the rural areas and built form in the settlements. This means that there are often no views or limited visibility from settlements and roads in the area. Secondly, many of the patches of theoretical visibility cover areas where there are no visual receptors, for example, areas of open field, and therefore there is no potential effect on visual amenity and no representative viewpoints need to be included. Thirdly, with distance, the likelihood of significant effects typically dissipates. This is often because the relative scale of the project decreases and the influence of the wider surrounding landscape or townscape increases.
Q9.1.2	Relevant Planning Authorities	**Study area parameters** Do you have any comments relating to the study areas adopted for the onshore project substation/ substation extension and the landfall site, and the selection of representative viewpoints?	
Q9.1.3	The Applicant	**Description of effects** Confirm for the benefit of Interested Parties that all effects as stated are adverse unless otherwise indicated.	Yes - all effects are adverse unless stated otherwise. Generally, a precautionary approach is adopted, which assumes that significant landscape and visual impacts would be weighed on the adverse side of the planning balance. This is in light of the subjective nature of landscape and visual effects and ensures that a worst case assumption is covered.
Q9.1.4	The Applicant	**Distance: susceptibility of a receptor and the magnitude of change** 1. Confirm whether distance between a visual receptor and the proposed development should (according to the stated methodology [APP-677]) be a factor in influencing the susceptibility of a receptor or the magnitude of change. It appears in some parts of the visual assessment that distance has	1. Distance between a visual receptor and the proposed development is a factor in considering **both** the susceptibility of the visual receptor to the proposed development and the magnitude of change that the visual receptor will experience as a result of the proposed development. As set out in ES Appendix 29.1 LVIA Methodology Paragraph 57 [APP-677] the assessment of susceptibility needs to consider the susceptibility of a visual receptor to a specific project, so within the assessment of sensitivity, consideration of how views towards the site will be affected are being made. How far the visual

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		been used as an influencing factor for both; such as residents of Whimpwell Green [APP-242, Table 29.10, VP8]. 2. Likewise, should screening by existing intervening landform be a factor in determining susceptibility of a receptor or the magnitude of change? It appears in places that screening has been used as an influencing factor for both [APP-242, Table 29.13, VP8]. 3. Could these instances (and others if they exist) result in a downplaying of the sensitivity of receptors to change, and therefore the assessment of whether effects are significant or not?	receptor is from the site, is therefore a valid consideration, as it will have a direct effect on their susceptibility. For example, a visual receptor at 500m is likely to have a much higher susceptibility to the project than a visual receptor at 5km. This is just one of many considerations made in the assessment of susceptibility. 2. Screening between a visual receptor and the proposed development is also a factor in considering **both** the susceptibility of the visual receptor to the proposed development and the magnitude of change that the visual receptor will experience as a result of the proposed development. The susceptibility of a visual receptor is being assessed relative to that specific project and therefore if a visual receptor is set behind intervening landform or woodland, their susceptibility to the effects of that project will inevitably be reduced. 3. In terms of the suggestion that this approach may downplay the sensitivity of receptors and subsequently give rise to the possibility that significant effects may have been overlooked as a result, this is not the case. These considerations are a valid part of the assessment, as it is the susceptibility of visual receptors relative to the specific view towards the site and inevitably if there are elements screening the site or those views are being experienced some distance from the site then this will affect susceptibility. Following on from this, the assessment of significant effects is in line with the methodology and there has been no downplaying of effects.
Q9.1.5	The Applicant	**Visualisation assumptions** Confirm what assumptions have been made for the production of visualisations and the assessment of effects: 1. with regards to existing ground levels showing the project substation and the National Grid substation extension, with reference to the existing ground levels defined in Requirement 16 of the dDCO [AS-019], and with reference to ground levels in the OS Terrain 5 DTM data; 2. regarding the maximum height of structures	1. The assumption made is that the substation footprint is on a uniformly level platform which would be formed by a balanced cut and fill of the existing ground levels (as provided in the OS Terrain DTM model), with no import or export of material or reuse of material on the site for other purposes such as landscape bunding. The ground level of this uniformly level platform is then utilised for production of visualisations, assessment of effects and the 'existing ground levels' defined in Requirement 16 of the dDCO. 2. The blue-dotted lines show the maximum envelope of 25m to include the masts, despite the maximum height of the buildings being 19m. The maximum height of the blue Rochdale Envelope is also shown at 25m. 3. Yes – 15m.

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		within the project substations, do the blue dotted lines on the visualisations show the proposed maximum height of the buildings at 19m or the masts at 25m? For clarity, please confirm the maximum height AOD of the 'blue Rochdale Envelope' referred to in the Applicant's comments on Relevant Representations [AS-024, Table 4, No.4]. 3. regarding the maximum height of equipment within the National Grid substation extension? Is this 15m? 4. whether or not the potential 2m high (Scenario 1) and 1.5m high (Scenario 2) bunding for planting on the western boundary [APP-698, paras 53 and 58] has been included in the visualisations.	4. Yes – bunding has been included in the visualisations.
Q9.1.6	The Applicant	**3-D model of substations** In responding to [RR-109] regarding the 3-D model of the substation [AS-024, Table 24, No.4] would it be more appropriate to say the 3-D model has been used to give an indication of what the substation "could" or "might" look like (rather than "will" – as all details are subject to post consent approvals?	Yes.
Q9.1.7	The Applicant	**Height of vegetation** Assumptions are made [APP-242, paras 137, 138 and 200, and Table 29.12] and the OLEMS [APP-698, para 63] on the height of mitigation planting at 20 and 30 years. The methodology for the production of the visualisations [APP-509, Figure 29.23] and [APP521, Figure 29.35] state that the visualisations show 15 years growth. 1. Confirm what has been shown on the visualisations. 2. If this is planting at 15 years growth, what height	1. 15 years growth which is shown as approximately 5 to 7m in height. 2. At 20 years approximately 6 to 8m in height. At 30 years approximately 9 to 12m in height. The views would not differ as the planting would be designed to include an under-storey to avoid openness between clear stems and ensure an effective screen from tops to bases. 3. In respect of viewpoint 1 it is anticipated that the height of mitigation planting will be approximately 7.5 to 10m after 25 years. All estimates for planting growth are conservative in respect of guidance produced by the Institute of Environmental Management Assessment where a

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		is mitigation and advance planting expected to achieve at 20 to 30 years? Would the views differ e.g. through clear stems from that shown on the visualisations? 3. With reference to the assessment of VP1 in [APP-242, Table 29.18], confirm what height mitigation planting has been assumed to reach after 25 years.	broad average of 7 to 7.5m height after 15 years is presented but with reference also made to many faster growing species.
Q9.1.8	Local Planning Authorities	**Cumulative effects** Are you content with the list of projects included in the assessment of potential cumulative landscape and visual effects [APP-242, Table 29.14]?	
Q9.1.9	The Applicant	**England Coastal Path - views** Provide comment on the potential for cumulative visual effects to users of the England Coast Path arising from impacts during the construction of the proposed development, acting cumulatively with impacts from Bacton and Walcott Coastal Management Scheme and Coastal defence/protection works, Happisburgh [APP-242, Table 29.14].	For users of the England Coastal Path, the potential for a cumulative visual effect to arise as a result of the project being added to a cumulative situation comprising Bacton and Walcott Coastal Management Scheme and Happisburgh Coastal Defence and Protection Works is unlikely for the following reasons. Bacton and Walcott Coastal Management Scheme has already been implemented and involved the deposition of large volumes of sand on the beach. It is unlikely that the addition of the project to a baseline comprising this scheme will give rise to a significant cumulative effect as it will appear as a natural part of the coast and not a development. Furthermore, these works were carried out more than 1km from the landfall site. Happisburgh Coastal Defence and Protection Works were approved in August 2018. They involve a 10 year programme of moving rocks that are already on the coast into new locations and re-cutting a ramp to provide access onto the beach. This will involve the periodic presence of heavy machinery on the beach to move rock. While there may be some overlap in terms of the construction period for the landfall, it is unlikely that the addition of the project to these relatively small scale works would give rise to a significant cumulative effect. The reasons why these cumulative projects were discounted at the time of writing relate to the following points. Firstly, there is the baseline character in which most of this coastline has been modified by human intervention and as

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			a result there are very few natural sections. This means that sea defence features, including timber groynes, rock armours and concrete walls are an integral feature of the urban and rural coastal character. This also means that future developments, such as the Happisburgh Coastal Defence and Protection Works, will have less of an impact than if they were to occur along an unmodified coastline. Secondly, the localised extent and short term nature of the effect on visual receptors on the coastal path, as a result of the project, limits the potential for a significant cumulative effect to arise in conjunction with other projects. As stated at Paragraph 7.20 of GLVIA 3; "*The approach must be reasonable and proportional in order to keep the task manageable and ensure that the focus is on cumulative landscape effects that are likely to be significant.*"

9.2 Alternatives considered

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.2.1	Interested Parties (including those who made comments on alternatives)	**Signposting document for alternatives considered** Has the Applicant's response to the RRs [AS-024, Table 1, No. 2 and 3] provided the information you sought on alternatives? If not, what further evidence do you consider is required?	
Q9.2.2	The Applicant	**Policy position for alternatives** Set out the legal and policy position concisely for the consideration given to alternatives in the ES and the various reports and that form part of the application; and cross reference how the application for the proposed development has met this. A table might be a suitable way of presenting this.	The Applicant has responded to this question by summarising (i) the legal requirement for consideration of alternatives, (ii) the relevant EIA Regulations and (iii) the NPS Guidance on alternatives, and responding (in italics) in each case as to how these are addressed in the application. **1. The legal requirement for consideration of alternatives** In law, the test set out by the Courts (*GLC v Secretary of State and London Docklands Development Corporation (1986) JPL193*) as to when the existence

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			of an alternative site is a relevant factor in the determination of a planning application is as follows: (a) the presence of a clear public convenience or advantage in the proposal under consideration; (b) the existence of inevitable adverse effects or disadvantages to the public or some section of the public in the proposal; (c) the existence of an alternative site which would not have those effects, or would not have them to the same extent; (d) a situation in which there could only be one permission granted for such a development, or at least only a very limited number of permissions. The issue of consideration of alternative sites, in law, as a material consideration, is therefore dependent on a number of "tests". If the proposal is to develop land in a way which is acceptable in planning terms, then the existence of other land which is more acceptable does not justify refusal of planning permission. However if there are clear planning objections or inevitable adverse effects it may be relevant to consider alternative sites. There are also other instances where alternatives need to have been properly considered by the Applicant, for example in an appropriate assessment of the impact on a protected habitat (see Managing Natura 2000 Sites, European Commission) and in particular where it is to be argued that "imperative reasons of overriding public interest" justify a project being permitted which would result in adverse effects on a protected habitat. Similarly if the Secretary of State is asked to exercise compulsory acquisition powers as part of a DCO (Section 120 and 122-134 Planning Act 2008), alternative means of achieving the objectives behind the acquisition will have to be considered (see Circular 06/2004).

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Applicant's Response *Alternative sites have been considered in Chapter 4 of the ES (Site Selection and Assessment of Alternatives) (Document 6.1.4, APP-217) in relation to:* • *The offshore wind farm location (4.6)* • *The offshore cable corridor (4.7 and 4.8.1)* • *The National Grid connection point (4.8)* • *The landfall area (4.7 and 4.9)* • *The onshore cable corridor (4.10)* • *The onshore cable route (4.11)* • *The onshore project substation location (4.13)* • *The National Grid extension works location (4.14).* **2. EIA Regulations** The Infrastructure Planning (Environmental Impact Assessment) Regulations, both 2009 and 2017, require the Applicant to provide within the Environmental Statement a description of the reasonable alternatives considered in developing the project for which a DCO is sought. The 2017 EIA Regulations advise that this assessment of alternatives should include "a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen taking into account the effects of the development on the environment".

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Applicant's Response *Alternative sites have been considered in Chapter 4 of the ES (Site Selection and Assessment of Alternatives) (Document 6.4, APP-217) in relation to* • *The offshore wind farm location (4.6)* • *The offshore cable corridor (4.7 and 4.8.1)* • *The National Grid connection point (4.8)* • *The landfall area (4.7 and 4.9)* • *The onshore cable corridor (4.10)* • *The onshore cable route (4.11)* • *The onshore project substation location (4.13)* • *The National Grid extension works location (4.14).* *In addition to section 4.8 of Chapter 4 of the ES, the report on the Strategic Approach to Selecting a Grid Connection Point for Norfolk Boreas and Norfolk Vanguard (ES Appendix 4.3, Document 6.3.4.3, APP-539) provides a summary of the context and work carried out by National Grid and Vattenfall Wind Power Ltd (Parent Company of the Applicant) to select an appropriate location to connect to the National Electricity Transmission System.* *In the Applicant's comments on Relevant Representations (AS-205), the Applicant has further addressed in section 1.1 (Site selection) issues relating to the selection of the landfall site south of Happisburgh village (1) landfall site selection (2) alternative sites (onshore project substation) (3) selection of*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			the grid connection point (4) and cumulative impact of the Norfolk Boreas onshore project substation (5). *In the Applicant's response to the Open Floor Hearing (REP 1-036), the Applicant has responded (reference 1) on the issue of site selection and onshore project substation siting.* **3. NPS Guidance on alternatives** The overarching National Policy Statement for Energy (EN-1) states (page 14): "The IPC should start its assessment of applications for infrastructure covered by the energy NPSs on the basis that need has been demonstrated. The IPC does not need to consider the relative advantages of one technology over another given the Government's view that companies should be permitted to determine the individual projects to bring forward within the strategic framework set by the Government, taking account of the clear benefits of a diverse energy mix." More detailed consideration of the approach to alternatives is set out at paragraph 4.4 of NPS EN-1. This represents the approach, as a matter of policy, which the Secretary of State will take in considering alternatives in connection with energy projects. In particular the following points from section 4.4 of NPS EN-1 should be noted: "4.4.1 As in any planning case, the relevance or otherwise to the decision making process of the existence (or alleged existence) of alternatives to the proposed development is in the first instance a matter of law, detailed guidance on which falls outside the scope of this NPS. From a policy perspective this NPS does not contain any general

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			requirement to consider alternatives or to establish whether the proposed project represents the best option. 4.4.2 However: • applicants are obliged to include in their ES, as a matter of fact, information about the main alternatives they have studied. This should include an indication of the main reasons for the applicant's choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility; • in some circumstances there are specific legislative requirements, notably under the Habitats Directive, for the IPC to consider alternatives. These should also be identified in the ES by the applicant; and • in some circumstances, the relevant energy NPSs may impose a policy requirement to consider alternatives (as this NPS does in Sections 5.3, 5.7 and 5.9)." Under Section 5.3 (Biodiversity and geological conservation) paragraph 5.3.7 states "As a general principle, and subject to the specific policies below, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives (as set out in section 4.4 above); where significant harm cannot be avoided, then appropriate compensation measures should be sought." **Applicant's Response**

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			The consideration of reasonable alternatives is set out in Chapter 4 of the ES. *The mitigation measures to avoid significant harm to biodiversity and geological conservation interests are set out in the respective chapters of the ES on Marine geology, oceanography and physical processes (chapter 8), Fish and shellfish ecology (chapter 11), Marine mammals (chapter 12), Offshore ornithology (chapter 13), Onshore ecology (chapter 22), and Onshore ornithology (chapter 23).* Under section 5.7 (Flood risk) paragraph 5.7.16 states "All three elements of the [Exception] test will have to be passed for development to be consented. For the Exception Test to be passed: • it must be demonstrated that the project provides wider sustainability benefits to the community that outweigh flood risk; • the project should be on developable, previously developed land or, if it is not on previously developed land, that there are no reasonable alternative sites on developable previously developed land subject to any exceptions set out in the technology specific NPSs; and • a FRA must demonstrate that the project will be safe, without increasing flood risk elsewhere subject to the exception below and, where possible, will reduce flood risk overall. **Applicant's Response** *Considerations of flood risk are addressed in ES chapter 20 (Water resources and flood risk).*

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			Under section 5.9 (Landscape and visual) paragraph 5.9.10 states: "Nevertheless the IPC may grant development consent in these [nationally designated] areas in exceptional circumstances. The development should be demonstrated to be in the public interest and consideration of such application should include an assessment of: • the need for the development, including in terms of national considerations, and the impact of consenting or not consenting it upon the local economy; • the cost of, and scope for, developing elsewhere outside the designated area or meeting the need for it in some other way, taking account of the policy on alternatives set out in section 4.4; and • any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated. **Applicant's Response** *The extent to which the project affects nationally designated areas is addressed in Chapter 29 (Landscape and visual impact assessment) of the ES.* "4.4.3 Where there is a policy or legal requirement to consider alternatives the applicant should describe the alternatives considered in compliance with these requirements. Given the level and urgency of need for new energy infrastructure, the IPC should, subject to any relevant legal requirements (e.g. under the Habitats Directive) which indicate otherwise, be guided by the following principles when deciding what weight should be given to alternatives:

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			• the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner; • the IPC should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security and climate change benefits) in the same timescale as the proposed development;[…] • alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the IPC thinks they are both important and relevant to its decision;[…] • alternative proposals which are vague or inchoate can be excluded on the grounds that they are not important and relevant to the IPC's decision; and • it is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the IPC (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore where an alternative is first put forward by a third party after an application has been made, the IPC may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the IPC should not necessarily expect the applicant to have assessed it." **Applicant's Response**

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Two alternative proposals have been put forward by third parties – the first relating to an Offshore Ring Main and the second relating to a site for the onshore substation at Top Farm. *In section 1.28 of the Applicant's Comments on Relevant Representations (AS-25) the Applicant has addressed proposals for an Offshore Ring Main (reference 3). In the Applicant's Response to the Open Floor Hearing (REP 1-136) the Applicant has also responded on the proposals for an Offshore Ring Main (Reference 4).The Applicant takes the view that these proposals are both "vague" and "inchoate" and do not offer "a realistic prospect…of…delivering the same infrastructure capacity…in the same timescale as the development", as referred to in 4.4.3 above.* *In the Applicant's response to the Open Floor Hearing (REP 1-036) the Applicant has responded on the issue of site selection and onshore project substation siting (reference 1) and this response also addresses the potential site at Top Farm. The site at Top Farm is also addressed in the Consultation Report (5.1; APP-027) at pages 138 and 139 (Finding the best possible substation location) and at section 28.11 (Learnings from the Norfolk Vanguard examination and community representations).* *The Applicant considers that these proposals can only be described as "vague and inchoate" and were not identified in any detail "sufficient to allow appropriate consultation and the development of a suitable evidence base" nor with "evidence for its suitability as such" within the terms of paragraph 4.4.3 above.* *Further detail on the consultation regarding the siting of the substations and consideration of alternative sites is provided in response to WQ 9.2.8 below.*
Q9.2.3	The Applicant	**Construction stage effects** Were construction stage effects (including those away from the actual cable corridor alignments) taken into consideration in the assessment of	Construction stage effects were considered as part of the site selection process as outlined in ES Chapter 4 Site Selection and Assessment of Alternatives (APP-217). As identified in Table 4.2 Key strategic project alternatives considered, there is significant environmental benefit of installing ducts and backfilling the

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		alternatives for the cable route? If so indicate where.	trenches in a staged/ sectionalised approach. The alternative to this would be installing ducts along the entirety of the route before backfilling which would increase the amount of land being worked on at any one time and would also increase the duration of works on any given section of the route. Details of the onshore cable route refinement and other considerations taken into account are detailed in Appendix 4.7 Identification of Onshore Cable Corridor (APP-543).
Q9.2.4	The Applicant	**High Voltage Direct Current (HDVC)** Were there any changes following the decision to adopt high voltage direct current (HVDC) technology?	The decision to adopt the HVDC technology resulted in the following changes: • Removal of the requirement for a Cable Relay Station as above ground infrastructure near the Coast; • Fewer onshore cables resulting in a reduction in the width of the onshore cable route to 45m from 100m; • The width of the permanent easement is reduced from 54m to 20m; • Reducing the maximum number of jointing pits from 450 to 150; • Reduction on the number of offshore export cables from six to two; • The onshore project substation consists of an HVDC substation.
Q9.2.5	CPRE Norfolk [RR-046], East Ruston Parish Council [RR041], No to Relay Stations (N2RS) [RR-020] and [RR053], and the Additional Submission [AS-012]	Are you satisfied with the response from the Applicant in its response to RRs, which sets out that HVDC export infrastructure was assessed under the Environmental Statement and therefore 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 [AS-024, Table 26, No. 84]. If not set out what further explanation you require.	
Q9.2.6	The Applicant	**Cable corridor selection** Respond to the point [RR-109] regarding whether consideration was given to the route corridors and connections for Norfolk Boreas and Hornsea Three; whether potential to shorten the length of the cable	Alternative cable routes and connection points were assessed and have been considered in Chapter 4 Site Selection and Assessment of Alternatives (APP-217).

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		corridor was taken into account.	As outlined in Section 4.8, following a review of landfalls and the offshore cable corridors, the long list of 14 onshore connection points was refined down to two options, either Necton or Norwich Main. Broad cable corridor search areas were identified for both options using high level siting principles to allow both options to be compared. The assessment of the two study areas found that the Necton study area: • Contained fewer road crossings for cables to make; • Contained less designated sites to cross; • Contained less populated areas (and the associated infrastructure and utilities) to navigate; and • Allowed the Broads National Park to be avoided. Due to these findings, VWPL and National Grid agreed that the most effective and economical option overall was the Necton option. In July 2016, following the process outlined above, an offer was made by National Grid for a connection point at the existing Necton National Grid substation and this was accepted by one of Norfolk Boreas Limited's affiliate companies in November 2016. Following this, an onshore scoping area was defined and the onshore scoping process commenced. This was completed as part of the Norfolk Vanguard scoping (Royal HaskoningDHV, 2016). Details on the approach to a grid connection point are detailed in Appendix 4.3 Strategic Approach to Selecting a Grid Connection Point (APP-539), Section 9 outlines the identification of the final onshore connection point and summarises that in general, there is an increase in all constraints such as designated sites, roads, rivers and populated areas, from west to east across the study area due to the proximity of Norwich (and the associated infrastructure and utilities) and The Broads National Park. Please also refer to Table 1, Row 3 of the Comments on Relevant representations document submitted in response to the Rule 6 letter (A-024) for more details on the selection of the grid connection point.

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Q9.2.7	The Applicant	**Substations' siting** NPS EN-5 requires an applicant's assessment for routeing new overhead lines to follow the Holford Rules. The Holford Rules states that in siting substations, account should be taken of the effects of the terminal towers and line connections and that advantage should be taken of screening features such as ground form and vegetation. 1. How have the Holford Rules been considered in the siting of the substations? 2. Provide a copy of the Holford Rules. Also provide a copy of the Horlock Rules. It is noted that the Applicant sets out how the design guidelines in the Horlock Rules have been applied in the Site Selection and Assessment of Alternatives [APP-217, Table 4.4 and other places] and in the Onshore Substation Site Selection [APP-546]. However, these appear to relate mainly to vegetation screening and have made little reference to screening by landform. This point is made by several Interested Parties in their Relevant Representations. 1. Notwithstanding your response to RRs [AS-024, Table 1, No.3] respond to those comments from Interested Parties in their Relevant Representations that consider insufficient attention has been paid to design principles set out in the Horlock Rules.	1. The Holford Rules are concerned principally with the routeing of new high voltage overhead transmission lines and not the siting of substations. The project does not include any new high voltage overhead transmission lines, only the replacement of one tower and the addition of a tower on an existing and established route. There is one reference to the siting of substations under Rule 7 '*When siting substations, account should be taken of the effects of the terminal towers and line connections and that advantage should be taken of screening features such as ground form and vegetation*.' This is not relevant to the project for two reasons. Firstly, the onshore project substation which has been sited as part of the project has no overhead transmission lines either going in or coming out of the site, as these are embedded in the ground. Secondly, with regard to the siting of the National Grid substation extension, the guidance is not referring to the effects of the substation, but the effects of terminal towers and line connections whose position will be determined as a result of the siting of the substation. While one tower would be relocated and another tower added, this would occur largely within the area of the existing route. The siting of the National Grid substation extension is largely determined by the existing infrastructure in order to avoid new high voltage overhead transmission lines from being constructed and thus reducing the overall landscape and visual impact. 2. A copy of the Holford Rules are attached at Appendix 9.5 and a copy of the Horlock Rules are attached at Appendix 9.6. 3. The Horlock Rules at Point 4 states; "*The siting of substations, extensions and associated proposals should take advantage of the screening provided by land form and existing features and the potential use of site layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum.*" Norfolk is characterised by a relatively flat landscape, with the highest point being Beacon Hill (103m AOD) on the North Norfolk Coast. The landform in this county is not of a sufficient scale to substantially screen either the onshore

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			project substation or the National Grid substation extension. While the landform lacks the necessary scale to completely screen, it does, nonetheless, have enough elevation to partly screen, and this has been an important consideration in the siting of the onshore project substation and National Grid substation extension. The local landscape is shaped around the un-named water course that flows from the A47 at Redgate to Ivy Todd village. This follows a predominantly north to south course and the landform folds into the valley from the west and the east. To the north-west and east of this subtle valley the land levels into relatively small plateaux, before continuing to gently rise to the north and north-east. These plateaux have provided the most appropriate sites for the project for the following reasons. Firstly, whilst the valley may have provided a greater degree of enclosure in terms of landform, the technical issues of accommodating a 250 x 300m footprint on sloping landform meant this option was discounted at a relatively early stage in the iterative design process. Furthermore, there is no existing tree or woodland cover to provide additional screening in this area. The rising landform to the north was also discounted as it made the sites too prominent, introducing more extensive visibility to the eastern edge of Necton and along the A47. The intermediate plateaux provided the best option; the landform was relatively level which meant the large footprint of the onshore project substation could be accommodated with minimal modification to the landform, whilst there was still enough screening from the subtle undulation of the intervening ridgeline to the east of Necton to ensure visibility did not overly impinge on this settled area. Furthermore, there was sufficient space to accommodate Norfolk Boreas and Norfolk Vanguard under Scenario 1, thus ensuring their consolidation within one area. In respect of the National Grid substation extension, the plateaux closer to the A47 similarly presented the opportunity of a relatively flat site for development, albeit with some slope towards the south-east and similarly benefitted from some landform screening from the rising landform to the east of Necton.

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Q9.2.8	The Applicant	**Siting of substations** [RR-042] is concerned about the adequacy of the consultation regarding the siting of the substations and the apparent lack of consideration of an alternative nearby site put forward by the community. We note you have provided signposting to the consultation which has been undertaken with communities in connection with the siting of the proposed substations [AS-024, Table 1, No.3]. 1. Provide evidence of (or signposting to) the specific consultation which has been undertaken with the communities local to the proposed substations site for the Proposed Development. Set out how this consultation has informed the substation siting for the Proposed Development. 2. Was consideration given to the alternative substation site to which [RR-042] refers? 3. Is this the same site to which several RRs refer, such as Savills, the NFU and LIG on behalf of landowners; which is described as north of the existing substation site on lower lying ground?	1. As summarised in Plate 2 Norfolk Boreas and Norfolk Vanguard overarching consultation timeline (APP-027 Consultation Report document 5.1, Page 23) the Applicant held public exhibitions and a workshop in the Necton Community Centre and Swaffham Green Energy Centre on 5 separate occasions, including during statutory consultation for the project, between October 2016 and November 2018. The information and materials provided can be found at Appendix 12.7 – Phase I non-statutory public exhibition materials (APP-092), Appendix 12.9 – Phase II non-statutory public exhibition materials (APP-094), Appendix 14.8 – Necton substation workshop presentations (APP-132), Appendix 18.3 – Phase III non-statutory public exhibition materials (APP-137) and Appendix 22.14 – Formal consultation exhibition boards (APP-163). Following each series of events (phases of consultation), the responses of consultees and the regard given to those responses by the Applicant were communicated to stakeholders through interim reports, Appendix 3.1 – 3.4 – Hearing Your Views I through to IV (APP-028, -029, -030, -031) and Appendix 14.9 – Necton substation workshop feedback report (APP-133). At the first drop-in event (October 2016) a group of local residents, particularly those living on the outskirts of Necton and in neighbouring conurbations, gave their views that the substation should not be located in their local area. While not a high proportion of local residents, the Applicant has sought to explain throughout the consultation process the rationale for site selection and the approach to consideration of alternatives, over and above the detail provided in ES Chapter 4: Site Selection and Assessment of Alternatives (APP-217), and Chapter 5: Project Description (APP-218). This has included using a range of different illustrative tools, and communication techniques, such as photomontages, 3D visual models, exhibition boards, slide shows, and explanations from a range of experts in their field. At the first event held in Necton, participants were invited to highlight ideas and issues the Applicant should consider in relation to finding the most appropriate onshore project substation location. Participants provided arguments for or against the five sectors delineated within the 3km radius search zone. Many people preferred to state where they did not wish to see

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			additional infrastructure – namely to the west and north of the existing National Grid substation, around Little Dunham and Little Fransham, and in areas closer to the village of Necton itself. A refined search area was consulted on during Phase II, by which point the land referred to in part 2 of this Written Question was eliminated from the search area considered appropriate for substation siting. The main reasons for removing this area of land related to residential buffers – to ensure infrastructure was located as far away as possible from homes, in addition to landscape and visual impact, noise and vibration, flood risk and engineering constraints. Landscape and visual impact considerations are dealt with in more detail at part 2 of this Written Question, below. During the multiple phases of consultation undertaken, few residents have suggested alternative sites. Some of these are within the original 3km diameter search area, including that mentioned in parts 2 and 3 of this Written Question, and some are more distant. The Applicant has produced a document called "A strategic approach to selecting a grid connection point for Norfolk Vanguard and Norfolk Boreas" (APP-539), which provides a summary of the context and work carried out by National Grid and Vattenfall Wind Power Ltd to select an appropriate location to connect up to 3.6GW of offshore generation to the national electricity transmission system (NETS) for the development of the Norfolk Vanguard and Norfolk Boreas Offshore Wind Farms. This responds to the "Why Necton?" question and why not somewhere outside of the original search zone. In terms of sites within the original search zone, including the site highlighted by NSAG members and others, and referred to in points 2 and 3 of this Written Question, a workshop and open drop-in event was convened) to guide interested residents through the complex balance of factors to be achieved when determining siting of proposed infrastructure. This information was also made available on the Norfolk Boreas project website following the workshop and drop-in event. Factors feeding into site selection, including EIA surveys and assessments, engineering requirements, landowner discussions and consultation results were described in detail (Appendix 14.8 – Necton

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			substation workshop presentations (APP-132)). These combined factors resulted in the current siting of the onshore project substation. In response to continued suggestions from NSAG and others that the location referred to in parts 2 and 3 of this Written Question could be appropriate, the Applicant's approach and response to site selection has been clarified further (see Chapter 28.2.11 of the Consultation Report – "Learnings from the Norfolk Vanguard examination process and community representations" (APP-027)). 2. An assessment of a number of alternative sites around the proposed site was undertaken to ascertain the most suitable site based on a number of criteria. The key consideration from an LVIA perspective was ensuring that the project was sited as far away as possible from the key visual receptors, such as Necton, Ivy Todd and Little Fransham, as well as from Ivy Todd Road and the A47. The site that was selected also benefitted from relatively level landform and enclosure from existing woodland. The area to the north-west of the site was discounted owing to the location of a water course through this area and the steep valley sides leading down to it. The area to the north, towards Top Farm, was also reviewed as an alternative site. In terms of landform, this site is higher than the proposed site, with a range of 65m to 75m as opposed to 65m to 70m. It is also on more steeply sloping landform and without the levelling off that occurs around the proposed site, it would potentially be more visible from the surrounding landscape. Furthermore, it would also bring a new development closer to the heavily trafficked A47. 3. OS maps show that the landform to the north and north-east of the onshore project substation rises. It is, therefore, simply not possible for a site to the north to be on lower-lying ground. The proposed site is situated between the existing contours of 65m and 70m AOD. Land towards Top Farm, to the north, is situated between the contours of 65m and 75m AOD. The land to the north-west, however, falls away to 60m to 65m AOD which would be lower-lying but then the site would be in the valley of the un-named river and potentially covering its course, giving rise to issues of large scale earthworks required to

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			accommodate a large level site and issues of culverting the water course in an area which is already prone to flooding.

9.3 Landscape effects

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Q9.3.1	The Applicant	**Tree removal** 1. Provide a plan which shows the extent of woodland/ trees removed for Scenario 2. 2. Confirm that no additional woodland/ trees would be removed for Scenario 1. 3. Is it anticipated that there may be trees other than in the woodland areas or hedgerows described which would be removed in either Scenario?	1. In respect of the Scenario 2 onshore project substation, no woodland would be removed. A small number of hedgetrees would be removed as marked on Figure 1 in Appendix 9.1. 2. A small number of hedgetrees would be removed in respect of the Scenario 1 onshore project substation, as marked on Figure 2 Appendix 9.1. 3. It is not anticipated that any other trees would be removed.
Q9.3.2	The Applicant	**Hedgerow removal** Quantify the hedgerow removal for both Scenarios 1 and 2 (This could be added to dDCO [AS-019] Schedule 14 if appropriate).	Under Scenario 2, sections of 196 hedgerows will be subject to partial removal along the onshore cable route to facilitate construction, with a total of approximately 2.5km of hedgerow removed during construction. A further approximately 727m and 344m of hedgerow will be removed to facilitate construction at the onshore project substation and National Grid substation extension respectively. A total of approximately 3.5km of hedgerow is therefore removed to facilitate construction under Scenario 2. Under Scenario 1, approximately 796m and 498m of hedgerow will be removed to facilitate construction at the onshore project substation and National Grid substation extension respectively. A total of approximately 1.3km of hedgerow is therefore removed to facilitate construction under Scenario 1. All of this hedgerow removal is subsequently reinstated (if it is along the onshore cable route) or compensated for (if it is at the onshore project substation or National Grid extension works).

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Q9.3.3	The Applicant	**Tree and hedgerow replacement** NPS EN-1 (paras 5.3.15 and 5.3.18) point to making opportunity for beneficial biodiversity, enhancing existing habitats and creating new habitats of value. 1. Explain how the landscape design for the Proposed Development recreates and replaces any ecological connections severed by construction of the onshore project substation [APP-688, item 172], when the details are yet to be agreed, and there is less connectivity than the baseline condition. 2. Is there a proposed ratio for tree and hedgerow replacement? 3. If certain hedgerows are not replaceable, and tree species in hedgerows are restricted because of the cable easement, how do the proposals meet Breckland Council's Adopted Core Strategy and Development Control Policies Development Plan Document (2009), policy DC12: Trees and Landscape [APP-235]?	1. As detailed in Chapter 22 (APP-235) [para 317], construction of the onshore project substation will, under Scenario 2, result in the permanent loss of approximately 390m of hedgerow (of which 360m is species-poor hedgerow with trees, and 30m species-rich hedgerow with trees), and under Scenario 1, result in the permanent loss of 240m of species-rich hedgerow with trees. The indicative areas for mitigation planting which have been included with Strategic Plan of Indicative Mitigation Planting for each Scenario (APP-495 and APP-508) have been selected to ensure that habitat connectivity is created across the onshore project substation site from north to south and west to east. Under Scenario 1, this includes mitigation planting running north-south to the east of the onshore project substation, to replace the hedgerow lost in the eastern area of the onshore project substation and to create new connectivity with the woodland block to the east of Necton Wood. Under Scenario 2, this includes mitigation planting running north-south to the east and to the west of, and east-west to the south of, the onshore project substation, to replace the hedgerow lost within the centre and south of the onshore project substation, and to improve connectivity provided by existing species-poor hedgerows to the west of the onshore project substation. Please refer to the Strategic Plan of Indicative Mitigation Planting for Scenario 1 (APP-495) and Scenario 2 (APP-508) for these locations. Whilst the specific details of the mitigation planting will be agreed within the Written Landscape Scheme under Requirement 18 of the draft DCO (AS-019), these details are required to "accord with the outline landscape and ecological management strategy" under the wording of the DCO. The Outline Landscape and Ecological Mitigation Strategy (APP-698) describes the location of new planting proposed to replace and improve existing ecological connections surrounding the onshore project substation, as described above. 2. A specific ratio for the tree or hedgerows replacement has not been defined. As detailed in Chapter 22 (APP-235), the Applicant has committed to replanting all hedgerows temporarily removed for the project where possible [para-423] and ensuring that new planting is created to compensate for the permanent

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			loss of species-rich hedgerow at the onshore project substation [para-425]. The landscape proposals will be finalised in consultation with the relevant planning authorities through the final Landscaping Management Scheme post-consent under Requirement 18 of the draft DCO. 3. As detailed in Chapter 22 (APP-235) [para-423], all hedgerows identified for removal will be replaced by the project to a standard which is in accordance with the Norfolk Hedgerow Biodiversity Action Plan (NBP, 2009), which will result in a habitat of equal or higher ecological value once the hedgerows mature. Therefore, proposals comply with Policy DC12, which states that "…where the loss of [trees, hedgerows and other natural features] is unavoidable, replacement provision should be of a commensurate value to that which is lost.".
Q9.3.4	The Applicant	**Hedgerows** Clarify how processes for agreeing hedgerow removal, replanting, aftercare and management and maintenance are undertaken. Refer to the involvement of local planning authorities, Natural England and landowners (including the undertaker).	The principles which will be adhered to during hedgerow removal and reinstatement will be detailed within a Hedgerow Mitigation Plan, which forms part of the Ecological Management Plan submitted post-consent under Requirement 24 of the draft DCO. As detailed in Requirement 24, the Ecological Management Plan must be approved by the relevant planning authority in consultation with the relevant statutory nature conservation body. Key principles regarding hedgerow removal and reinstatement are set out within section 7.2, 9.2 and 9.8 of the Outline Landscape and Ecological Management Strategy (REP1-020). These include maximum extents to be removed, seasonal restrictions on removal, replanting principles and aftercare periods. These key principles will be carried forward into the Hedgerow Mitigation Plan, post-consent.
Q9.3.5	The Applicant, Local Planning Authorities	**Hedgerows where removal assessed an adverse significant effect in Scenario 2** 1. Applicant to plot the hedgerows where significant adverse effects are located in Scenario 2 at Blickling Road, N of Aylsham; Silvergate Lane, NW of Aylsham; Aylsham Road, W of Aylsham; Elsing Road, near River Wensum; B1145, N of Reepham; and	1. Figures showing the areas of hedegrow and tree removal where significant adverse effects have been identified are presented in Appendix 19.2. This includes figures showing the hedgerows at Blickling Road (Figure 2); Silvergate Lane (Figure 3), Alysham Road (Figure 4), B1145 north of Reepham (Figure 5), B1145 west of Reepham (Figure 6), and Elsing Road near the River Wensum (Figure 8).

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		B1145, W of Reepham [APP-242,Table 29.11] for 20 years. Marking up relevant sheets of the Important hedgerows plans [APP-018] would be a suitable way of presenting this. 2. Does this significant adverse effect remain for 30 years until decommissioning? The 'duration of effect' column of Table 29.11 is not clear in this regard. 3. Would it assist Local Planning Authorities if more detail was prepared by the Applicant during the examination for these areas in terms of planting reinstatement?	2. These are direct effects on the landscape element of hedgerows. Hedgerows will be replaced post-construction which will mitigate effects over a period of 3 to 5 years where the baseline comprised a low hedgerow and 5 to 10 years where the baseline comprised a high hedgerow. Any significant effects would be mitigated within these time frames. In the few instances where hedgetrees would be removed, these could not be replaced and the direct effect on these few landscape elements would be long term and in a few specific instances their removal would give rise to a significant effect. 3. Details regarding planting reinstatement will be produced post consent in line with Requirement 18 of the DCO.
Q9.3.6	The Applicant	**Trees where removal assessed an adverse significant effect in Scenario 2** 1. As above, Applicant to plot where significant adverse effects are located in Scenario 2 at Colby Road, N of Banningham; Minor road near Hackford Hall; and Norwich Road, Swanton Morley [APP-242, Table 29.11]. 2. Is this a significant effect in the 'duration of effect' column, as it is reversible only on decommissioning? Is this also the case for The Wensum Way (also Table 29.11)?	1. Figures showing the areas of hedgegrow and tree removal where significant adverse effects have been identified are presented in Appendix 9.2. This includes the trees at Colby Road (Figure 1); Minor Road near Hackford Hall (Figure 7), and Norwich Road, Swanton Morley (Figure 9). The requested figures are presented in Appendix 9.2., 2. Yes - it is a significant effect for the locations listed and the Wensum Way. The effects relate only to the trees as landscape elements and not the wider landscape character.
Q9.3.7	The Applicant	**Advance planting** 1. Notwithstanding the Norfolk Vanguard planting which would be existing in Scenario 1, would there be any other opportunities for advance planting to be implemented in Scenario 1? If so where? 2. Can areas for potential advance planting be identified for Scenario 2? If so where?	1 & 2. The opportunities for advanced planting at the 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. Where possible, advanced planting would be implemented at the start of the construction phase, allowing approximately three years of growth prior to completion of construction and commencement of operation. Advance planting could not be undertaken where bunding is required until earthworks on site are completed.

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			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 OLEMS. The Applicant is not reliant on advanced planting to deliver the described mitigation and reported residual impacts. The possibility of advance planting is simply an opportunity to deliver measures earlier but will be dependent on landowner negotiations. It is not the Applicant's intention to specifically secure this aspect of the delivery.
Q9.3.8	The Applicant	**National Grid planting easements** The 1:4,000 landscape mitigation plans [APP-494] and [APP-505] seem to indicate planting located in what might be tree exclusion zones required for the 400kV overhead line. 1. Provide dimensioned plans for Scenarios 1 and 2 (which set out the overhead line's lateral limits of deviation (LoD)) at a more detailed scale, to illustrate if this is the case. 2. Seek clarification from National Grid on its tree planting exclusion zones and vegetation height restrictions. 3. If it is the case that the mitigation planting would be compromised from what is shown, provide solutions for Scenarios 1 and 2, including consideration of limiting the lateral LoD secured in Article 4 for Scenario 2.	1. Appendix 9.3 includes figures showing the proposed planting for Scenario 1 and Scenario 2 and the overhead line limits of deviation (including the 5.3 minimum safety clearance (see part 2)). 2. National Grid Guidance on Development near overhead lines, July 2008 (available at https://www.nationalgrid.com) Appendix III provides details of safety clearances, which identifies for trees under or adjacent to a 400kV lines up to 5.3m (for tress capable of supporting ladder/climber). This safety distance has been included in the limits of deviation shown on the figures in Appendix 9.3. 3. The Figures in Appendix 9.3 indicate that a strip of proposed woodland to the north of the National Grid extension to the west is within the limits of deviation. The limits of deviation have been proposed by National Grid and reflect the necessary flexibility required at this time, prior to detailed design, on the final alignment of the existing overhead line in this area, as a result of the necessary overhead line modifications to facilitate the connection of Norfolk Boreas. Under Scenario 2 this is proposed planting to be undertaken by Norfolk Boreas and the proposed solution would be for this planting to be moved further south so it falls outside the overhead line limits of deviation. The movement of this small section of proposed woodland is not critical to the mitigation of the project and will not affect the findings of the assessment. The key reason is that the only visual receptors on this northern aspect are road-users on the A47 and existing road-side planting already provides fairly continuous screening along the A47. Furthermore, this screen is in the process of being

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			bolstered by a band of woodland planting currently establishing as part of the Dudgeon Substation's mitigation measures. The proposed woodland effected was included to add an extra layer within the combined mitigation measures. This could be captured when the final landscape scheme is developed. Under Scenario 1 none of the planting proposed by Norfolk Boreas is compromised. However, the same strip of woodland is proposed by Norfolk Vanguard, however the solution outlined for Scenario 2, could be implemented by Norfolk Vanguard and incorporated into their final landscape scheme.

9.4 Visual effects

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.4.1	The Applicant	**Height of structures at the substations** Is it correct, as stated in [RR-042], that the decision to adopt HDVC technology gave rise to taller structures at the substations? If so, explain how these have been assessed?	Prior to the commitment to a HVDC solution for Norfolk Boreas, made in February 2018, the Applicant fully assessed and consulted upon a complete Rochdale Envelope which considered the maximum extents of either a HVAC or HVDC project, including the potential height of a HVDC onshore project substation, should a HVDC solution be utilised. The Applicant's Scoping Report submitted to the Secretary of State on 8 May 2017 (document PB5640-102-101) noted under Section 1.5.4.3 that the onshore project substation would be 'approximately 300m x 250m, based on the maximum parameters of an HVDC substation. The maximum height of the buildings would be approximately 25m'. At the Applicant's Phase 2 non-statutory exhibitions both a HVAC and HVDC visualisation were illustrated on the exhibition materials (document 5.1.12.9, APP-094) and interactive 3D model, with the maximum height for a HVDC option again being noted as 25m. Photomontages of both a HVAC and HVDC onshore project substation were consulted upon during the Necton Substation Workshop Presentations (document 5.1.14.8, APP-132).

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			It is therefore a statement of fact that a HVDC onshore project substation has a taller maximum height than a HVAC onshore project substation due to technical requirements, however the HVDC onshore project substation and its associated maximum extents have been consistently consulted upon and assessed since the Scoping Report. The assessment of the HVDC onshore project substation is presented in ES Chapter 29 Landscape and Visual Impact Assessment (document 6.1.29, APP-242).
Q9.4.2	The Applicant , [RR-019] and [RR-053]	**Effects of lighting** 1. Has the Applicant's response on lighting [AS-024, Table 24, No.2] responded to the concerns set out by those IPs who submitted RRs in relation to lighting [RR-019] and [RR-053]? 2. Applicant to respond to the concerns set out in [RR-053] regarding the mobilisation area (MA11) near Ridlington.	2. RR-053 notes concerns with regard to MA11 in respect of usage, lighting and access. **Usage of MA11.** The Applicant can confirm that MA11 will only be used during duct installation, required only under Scenario 2. **Site Lighting of MA11** As detailed in para 474 of ES Chapter 5 Project Description (document 6.1.5, APP-218), site lighting and secure fencing around the perimeter of the mobilisation areas will be used for safety and security purposes. The Applicant has committed to producing an Artificial Light Emissions Management Plan prior to construction as outlined in the OCoCP (document 8.1, REP1-018), required under Requirement 20(2)(c) of the dDCO. 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 plan which will be submitted to the local authorities for approval prior to

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			construction commencing. The approved scheme will be maintained throughout the construction of the relevant works. 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. **Access to MA11** The OTMP (document reference 8.8, REP1-022) Section 4.1, sets out the general principles for managing HGV movements and sets out a strategy of mobile traffic management - 'pilot vehicles' - to control low HGV demand on lightly trafficked narrow roads. The pilot vehicle strategy avoids vehicles needing to pass on narrow roads and the associated verge erosion and is appropriate to address the concerns outlined for Happisburgh Road. Paragraph 112 of the OTMP states, "Suitable scale plans of pilot control routes with any proposed widening would be submitted with the final TMP pursuant to the discharge of Requirement 21 of the DCO"; there is therefore an acknowledgement that localised highway improvements may be required to facilitate the use of pilot vehicles.
Q9.4.3	The Applicant	**Bunding round substations** 1. Were concealment options such as a lower ground level and/ or bunding for planting as suggested by [RR-109] considered in the detailed visual mitigation for the substations siting? 2. Why is the western boundary planting in Scenario 1 described as "potentially set on an earth bund up to 2m in height" [APP-698, para 53]? What has been assessed? 3. Why under Scenario 2 is there uncertainty about the earthworks to be provided? "There is potential to include a subtle earthwork bund of up to 1.5	1. In terms of landscape and visual considerations, the options of lowering the ground level and large scale bunding were considered and discounted for the following reasons. In order to ensure a design is responsive to the unique characteristics and attributes of a local landscape, the best approach is generally to work with the landform, in order to minimise the magnitude of change. While the landform is gently undulating, it falls more steeply towards the south-east. In order to cut a level platform of 250m x 300m at a lower ground level would require a huge amount of earthworks and would fundamentally alter the character of the local landscape. Similarly, the introduction of large scale bunds would appear out of character in this traditional, rural landscape and at variance with the gently undulating landform.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		along the western side of the permanent footprint…" [APP-698, para 58]? What has been assessed?	2. The assessment of Scenario 1 is based on a 2m bund being included along the western boundary. 3. The assessment of Scenario 2 is based on a 1.5m bund being included along the western side of the permanent footprint.
Q9.4.4	The Applicant	**Long term reversible effects** NPS EN-1, para 5.9.16 requires the decision maker to consider whether adverse impacts on landscape is temporary and/or capable of being reversed in a reasonable timescale. Does "long term and reversible", when not elaborated in the 'duration of effect' column of the assessment tables [APP-242] mean that the reversibility is only achieved on decommissioning?	ES Appendix 29.1 LVIA Methodology, paragraph 93 [APP-677] states "*Long term effects are used to describe those effects which would last between 5 and 30 years and relate to the residual effects of the presence and operational processes of visible components of the project and the time taken for trees and taller hedgerows to fully establish.*" When not elaborated in the duration of effects column this is because the effect is not significant.
Q9.4.5	The Applicant	**Construction stage views from England Coast Path, PRoW RB22 and Happisburgh** 1. Confirm that views of construction activities from the Norfolk Coastal Path, Public Right of Way (PRoW) RB22 and the southern edge of Happisburgh would be limited to 20 weeks [APP-242, Table 29.10] and that this significant adverse effect is the same for Scenarios 1 and 2. Is that 20 consecutive weeks or is it over a longer period, if so what? 2. If views would occur for over a longer period does this affect the assessment?	1. The construction activities at the landfall would be limited to 20 consecutive weeks. The significant adverse effect assessed in respect of localised effects on PRoW RB22 and Happisburgh would be the same for Scenarios 1 and 2. 2. ES Appendix 29.1 LVIA Methodology, paragraphs 4 to 6 [APP 677] explains how duration and reversibility form a separate consideration to the assessment of significance and therefore if visibility of the construction activities at the landfall were to occur over a longer period then the significant effect would be attributed a longer duration.
Q9.4.6	The Applicant	**Fencing** 1. Submit photographs of the proposed 2.4m palisade fencing and the electric pulse fencing [APP-218, para 348]. 2. Would these fences types occur next to each other or independent of each other?	A photograph is provided in Appendix 9.4 showing an example for the existing Necton National Grid substation. This type of fencing is common for securing electrical infrastructure perimeters. The two fences are combined to form a single barrier in that the 2.4m palisade fence is ground mounted with the further 1.0m electrical pulse fencing mounted upon the palisade fence.

9.5 Outline Landscape and Ecological Management Strategy (OLEMS)

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.5.1	The Applicant	**Landscape and visual mitigation** Is the design of the substations considered to be part of the landscape and visual mitigation? This does not appear to be stated; the mitigation appears to rely upon planting.	The design of the substation is not considered to be part of the landscape and visual mitigation which relies largely upon existing and proposed mitigation planting.
Q9.5.2	The Applicant	**Aftercare** 1. Why is the aftercare period specified as five years [APP-698, paras 20 and 67] when localised, cumulative, significant, adverse landscape and visual effects are assessed as lasting 25 years [APP-242, Table 29.18] before they become not significant? 2. Set out the difference between aftercare and management and maintenance? Should this be clarified in places in the documentation? 3. Would management and maintenance of the planting be required even after 25 years? If so, how is this secured?	1. In contracts for landscape services, it is industry standard for the maintenance period to be set at a period of five years. This is mainly because it is within this first five years that the majority of failures, in terms of plant establishment, will occur. After this first five years the plants will mostly be well established and any defects which arise are more likely to relate to their ongoing management rather than the original planting stock or planting process. Detailed recommendations for the longer term management would be set out in the Landscape Management Scheme in line with requirement 18 of the dDCO. 2. The aftercare and maintenance essentially have the same meaning. They refer to the short to medium term period in which the planting will need a greater level of attention to ensure successful establishment. Management refers to the longer term plan which includes the initial 5 year aftercare period, but which also extends into the longer term, when the planting will be well established and will need less attention, for example occasional thinning to ensure the plants have space to mature and monitoring for pests and diseases, with treatment and removal of plants where necessary. Definition of the aftercare period and the management period and the difference between them will be included in an updated version of the OLEMS. 3. After 25 years there would be no specific requirements for the management and maintenance of the on-site mitigation planting, other than the general good practice measures that the owner of the substation site would undertake as part of their overall site management. The trees will have long passed the critical stage of establishment and would have reached a sufficient height to achieve their purpose in terms of mitigation. Securing a formal management and maintenance plan after 25 years would, therefore, not be necessary.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.5.3	The Applicant	**Ash dieback in the vicinity of the substations** 1. In setting out a process to deal with ash dieback [APP-698, para 67], does this relate only to existing vegetation? 2. Has the potential effect of ash dieback been assessed? 3. For how long is the replacement of trees affected by ash dieback with non-native species proposed to extend? 4. Is this for 10 years or for the lifetime of the Proposed Development?	1. Yes – because of ash dieback, ash is never included in new planting proposals. There are very few existing trees within the Order Limits of the onshore project substation for Scenario 1 and Scenario 2. The only group of trees occurs around Lodge Farm. This is a relatively small area and from photographs taken during site work, there does not appear to be a predominance of ash species. 2. No – detailed tree surveys have not been carried out and will conducted pre-construction. 3. 10 years 4. 10 years
Q9.5.4	The Applicant	**Monitoring** Section 12 of the OLEMS [APP-698] relates to monitoring, but only in respect of trees and hedges specified to be retained which are damaged during construction. 1. Why does this not cover mitigation planting? 2. Is the monitoring of that covered elsewhere? 3. If not, propose how and where this could be covered.	1. Monitoring referenced under Section 12 of the OLEMS, is in relation to the Ecological Management Plan (EcoMP) and not the Landscape Management Plan under which the mitigation planting would be undertaken. During construction there will be no mitigation planting unless areas of advanced planting are implemented. Advanced planting would only occur in those areas that would be separate from construction works and protected from potential damage. 2. Monitoring of mitigation planting would be covered in the Landscape Management Scheme produced in line with Requirement 18 of the DCO. 3. See point 2 above.
Q9.5.5	The Applicant	**Terminology** Some of the terminology in the OLEMS [APP-698] (such as "it is expected…" "would seek to….") lacks certainty in terms of delivery. How could this certainty be provided?	In the Landscape Management Scheme certainty will be provided. Another level of design at a more detailed scale is required to consolidate the design principles and add in deliverability of the mitigation planting.
Q9.5.6	The Applicant	**Substations site -specific landscape management scheme** 1. To whom do the "Recommendations to landowners, for management of trees and hedgerows in the longer term" refer [APP-698, para 67 final bullet]? Is some of the land with mitigation planting returned to landowners? Or does this refer	1. This comment refers to the post-decommissioning period when the land would be returned to landowners and recommendations for the ongoing management of trees and hedgerows may be relevant. 2. Detailed recommendations for the longer term management would be set out in the Landscape Management Scheme in line with requirement 18 of the dDCO. The recommendations will follow all relevant standards and legislation including "BS 8545-2014 Trees: from nursery to independence in the landscape

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		to replacement planting? 2. Set out in more detail the type of management recommendations which are to be included. 3. Have any landowners been consulted?	– Recommendations", and will include recommendations on pruning, cutting, irrigation, weed control. 3. The landowners concerned with the onshore project substation have been consulted regarding form and management of the mitigation planting. Discussion with these parties is ongoing in relation to species composition of planting and associated management.
Q9.5.7	The Applicant	**Failure of planting scheme to progress to achieve objectives** The OLEMS [APP-698, para 73 final bullet] does not set out what the remedy would be if in the opinion of the Local Planning Authority, there was significant failure of the planting scheme or if it was failing to progress to the extent that it would not achieve the objectives of the scheme. Further explanation is required for this Examination and in the OLEMS.	While there is always some degree of uncertainty in respect of the establishment of new planting, it is highly unlikely that significant failure would occur or that the progress of planting would prevent the objectives of the scheme from being achieved. Potential risks will be significantly reduced by applying best practice and ensuring all materials and workmanship comply with the relevant British Standards and that the Landscape Contractors employed are industry approved, as secured in the Outline Landscape and Ecological Management Strategy (document 8.7, REP1-020) and Requirement 19 (1) of the dDCO. In the unlikely event that significant failure occurs, then in accordance with Requirement 18(2)(h) and Requirement 19 (2) of the dDCO, further planting would be required to be carried out to satisfy the requirements of the Local Planning Authority and to ensure the planting was achieving the objectives of the scheme.
Q9.5.8	The Applicant	**Removal of vegetation** What is the difference between a bird nesting season (March to August) [APP-698, para 148] and a bird breeding season (March to October) APP-698, para 142]? What is the significance of the difference in timings for the different vegetation removals?	There is no difference, however the second period cited – March to October inclusive – is an error in both Chapter 22 (APP-235) and the Outline Landscape and Ecological Management Strategy (REP1-020) – it should read 'March to August inclusive', as per para 148. This error will be included in an update to the Outline Landscape and Ecological Management Strategy (REP1-020).
Q9.5.9	The Applicant, Natural England, The RSPB	**Removal of Vegetation** The Project Description [APP-218, para 417] proposes hedge and tree netting because hedge and tree removal is seasonal and removal ahead of the main works provides flexibility to account for seasonal restrictions and mitigates potential	1. The option to use netting is retained by the Applicant, but only as a last resort if hedgerow removal outside of the bird nesting season is not a viable option. As set out in the Outline Landscape and Ecological Management Strategy (REP1-020) [section 9.2.3.1], vegetation which provides suitable habitat for nesting birds is intended to be removed as close to the start of construction as possible, but outside the bird nesting season (March – August

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		programme delays. 1. Netting is not mentioned in the OLEMS or the OCoCP. Does that mean it is not proposed to use netting? 2. What is Natural England's and the RSPB's view of the use of netting?	inclusive). If hedgerows cannot be removed during this period, then the Applicant would consider the use of netting of trees in advance of the forthcoming breeding season. In these circumstances, the Applicant would follow the RSPB's advice on the use of netting on trees, bushes and hedgerows to prevent nesting birds (https://www.rspb.org.uk/our-work/rspb-news/news/stories/use-of-netting/#m3SB71xJFBOizt8E.99).

9.6 Good design

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q9.6.1	Interested Parties	**Policy requirements for good design** Do you consider the Applicant has satisfactorily demonstrated how the proposed development would meet the national and local policy requirements for good design in its Planning Statement [APP-693] and Design and Access Statement [APP-694]? If not, what is missing?	
Q9.6.2	Interested Parties and The Applicant	**Design and Access Statement** Compliance with the Design and Access Statement (DAS) [APP-] is one of the means which would be used in the dDCO [AS-019, Requirement 16 (4)] to secure the onshore detailed design through further approvals. The ExA has noted some differences between the DAS and other application documents (substation descriptions, landscape drawings). 1. In the first instance Interested Parties are requested to point out any differences that they have noticed. 2. The Applicant is requested to update the DAS for conformity, providing a track changed version at	The Applicant has submitted an updated Design and Access Statement at Deadline 2, with tracked changes, to address Action Points 1 and 12 from the Issue Specific Hearing 1 – draft DCO. The Applicant will provide a further updated Design and Access Statement at Deadline 7 to include any further updates required.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Deadline 7.	

10 Marine and Coastal processes

10.0 Marine and Coastal processes

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q10.0.1	The Applicant	**Coastal erosion issues** The Applicant to provide guidance to where in its Application the assessment of implications of potential worst-case coastal erosion and any Shoreline Management Plan is discussed.	The assessment of effects/impacts on coastal erosion and the implications for the Shoreline Management Plan (SMP) are discussed in several places in Chapter 8 of the ES (APP-221) and in Appendix 4.5 of Chapter 4 (APP-541). These are: Section 8.6.11. Coastal Processes at the Landfall in Chapter 8 (APP-221) provides an appraisal of baseline coastal processes at the landfall location. A summary of the SMP policy is also stated (Managed Realignment over the next 100 years). Section 8.7.4.1 of the ES chapter (Embedded Mitigation Relevant to Marine Physical Processes) provides a description of the long HDD and highlights that its burial at sufficient depth below the coastal shore platform and cliff base will ensure that its operation will have no effect on coastal erosion. Erosion would continue as a natural phenomenon driven by waves and subaerial processes, which would not be affected by Norfolk Boreas. Natural coastal erosion throughout the lifetime of the project has been taken into account within the project design by ensuring appropriate set back distances from the coast for the HDD entry point. Within section 8.7.7.6 of the ES chapter (Operational Impact 6: Morphological and sediment transport effects due to cable protection measures within the offshore cable corridor) it is stated that the HDD will be designed to be sufficiently far below the cliff base (including a significant margin for safety) to have no effect on the natural erosion of the cliff. 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

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			during the design life of the project (approximately 30 years). 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. Hence, the project will not affect the SMP because allowance has been made for predicted erosion rates during the project design. Also, the project is compatible with the SMP as there will be no impact on existing or planned coastal defences. A coastal erosion study is provided in Appendix 4.5 (APP-541) of the ES, which informed the landfall site selection and design of the HDD works and the assessment of potential effects/impacts of the landfall on coastal erosion. This study takes account of the Shoreline Management Plan in section 2.3 of that document as well as other available sources such as North Norfolk District Council's Coastal Management Studies.

11 Navigation

11.0 Marine Navigation and Shipping

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q11.0.1	Maritime and Coastguard Agency (MCA); Trinity House (THLS); UK Chamber of Shipping (UKCoS)	**Radar interference effects on navigation deviated around the proposed OWF** Section 22.8 of the Navigation Risk Assessment (NRA) [APP-569] discusses potential impacts of the Proposed Development on ship-borne marine radar with specific effects discussed at paras 403 to 408, which the ExA understands to indicate that effects increase significantly within 1.5nm of the OWF WTG array. Figure 22.1 of the NRA shows the deviation of shipping around the proposed OWF that would be an effect of the Proposed Development and shows vessel routes deviating and turning around the north-eastern corner of the proposed OWF through an appreciable angle and within 1.5nm of the Red Line Boundary (RLB). IPs to comment on the implications to navigational safety of vessels passing closer than 1.5nm to the proposed WTG array RLB at the north-eastern extent of the OWF array and whether specific risk mitigation should be considered in this location.	Although this question is not addressed to the Applicant, the Applicant's response is as follows: United Kingdom (UK) trials into impacts on vessel based marine radar systems from offshore wind farms have shown that within 1.5 nautical miles of a Wind Turbine Generator (WTG) effects can be seen with progressive deterioration in the Radar display as the range closes. The Maritime and Coastguard Agency (MCA) has produced guidance (the Shipping Template within Marine Guidance Note (MGN) 543) based on the output of these trials and operational experience to ensure that effects are considered in offshore wind farm design. Considering the effects within 1.5nm in more detail, within 0.5nm intolerable impacts can be experienced, however transiting vessels would typically pass in excess of 1nm (see paragraph 309 of APP569, Appendix 15.1 Navigation Risk Assessment) which is based on industry experience of passing distances to existing offshore structures. Between 0.5 and 1.5nm effects are considered tolerable with WTGs producing strong radar echoes to give early warning to approaching vessels. Other issues such as side lobes, multiple reflected echoes and tracking or masking of targets have all been found to be manageable (tolerable) with mariners aware of any Radar effects and therefore able to interpret the Radar display correctly, noting that effects are the same as those experienced by mariners in other environments such as in close proximity to other vessels or structures which have a notable Radar cross section. MGN 372 (Guidance to Mariners Operating in the Vicinity of United Kingdoms (UK) Offshore Renewable Energy Installations) (2008) notes that effects can be mitigated by 'careful adjustment of Radar controls' or where sea room or traffic conditions allow an increased passing distance. With regards to Norfolk Boreas and figure 22.1 of the NRA [App-569] as noted in paragraph 309, passing distances assumed within the future case routeing scenarios are based on a worst case passing distance to ensure that a worst

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			case allision and collision scenario is assessed. As noted in table 22.1 of the NRA, vessels do have sufficient sea room to distance themselves from Norfolk Boreas, in line with the shipping template contained within MGN 543, to mitigate any effects. Furthermore it should also be noted that, cumulatively, vessels within the navigational corridor could be sensitive but have the ability to distance themselves further from the boundary or to make manual adjustments to mitigate any temporary impacts. Based on the outputs of the NRA and ES no further mitigation measures are required outside of those already contained within MGN 543 and MGN 372 – Guidance to Mariners Operating in the vicinity of UK Offshore Renewable Energy Installations.
Q11.0.2	Maritime and Coastguard Agency (MCA); Rijkswaterstaat	**Separation distance to Davy gas platform related to safety of deviated navigation** APP-228 ES chapter 15 states 'There is one gas platform (normally unmanned) within the Norfolk Boreas site, associated with the Davy Field. The platforms associated with the Sean Field are positioned north of the Norfolk Boreas site, with the closest being 1.4nm from the boundary.' Are MCA and Rijkswaterstaat satisfied at this separation distance of 1.4nm in relation to safety of navigation for shipping routes that may need to deviate around the north of the proposed Norfolk Boreas OWF as referred to in Table 5.3 of [APP-569]?	Although this question is not addressed to the Applicant, the Applicant's response is as follows. It has been assumed that the title of the question should read **Separation distance to Sean Complex related to safety of deviated navigation.** Worst case future routeing scenarios are considered within Figure 19.1 of the NRA [APP-569]; these are based on a minimum passing distance of 1 nautical mile (nm) to the Order limits assuming full build out of Norfolk Boreas and any other existing infrastructure (e.g., platforms within the Sean Complex). The worst case future routeing also takes into account departure and destination ports as well as current routeing preferences (see paragraphs 309, of APP 569, Appendix 15.1 Navigation Risk Assessment). In reality and as per the International Convention for the Safety of Life at Sea (SOLAS) Annex V all vessels proceeding to sea are required to passage plan and therefore the Master of any vessel dependant on its destination, weather conditions etc. may decide to pass between the Sean platforms and Norfolk Boreas. The NRA assumes, in line with experience of other operational wind farms within the UK, and the relevant guidance and regulation, that there are no restrictions to them doing so, assuming the transit remained outside of any operational safety zones (around the Sean complex) and any construction / maintenance safety zones within Norfolk Boreas.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Although the Sean Complex does have a 500 metre (m) safety zone, closer assessment of the marine traffic survey data (Figure 12.3 and 12.4 within APP-569, Appendix 15.1 Navigation Risk Assessment) does show vessels (not associated with the Sean complex) passing in close proximity to Sean PP and PD (bridge linked platforms within comprising the Sean complex) including a commercial cargo vessel passing at 1.4nm. This demonstrates that this is a distance that vessels in the area are comfortable passing fixed structures (noting passage planning requirements under SOLAS).
Q11.0.3	The Applicant	**Effects of development on adverse weather routing** It is understood by the ExA [from APP-228 para 342] that the frequency of deviation southwards of shipping due to adverse weather is assessed as 'reasonably probable' (ranking 4). The Applicant to justify further why the probable occurrence is not rated as 'Frequent', i.e. at least yearly; and if it were to be at least a yearly occurrence, how this would influence the conclusion of the assessment in the north-east corner of the proposed OWF	Commercial vessel transits, outside of routeing measures and channels, are not constrained and although general habitual courses are often seen, in reality these tend to vary according to the vessel, Master preference, traffic and/or weather conditions. Adverse weather in particular can lead to a variety of headings and courses taken by vessels operating between the same ports. This is due to the fact that mitigations required to minimise the effects of weather are specific to the conditions at the time i.e., bearing and strength of the wind, direction of the tide, and height of the swell. Although adverse weather scenarios can occur frequently (yearly) the "remote" frequency (1 in 10 to 100 years) assessed refers to the frequency at which adverse weather conditions (i.e., the specific bearing and strength of the wind, direction of the tide, and height of the swell) would require a vessel to route in a way that it could be likely to result in a moderate safety 'consequence' not just the frequency of adverse weather occurring. Whilst Norfolk Boreas has the potential to impact upon adverse weather routes (noting above the variation in these) on a more frequent basis (as per section 15.8.2 of 6.1.15 Environmental Statement - Chapter 15 Shipping and Navigation ES [APP-228], the significant majority of such cases were assessed as being likely to be of a lower or no safety consequence, hence the "reasonably probable" occurrence.

11.1 Aviation and Radar

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q11.1.1	The Applicant	**Consultations with MoD on Military aviation and Air Defence Radar (ADR):** APP-229 Table 16.2 Consultation Responses reports: Dec 2018: 'In response to statutory consultation the MoD stated that when operational the Norfolk Boreas wind turbines will be detectable to and cause unacceptable interference to the radar. Furthermore, the wind turbines and associated offshore platforms will affect military low flying activities conducted in the area. The MoD have accepted a proposed mitigation solution to mitigate the Norfolk Boreas 'sister project' Norfolk Vanguard impact to the Trimingham ADR, it is expected that this mitigation solution will also be applicable to Norfolk Boreas.' The Applicant to provide an update on consultation with the MoD with regard to 1. effects on the Trimingham ADR system; and 2. effects to low-flying activities in the area.	The Applicant submitted a proposed mitigation solution to the MoD to mitigate the potential impact on the Trimingham ADR that has been accepted by the Ministry of Defence (MoD). On the 6th September 2019 (DIO ref. 10039925) the MoD confirmed acceptance of the mitigation proposal to the Planning Inspectorate and that the wording of two Requirements (12 and 13) included in the dDCO (REP1-008) had been agreed. Consequently the MoD maintains no safeguarding objection to this application subject to the inclusion of Requirements 12 and 13. These Requirements relate to (1) the need to attach aviation warning lighting to relevant offshore structures necessary to maintain safety for military low flying aircraft and (2) the provision of a technical mitigation scheme to resolve the adverse impacts of the development upon the air defence radar.
Q11.1.2	The Applicant	**Consultations with Anglia Radar on Helicopter Main Route aviation:** APP-229 para 50 states 'Helicopter operators and ATC service providers have been consulted with regard to any potential impact on HMRs with limited response in return. Furthermore, Anglia Radar did not respond to a request for consultation …'. The Applicant to provide an update on consultation with Anglia Radar with regard to potential effects on Helicopter Main Routes (HMRs).	Anglia Radar was contacted on the 23rd November 2019 in order to provide a response to the previous request for consultation. The Air Traffic Control Manager at Anglia Radar confirmed by email on the 25th November 2019 that the agreed mitigation of radar effect with NATS meets the need of the Anglia Radar operation furthermore; in respect to Helicopter Main Routes (HMR) Anglia Radar has no objection in this regard to the Norfolk Boreas Offshore Wind Farm.
Q11.1.3	The Applicant	**Mitigation of effects to Civil and Military Radar:** APP-229 para 91 states that: 'Until mitigation is in place; the impact to [PSR and ADR] radar systems is	A Primary Radar Mitigation Scheme (PRMS) has been agreed with NATS which will remove the impact created to the NATS Cromer Primary Surveillance Radar (PSR) system. The Applicant has agreed a Mitigation and Services Contract

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		of major significance. However, mitigation of the radar systems will be agreed with NATS and the MoD prior to offshore construction works which will remove the impact created by Norfolk Boreas and reduce the impact to not significant.' The Applicant to provide updated statements of agreement of mitigation from NATS and MoD.	(MSC) with NATS for implementation of the PRMS which will reduce impact to the PSR to negligible. A proposal to mitigate the impact on the Trimingham ADR has been accepted by the MoD (see response to Q11.1.1), and the MoD maintains no safeguarding objection to this application subject to the inclusion of draft Requirements 12 and 13.

12 Onshore construction effects

12.0 Cable corridor and ducting

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q12.0.1	The Applicant	**Installation of onshore cable ducts** ES Chapter 5 [APP-218, paragraphs 422 and 423] proposes an onshore cable duct installation strategy to minimise impacts. Construction teams would work on a short length (approximately 150m section) and once the cable ducts have been installed, the section would be back filled and the top soil replaced before moving onto the next section. This would minimise the amount of land being worked on at any one time. Have you considered an alternative approach for Scenario 2 should you find the current strategy to not be viable for all or parts of the route? If so, what are the details? If not, why not?	The onshore duct installation strategy (Scenario 2 only) has been a very early project commitment as an embedded mitigation method following early consultation feedback from stakeholders and landowners. This comes as a result of experience from other utility installations opening up long sections (potentially multiple kilometres) of trenches for prolonged periods and the impacts caused as a result. The construction methodology is a standard trenching approach common across the utility industry, with the benefit of duct installation (rather than direct cable installation) being that short lengths of duct can be installed at a time, rather than long lengths of cables. To ensure the viability of the construction method throughout the onshore cable route, the strategy includes all supporting infrastructure requirements during construction such as a running track, soil storage areas and multiple mobilisation areas distributed along the cable route. The construction method is included as embedded mitigation within the OCoCP (document 8.1, REP1-018) and secured within Requirement 20 of the dDCO. As part of the OCoCP, the Applicant has committed to producing Construction Method Statements which will further detail good practice in line with achieving the construction strategy.
Q12.0.2	The Applicant	**Method statement for crossing of River Wensum**: To give clarification to the action point from the HRA and environmental matters Issue Specific Hearing on 14 November 2019: Provide a method statement to explain the cable crossing of the River Wensum, its associated land drainage and streams, works access [APP-011, Sheet 29 of 42, AC130 AC129, AC128] and long distance trail closure; to expand on [APP-010] Works Plan Sheet 29.	A 'Method Statement for the crossing of the River Wensum and adjacent watercourses' has been submitted at deadline 2 (ExA.AS-5.D2.V1).

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q12.0.3	The Applicant	**Cable corridor width** 1. Signpost where in the documentation, details for the justification of the width of the cable corridor is set out. 2. What tolerance has been allowed for micro siting? 3. Would it be possible to include a temporary haul road within the current working width? If not, why not?	1. Section 5.7.2 of ES Chapter 5 Project Description (document 6.1.5, APP-218) provides details on the construction requirements within the cable corridor to facilitate installation of the ducts (Scenario 2 only) which includes land to store stripped topsoil, separate land to store excavated subsoil, up to two trenches, a running track for access and delivery of materials to the excavation site and temporary perimeter fencing. A cable corridor section drawing is provided in Plate 5.15 to visually illustrate these requirements and the associated dimensions to justify the required cable corridor width in Scenario 2. In Scenario 1, Norfolk Vanguard will have conducted the duct installation and only the cables will need to be installed within the pre-installed ducts by Norfolk Boreas. 2. In Scenario 2, the cable corridor requirements are 35m, providing 10m opportunity for micrositing within the 45m cable route Order Limits, as presented in the Works Plan (document 2.4, APP-010). 3. A temporary haul road (named a running track) is included within the cable route, as illustrated in Plate 5.15 and detailed in Section 5.7.2.2.3 of ES Chapter 5 Project Description (document 6.1.5, APP-218).
Q12.0.4	The Applicant	**Cable corridor works where boundary barriers exist** How is construction achieved when the cable corridor crosses a solid boundary for example a wall such as that along the minor road along the west side of Elsing Lane, the minor road which runs north/ south between Bawdeswell and Mill Street (just north of the River Wensum)? This is the boundary of a non-designated heritage asset. Is a feature such as this boundary wall retained?	During duct installation (Scenario 2 only) crossing of such a feature would be conducted similar to crossing of hedgerows whereby the width of the onshore cable route would be reduced to the running track and cable trenches only (13m for perpendicular crossing) to minimise the extent of impact. The wall would then be removed for this width during construction and replaced so far as possible post duct installation. In Scenario 1, the feature in question would be unaffected by Norfolk Boreas as the ducts would have already been installed by Norfolk Vanguard and the cable pulling can be achieved using construction side accesses. See response to Q1.2.6 for further information on the clarification of non-designated heritage assets.
Q12.0.5	Natural England	**Construction near ancient woodland** Do you consider there should be specific provision in the outline CoCP and/ or the OLEMS for	

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		protection measures in the vicinity of ancient woodland? A requirement for a 15m buffer zone is referred to in the mitigation strategy [APP-688, ref 163], but not secured in either of the aforementioned documents	

12.1 Mobilisation areas

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q12.1.1	The Applicant	**Mobilisation Areas** 1. Explain how the location of Mobilisation Area MA5b, on the edge of the settlement of Sparham meets your selection criteria for the location of Mobilisation Areas, in particular properties on Well Lane. 2. Specify when each of the 14 Mobilisation Areas is likely to be installed and uninstalled under Scenario 2 and reference the indicative construction programmes in ES Chapter [APP-218, Table 5.39, Table 5.43]. 3. Is it correct, as set out in the Project Description [APP-218, Table 5.32], that no mobilisation areas are required for Scenario 1? 4. If this is not the case, what is required? 5. Respond to the point made by [RR-053] about the location of MA11 in relation to the B1159 and whether consideration was given to sites immediately off the B road or ones which could be accessed via the running track. Provide detail for the access arrangements for MA2, as the minor road is narrow and the alternative	1. Section 5.7.2.5.1 of ES Chapter 5 Project Description (document 6.1.5, APP-218) notes that mobilisation areas (Scenario 2 only) must be located adjacent to the onshore cable route and accessible from the local highways network suitable for the delivery of heavy and oversized material and equipment. MA5b is therefore sited in consideration to meet these requirements with accessibility from the A1067 and adjacent to the onshore cable route. MA5b has been included to prevent construction traffic on the running track crossing the A1067 from MA5a, following consultation with the local highways authority. Consideration was given to avoiding proximity to local residents as part of the key embedded design principles in the siting of MA5b, however there are no suitable alternatives in the area which meet the criteria of being accessible from the local highways network and adjacent to the onshore cable route. A full construction noise assessment (document 6.1.25, APP-238) has included properties on Well Lane as receptor CRR20 which concludes negligible impact with standard mitigation (document 6.3.25.2, APP-658). The area was also considered specifically within the air quality assessment as receptor R16 (document 6.1.26, APP-239) which concluded negligible impacts. The Applicant has committed to a range of environmental management measures and construction good practice as provided in the OCoCP (document 8.1, REP1-

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		would be access off the A47.	018) and secured in Requirement 20 of the dDCO to limit any impacts to properties in the vicinity. 2. Each of the mobilisation areas along the onshore cable route have been assessed as being in place for up to 2 years, during the period 'duct installation' as illustrated in Table 5.39 of ES Chapter 5 Project Description (document 6.1.5, APP-218). However, each mobilisation area will only be required for the period of time in which the one or two workfronts operating from it have completed the duct installation for the associated cable route sections (see Figure 3a of the OTMP, (document 8.8, APP-699), at an approximate rate of 150m/week, plus mobilisation and demobilisation. In general therefore, the majority of mobilisation areas will be required for notably less than two years, typically 12 to 18 months. Appendix 24.22 (document 6.3.24.22, APP-637) provides an indicative establishment, use and demobilisation period of each mobilisation area within the wider two year assessed period. 3. No mobilisation areas are required along the onshore cable route for Scenario 1. Mobilisation area MA1a, located close to the junction of the A47 and the onshore project substation access road is however required under Scenario 1 during the construction of the onshore project substation, as illustrated in Figure 2a of the OTMP (document 8.8, APP-699). 4. Mobilisation area MA1a only is required under Scenario 1, to support construction of the onshore project substation. 5. Consideration was given to the siting of MA11 directly off the B1159, however concern was raised during consultation with the local highways authority regarding having an additional access in very close proximity to the existing crossroads. Furthermore, siting adjacent to the B1159 would locate the mobilisation area closer to residences directly to the North.

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			With respect to accessibility from a running track, the mobilisation area is the first location off the public highway to which materials and equipment are delivered. Therefore the running track cannot be established until the mobilisation area is established, from which the running track is then constructed as part of the progressive duct installation process. Pre-construction of a running track to access the mobilisation area is therefore not possible. Furthermore, use of the running track as an access point from the B1159 to the mobilisation area after the duct installation has progressed to the B1159 crossing would not be feasible for the safety concerns raised above regarding proximity to the crossroads and that the running track is sufficient for delivery of materials to the workfront, not all deliveries to and from the mobilisation area. In response to Q9.4.2, the Applicant has outlined how access to MA11 is considered within the OTMP (document 8.8, APP-699). 6. Section 4.4.1 of the OTMP (document 8.8, APP-699) provides details of the access arrangements for MA2, the final details of which are being discussed with Highways England and will be included in the final traffic management plan.

12.2 Noise and Vibration

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q12.2.1	The Applicant, Breckland Council, Broadland District Council, North Norfolk District Council, Interested Parties	**Location of noise sensitive receptors** ES Chapter 25 [APP-238, paragraph 148] states that the study area comprises the entire onshore project area. The assessment has not identified a buffer zone within which effects would be considered, rather Noise Sensitive Receptors (NSR) have been identified, as detailed in Table 25.27 and shown on	1. The Noise and Vibration method statement (APP-060) contained an outline approach to the assessment methodology and through the identification of the nearest sensitive receptors was used to inform a strategic baseline noise survey. Each Local Planning Authority agreed that these measurement and assessment locations were representative based on the project design detailed at the time of submission. Details on the Evidence Plan for noise, vibration and

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		Figure 25.2. These are stated to have been agreed with relevant stakeholders (Table 25.3 and paragraph 122). With reference to the location of noise sensitive receptors as identified in the ES Chapter 25 [APP-238, Figure 25.2], explain why: 1. The majority of NSRs on Map 1 of 9 are located south of the cable route, although there are some potential receptors (e.g. Chimney Farm) to the north; 2. There are no NSRs in North Walsham close to the indicative mobilisation area (see Map 2 of 9); 3. There are no NSRs in proximity of trenchless crossing (TC) 16, although there are residential properties in proximity of this area (see map 2 of 9); 4. There are no NSRs in proximity of TC6, although there are a number of farms in proximity of this area (see Map 6 of 9)? 5. IPs may wish to comment.	air quality can be found in Consultation Report Appendix 9.23 (APP-060) and Appendix 9.24 (APP-061). Refinements to the scheme occurred during the evolution of the project design, through consultation with stakeholders during the Evidence Plan Process held from the initial stage and beyond PEIR. Any changes were incorporated in the Environmental Statement (ES) submission, an example is the change in cable route alignment within the study area. The assessment is still considered representative as the nearest sensitive receptors to the proposed construction works and operational infrastructure in each direction have been taken into account. Chimney Farm is at a greater separation distance than receptor CRR1E; therefore, noise impacts would be expected to be no greater than those experienced at CRR1E. 2. The closest mobilisation areas to North Walsham are identified as MA10a and MA10. The nearest assessed receptor is CRR2 approximately 42m from the closest works area indicated at the location. Receptors at Lyngate Industrial Estate were categorised as a lower sensitivity to CRR2. The nearest medium sensitivity receptors (residential) in North Walsham (along Mundesley Road) are at a greater distance from MA10/MA10a than CRR2 and would be expected to have impacts no greater than those identified at CRR2. 3. Duct Installation works were modelled at all Trenchless Crossing (TC) locations simultaneously i.e. TC16, TC15/TC14a, TC14a/b. Receptor CRR3C was identified in the initial Noise and Vibration Method Statement (APP-060) as the closest measurement location representative of a receptor to the trenchless crossings along the proposed cable route. Works at other TC areas are closer to receptors i.e. CRR2 and CRR1 than the closest immediate receptors in the vicinity of TC16; therefore, the predicted noise levels provided in Chapter 25 represent a conservative scenario. 4. There are a number of receptors (CRR17, CRR17 NEW, CRR18, CRR18 NEW) included in the construction phase assessment in the vicinity of TC6; however, it is acknowledged that there are also other properties (farms) closer to TC6 than those assessed at this location as residential receptors in the ES chapter. On balance, the overall assessment does consider residential receptors at

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			closer proximity to indicative Trenchless Crossing works, for example TC4 is of a similar separation distance from CRR26, as the nearest residential receptors are to proposed TC6 works footprint. All TC work areas were modelled using a representative type and number of plant; therefore, on this basis, impacts are considered to be no worse at TC6 than for works at TC4. 5. The approach to the noise impact assessment, including the methodology, worst case assumptions and assessments has been agreed with the relevant local authorities through the Statements of Common Ground, submitted at Deadline 2.
Q12.2.2	The Applicant	**Operational vibration** ES Chapter 25 [APP-238, Table 25.3] states that in relation to operational vibration from the onshore project substation, industry standards require the use of vibration isolation pads to prevent transmission of ground borne vibration. It states that the substation would be designed to achieve negligible levels of ground-borne vibration and therefore scoped out operational vibration from the ES. 1. Provide further information on the design of the vibration isolation pads, and specify the industry standards that would be adhered to. 2. Explain how the implementation of the vibration isolation pads would lead to negligible residual effects. 3. Where is this secured?	1. ES Chapter 25 (APP-238), Table 25.3 contains consultation responses and specific to vibration in which the Applicant confirmed "The onshore project substation will be designed to achieve negligible levels of ground-borne vibration. Therefore, operational vibration can be scoped out of the EIA requirements for the operational phase of the project." National Grid have published a series of documents defining the relevant technical specifications, policies and procedures that must be complied with by all Users connected to or seeking connection to the National Electricity Transmission System as set out under CC or ECC.6.2.1.2 of the Grid Code Connection Conditions, as applicable and pursuant to the terms of the Bilateral Connection Agreement (Source: National Grid Electricity Transmission (2018) Relevant Electrical Standards Issue 3, Page 1). Section 2.1 Environment of National Grid Technical Specification Environmental and Test Requirements for Electronic Equipment TS 3.24.15 (RES) Issue 1 October 2014 states "the equipment shall be subjected to environmental factors such as electrical interference, supply voltage variations, nuclear radiation, dust, vibration, temperature, and salt mist." Further, section 2.10 states "equipment shall not generate vibration at a level that could be damaging to its performance or that of other equipment or personnel". CENELEC document Electronic Equipment for Use in Power Installations (BS EN 50178) details minimum design and manufacture requirements with which control equipment and specification must comply.

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			This specification is an equipment policy specification within the Substation Information, Control and Protection suite of technical specifications. All electronic equipment supplied to the user for operational use in transmission locations must meet its specified functionality and performance as set out in individual Technical Specifications and under the relevant environmental conditions stated in this Specification. 2. The specification of any vibration isolation for power equipment should be undertaken by competent engineers during the detailed design and procurement stage. Adhering with the relevant standards and guidance would minimise the level of vibration generated by the plant, and therefore transferred to the environment in the vicinity of the scheme. 3. At the detailed design stage where it is necessary to assess the operational phase compliance with dDCO Requirement 27 Control of Noise during operational phase , which forms part of the procurement process.
Q12.2.3	The Applicant	**Construction noise thresholds** ES Chapter 25 [APP-238, Paragraph 280] states "*Initial calculations determined that with the application of standard mitigation measures as detailed in section 25.8.5.6 and an increased separation distance from the noisiest mobile and stationary plant, would ensure that the BS 5228 daytime construction noise thresholds are not exceeded at CRR1E, CRR3F, CRR10*". This does not concur with para 200 which identifies a moderate to major adverse impact to these receptors following the application of standard mitigation. Explain this apparent discrepancy.	ES Chapter 25 (APP-238), paragraph 200 assesses the effects of temporary construction works incorporating standard mitigation measures. The paragraph details the effects determined from the noise modelling at receptors CRR1E, CRR3F and CRR10 during cable pulling, jointing and electrical commissioning works. Furthermore, the paragraph specifically states that enhanced mitigation measures will be required as detailed in section 25.8.5.7 due to moderate to major adverse impacts. Section 25.8.5.7 Enhanced Mitigation introduces various measures which could further reduce temporary construction phase effects at the nearest sensitive receptors to the proposed scheme footprint and works. One of the enhanced mitigation measures detailed in paragraph 280 (ES Chapter 25, APP-238) is to ensure there is an increased separation distance between receptors CRR1E, CRR3F, CRR10 and the noisiest plant at the proposed works. There is no discrepancy in the reported impacts. Paragraph 200 of ES Chapter 25 (APP-238) reports impacts which are based on the inclusion of standard mitigation measures as outlined in Section 25.8.5.6. These measures are embedded mitigation and part of the construction phase commitments as detailed in the OCoCP (APP-018). It is acknowledged in Paragraph 200 that

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			enhanced mitigation is required to reduce, offset and minimise the construction phase impacts. Paragraph 280 (ES Chapter 25, APP-238) then considers the construction phase and proposed work-fronts with the use of Enhanced mitigation measures (detailed in Section 25.8.5.7). The assessment re-evaluates the predicted impacts with these additional mitigation measures (above the embedded standard mitigation measures), including as an example, an increased separation distance between the noisiest plant and receptors. The resulting impacts are detailed in paragraph 281.
Q12.2.4	The Applicant	**Noise barriers** The ES Chapter 25 [APP-238] refers to the use of noise barriers during construction. The Construction Noise Management Plan (CNMP) within the OCoCP states that noise barriers *"may be installed to further reduce noise emissions in proximity to noise sensitive receptors"* 1. The ExA acknowledges that detailed design is not yet available for the Proposed Development. Nevertheless, can the Applicant explain why it has not identified the locations at which noise barriers would be implemented? 2. Without a firm commitment to the implementation of noise barriers to a given specification, what confidence can the Applicant provide to the ExA that the noise reductions identified in Tables 25.34, 25.36, 25.37 and 25.39 are possible through the implementation of noise barriers and construction plant selection? 3. Can the Applicant explain what criteria would be applied to determine whether noise barriers would be required? For example, proximity to residential receptors/type of construction activity? 4. Can the Applicant confirm whether there is a	1. The Noise and Vibration assessment presented a conservative worst case scenario, whereby tasks/phases were identified across the study area and anticipated numbers of plant, type, operational on-time specific for those tasks assigned accordingly. All plant was assumed to be operating at the closest point to the study area footprint. Selection of the exact plant requirements and phasing would be completed at the detailed design stage with a commitment to minimising noise and vibration related impacts through the use of the OCoCP and BPM. This assessment (at the detailed design stage) would identify where enhanced mitigation i.e. noise barriers, would be temporarily installed should they be required. 2. BS5228:2009+A1:2014 identifies that the effectiveness of a barrier is limited by transmission over and around the barrier, provided that the barrier material has a mass per unit of surface area exceeding about 7kg/m^2. Standard demountable barriers are widely available from a number of manufacturers to attenuate noise where necessary. Furthermore, BS5228:2009+A1:2019 (Section F.2.2.2.1, page 130) indicates that *"as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation."*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		minimum specification for the noise barriers, and if so, how is it secured? 5. Would the Applicant agree the location(s) and specification(s) of the noise barriers with the relevant local authorities? 6. Can the Applicant confirm the likely timeframes within which the noise barriers would be in place? What assurances are there that they would not be left permanently insitu? 7. Can the Applicant confirm whether the potential impacts that the proposed noise barriers would have on other aspects have been assessed within the ES? The Applicant is requested to provide such an assessment where significant effects are likely.	ES Chapter 25 identified only 3 assessed locations where enhanced mitigation was necessary during the daytime during Cable Pulling, jointing and commissioning. A number of enhanced mitigation measures were identified in Section 25.8.5.7 to reduce these impacts effectively, further outlined in the project commitment to an OCoCP and using BPM (Section 9.1.2 of OCoCP (REP1-018). 3. ES Chapter 25, Section 25.8.5.7 Enhanced Mitigation introduces measures which could further reduce construction phase effects at the nearest sensitive receptors to the proposed scheme footprint and temporary works. These are in addition to the standard mitigation measures - Best Practicable Means (BPM). Barrier deployment is one of many enhanced mitigation measures detailed and may be used in combination with selecting quieter plant, partial enclosure etc. as outlined in the Section 9.1.2 of OCoCP (REP1-018). 4. Barrier design would be dependent on the surroundings and optimised depending on the required level of required mitigation. There are various methods which could be employed and varying designs. BS5228:2009+A1:2014 identifies that the effectiveness of a barrier is limited by transmission over and around the barrier, provided that the barrier material has a mass per unit of surface area exceeding about 7kg/m^2. Standard demountable barriers are widely available from a number of manufacturers to attenuate noise where necessary. The actual final design would need to be selected based on level of required attenuation, proximity to sensitive receptors, task specific and using BPM. 5. Where barriers are identified as being appropriate for noise mitigation, the location would be agreed with the Local Planning Authority (Section 9.1.2.2 of the OCoCP (REP1-018). 6. The construction phase is a temporary period only. Barrier design would be dependent on the surroundings and optimised depending on the required level of mitigation. Where necessary, barriers forming part of an enhanced noise mitigation strategy would be removed on completion of the temporary construction works.

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			7. Given the temporary nature of the noise barrier is not anticipated that the presence of noise barriers will have any significant effects. The design and location of the noise barriers will be optimised dependent on the surroundings and on the required level of mitigation. The potential for any associated impacts will need to be considered once the location and type of barrier has been confirmed. However, where possible consideration has been given to potential associated impact, as such the need for non-reflective surfaces to avoid light nuisance or potential impacts to bats (section 3.7 of OCoCP, REP1-018). Where barriers are identified as being appropriate for noise mitigation, the locations would be agreed with the Local Planning Authority (Section 9.1.2.2 of the OCoCP (REP1-018) and will consider any potential associated impacts.
Q12.2.5	The Applicant	**Piling methods** The ES Chapter 25 [APP-238, Paragraph 260] states that in order to prevent cosmetic damage to buildings in the vicinity of the works, priority should be given to piling methods which minimise vibration i.e. augered piling (subject to suitable ground conditions). Explain the criteria used to determine the priority piling method at specific locations and confirm how it would be secured	Piling works are required at specific locations as detailed in the Project Description. The chosen method is subject to a number of parameters. Parameters to be considered when determining piling technique include proximity to sensitive receptors, duration of proposed works, number of piles, ground (geo-technical) parameters, other cumulative works being undertaken simultaneously and safety. ES Chapter 25 assessed a worst-case scenario with all piling works being undertaken at Trenchless Crossing during the daytime, evening and night time periods, in accordance with the BS5228:2009+A1:2014 'ABC' methodology. ES Chapter 25 identified that evening and night time works may be necessary at trenchless crossing locations or at the substation due to safety reasons, therefore; to minimise effects from evening and night time works, a commitment to using a reduced number of plant was detailed in Chapter 25. ES Chapter 25 Table 25.19 considered various piling techniques and proximity of works to the nearest receptors. The assessment concluded that piling works are 230m from the nearest receptors representing a no impact magnitude at a medium sensitivity (residential) receptor, representing a negligible impact significance. BS5228:2014+A1:2019, Section 8.5.2.1 (Page 16) states "a *decision regarding the type of pile to be used on a site should not be governed solely by noise, but*

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			should also take into account criteria such as loads to be carried, strata to be penetrated and the economics of the system, e.g. the time it will take to complete the installation and other associated operations such as soil removal." Further, the guidance details "i*t might not be possible for technical reasons to replace a noisy process by a quieter alternative. Even if it is possible, the adoption of a quieter method might prolong the piling operation; the net result being that the overall disturbance to the community, not only that caused by noise, will not necessarily be reduced*." A commitment to reducing noise and vibration from each construction phase is outlined in the OCoCP (REP1-018). Suitable piling methods will be reviewed by the Geo-technical engineers at the detailed design stage taking into account the parameters identified above, with a further commitment to incorporating Best Practicable Means (BPM) and preference given to methods which generate the lowest levels, subject to appropriateness.
Q12.2.6	The Applicant, Breckland Council	**Monitoring of noise rating levels** ES Chapter 25 [APP-238, Section 25.8.2] states that the requirement for monitoring would be agreed with the appropriate stakeholders and included within the final CoCP commitments (to be agreed post-consent as secured through dDCO [AS-019] Requirement 20). The outline CoCP [APP-692] states that 'a programme of monitoring may be required'. It is noted that in relation to the onshore project substation, Requirement 27(3) of the dDCO [AS-019] states that the Applicant must produce a scheme for monitoring compliance with noise rating levels (ie those set for the existing Dudgeon substation). The scheme must be approved by Breckland Council and implemented as approved. 1. Explain what action could be taken should monitoring identify that the noise rating levels specified in Requirement 27 are exceeded? 2. Is Breckland Council content that the drafting of	1. At the detailed design stage it will be necessary to assess predicted compliance of the onshore infrastructure at the substation during the operational phase to ensure this would meet the restrictions in dDCO Requirement 27 on Operational Noise. This would therefore form part of the procurement process. Noise modelling would be undertaken to predict conformity with dDCO Requirement 27 and suitable mitigation measures would be identified to reduce the operational phase impacts to within the dDCO requirements. Where, during operational compliance monitoring, an exceedance of Requirement 27 is demonstrated, then the Applicant would be required to implement a mitigation strategy. The mitigation measures may include for example, partial/full enclosure, enhanced sound insulation of buildings. Upon completion of works a further noise survey would need to be completed to demonstrate compliance with Requirement 27. 2. Breckland Council have agreed the wording of Requirement 27 as identified in the Statement of Common Ground submitted at Deadline 2. ES Chapter 25, Table 25.3 states "An OCoCP will be submitted alongside the DCO application, detailing the objectives for managing and minimising construction noise and vibration on-site and at nearby sensitive receptors.

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		dDCO [AS-019] Requirement 27 is sufficient to ensure corrective action be taken should the specified rating levels be exceeded? Complaint monitoring, part of communication liaison process, is included in the outline CoCP [APP-692]; although not specifically under the Noise and Vibration section. ES Chapter 25 [APP-238, Table 25.3] states that if complaints are related to construction noise, any investigation would likely include noise monitoring to determine any requirement for rectifying action. However, this is not included in the outline CoCP [APP692]. Explain why details relating to the complaints procedure for noise and vibration, as referred to in ES Chapter 25 [APP-238, Table 25.3], are not reflected in the outline CoCP [APP-692]?	Detailed design of onshore assets will incorporate Best Available Technique (BAT) and BPM to minimise any associated noise impacts. Furthermore, in the unlikely event of an operational noise complaint, investigations will be undertaken with the relevant local authority." The Noise and Vibration section of the Outline Code of Construction Practice (OCoCP) (REP1-018) will be updated to include the information identified in Table 25.3 of ES Chapter 25.

13 Socio-economic effects

13.0 Skills and Employment Strategy

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q13.0.1	The Applicant	**Skills and Employment Strategy Scenario 1** The Outline Skills and Employment Strategy (OSES) [APP-713, para 15] states that the SES for Scenario 1 would be developed on behalf of both projects, according to the OSES submitted to the Norfolk Vanguard Examination and secured pursuant to Requirement 33 of the Norfolk Vanguard DCO. Submit the OSES submitted to the Norfolk Vanguard Examination	The Applicant has submitted the Norfolk Vanguard Outline Skills and Employment Strategy submitted during the Norfolk Vanguard examination at Deadline 2 (ExA.AS-2.D2.V1). Note this is relevant to Scenario 1 only.
Q13.0.2	Norfolk County Council	**Skills and Employment Strategy Scenario 2** 1. Are you content with the high-level principles and commitments in the Scenario 2 OSES [APP-713]? 2. If not, list and explain concerns. 3. What further detail could be reasonably requested from the Applicant to resolve any concerns during this Examination (if relevant)?	
Q13.0.3	The Applicant, Norfolk County Council	**Supply chain planning** ES Chapter 31 Socio-economics [APP-244, Paragraph 138] states that the Applicant is committed to developing a Supply Chain Strategy to promote the use of local supply chain and support services, where applicable. 1. When would the Supply Chain Strategy be produced? Where is this secured? 2. Who has already been or would be consulted in the production of the Supply Chain Strategy. The OSES [APP-713, Appendix D] outlines a number of meetings and events with supply chain organisations that were held during the pre-	1.A draft Supply Chain Strategy is in progress. The final Supply Chain Strategy will be submitted by the Applicant to the Department for Business Energy and Industrial Strategy (DBEIS) in pursuit of an award for a Contract for Difference. 2. The Applicant is ultimately responsible for their Supply Chain Strategy. However, the applicant has consulted, and is working closely with local stakeholders, including the relevant departments within NCC and LPAs local Chambers of Commerce and the New Anglia LEP, East of England Energy Group (EEEGr) and local businesses. Supply chain engagement continues now, the most recent event was held at the new Energy Centre, East Coast College Lowestoft on 20th November, 2019, further meetings to inform and prepare the local supply chain will continue between now and finalisation of the Supply Chain Strategy.

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		application stage. 3. Have the findings of these meetings, particularly those that are relevant to the local businesses, been shared with Norfolk County Council? 4. If so, does Norfolk County Council have any comments? 5. If not, does the Applicant intend to share the findings of these meetings with NCC? If so when? If not, why not?	3. To date two reports have been published which share the findings of early supply chain meetings. Both report were submitted as appendices to the Consultation Report: Appendix 29.2 of the Consultation Report – 20th September 2018 skills and supply chain stakeholder workshop report (APP-197)) Appendix 29.3 of the Consultation Report – 5th December 2018 onshore works supply chain workshop report (APP-198). A further report will be produced from the recent event, most likely in Q1 2020. A final report will also be produced by Vattenfall and partners NCC, and Norwich and Norfolk Chambers of Commerce, in relation to the "Gearing up to Grow" project supported by the NALEP, at its conclusion, currently anticipated to be the end of 2020.
Q13.0.4	The Applicant	**Benefits for the local area** Have you forecast the implications of implementing the Scenario 2 OSES [APP-713] on the likely long-term effects on the wider NOMIS (Office for National Statistics service providing Official Labour Market Statistics) and Business Register and Employment Survey (BRES) indicators assessed in Appendix 31.1 [APP-680]?	The long-term effects on the wider NOMIS and BRES indicators are not directly discussed specifically for the OSES in Scenario 2 nor Scenario 1. The NOMIS and BRES indictors presented in the Environmental Statement (ES) Appendix 31.1 [APP-680] which are relevant to the OSES – Plates 1.1 to 1.10 - are discussed in ES Chapter 31, Sections 31.7.5.1, 31.7.6.1 [APP-244] in order to provide the context and baseline understanding of current socio-economic matrices. The purpose of the Skills and Employment Strategy, currently outlined in Document 8.22 [APP-713], will be to deliver support and complement other local, regional and sector-wide initiatives that aim to enhance the opportunities for local people and businesses to derive maximum benefits from potential supply chain growth, high value capital expenditure and long term Operations and Maintenance expenditure from the Project and other (current and future) Offshore Wind Projects, including in alignment with The Offshore Wind Sector Deal. Development of the Skills and Employment Strategy is an iterative process and the strategy and its implementation will evolve over the course of the Project to ensure that businesses, the labour market and therefore local residents derive the greatest benefit. This is why only an outline plan has been submitted to date. Work is ongoing by the Applicant, alongside partner organisations to inform the final strategy .

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			Furthermore, the NOMIS and BRES indicators are influenced by many factors. Economic modelling is not a precise science, and many assumptions would have to be made and explained to attempt such forecasting, which is beyond the remit of the Environmental Impact Assessment.

13.1 Jobs

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q13.1.1	Norfolk County Council	**Construction jobs** ES Chapter 31 Socio-economics [APP-244, table 31.30] sets out the local content of jobs created and supported in each year by onshore construction under Scenario 2. 1. Are you content that the jobs can be created and supported each year? 2. How would these local jobs be secured?	
Q13.1.2	The Applicant	**Role of other stakeholders** ES Chapter 31 Socio-economics [APP-244, Paragraph 282] states, "*Under Scenario 1 the direct employment reduces slightly to 425FTE jobs. These would create a major beneficial impact for the region as it is assessed that the relevant stakeholders are preparing to develop skills to supply them.*" 1. Specify who the 'relevant stakeholders' are, referred to above and how would locally based skills be developed? 2. How would this be secured in the dDCO?	The relevant stakeholders referred to which the Applicant is collaborating closely with include the New Anglia Local Enterprise Partnership, Norfolk County Council, Breckland Council, Broadland District Council, North Norfolk District Council, Gt. Yarmouth Borough Council, Department for Work and Pensions, and East of England Energy Group (specifically Skills for Energy Group). In addition, the Applicant has engaged and worked with key Academic partners, including: University Technical College Norwich (and the Colleges on the onshore cable route), University of East Anglia, East Coast College (Lowestoft), Centre for Energy Skills, East Coast College (Gt. Yarmouth) Offshore Wind Skills Centre, and College of West Anglia. The Applicant is

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			committed to continued collaboration with such stakeholders to appropriately support those engaged in developing skills and employability. This commitment is secured through the Outline Skills and Employment Strategy (document reference 8.22, APP-713), which sets out the out the approach that will be adopted by the Applicant to maximise the economic benefit associated with Norfolk Boreas in Norfolk and the East of England and the principles that must be adhered to, including the types of activities to be undertaken by the Applicant as part of the development and implementation of the Skills and Employment Strategy. For further details the Applicant refers the ExA to the Outline Skills and Employment Strategy (document reference 8.22, APP-713), which is secured through Requirement 33 of the dDCO (document reference 3.1, REP1-008).

13.2 Tourism

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q13.2.1	Norfolk County Council, North Norfolk District Council	**Effects on tourism and recreation** In light of the significance of tourism to the local economy, particularly tourism along the coast, are you content that the ES Chapter 30 Tourism and Recreation [APP-243] sets out in adequate detail the effects of the Proposed Development and proposed mitigation on the tourism industry and recreational activities?	

13.3 Land Use and Agriculture

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q13.3.1	National Farmers' Union and other Interested Parties	**Link Boxes** Given the Applicant's response to RRs [AS-024, Table 2, row 3] do you have further concerns and questions about the location and design of link boxes?	
Q13.3.2	National Farmers' Union and other Interested Parties	**Access Routes** RRs [RR-044, RR-049 to RR-051, RR-055, RR-057 to RR-062, RR-064 to RR-068, RR-070 to RR-083, RR-086 to RR-089, RR-092 to RR-094, RR-097 to RR-098, RR-108] refer to a difference in ground levels which would mean some of the Applicant's proposed access routes are not physically possible. 1. Identify which access routes you consider problematic and explain concerns. 2. Where relevant indicate alternative access points which could be preferable and why.	
Q13.3.3	National Farmers' Union and other Interested Parties	**Voluntary Option Agreement and CoCP** RRs [RR-044, RR-049 to RR-051, RR-055, RR-057 to RR-062, RR-064 to RR-068, RR-070 to RR-083, RR-086 to RR-089, RR-092 to RR-094, RR-097 to RR-098, RR-108] refer to wording from the CoCP that you wish to see in the Voluntary Option Agreements. 1. Does the OCoCP, as submitted, set out in sufficient detail the areas of wording you are looking for? 2. As the CoCP would be subject to post-consent approvals based on the OCoCP, are there any areas which you think need more detail at this stage? If so what and why?	
Q13.3.4	The Applicant	ES Chapter 5 [APP-218, Tables 5.35 and 5.41]	Please see the response the Applicant has provided to Q2.2.2.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		commit to burying the onshore cable to 1.05m in 'normal' agricultural land and 1.2m in areas of 'deep ploughing' to top of duct. Explain how this commitment is secured in the dDCO [AS-019] and what constitutes 'normal' agricultural land	As the Applicant outlines in its response to Question 2.2.2 above, the minimum depth of onshore cable burial has been included in the private land agreements being sought for all affected land interests. The minimum depth would be included in Construction Method Statements as required by the OCoCP (document 8.1, APP-692) which is secured in Requirement 20 of the dDCO. Through consultation with the Land Interest Group (LIG) and National Farmers Union (NFU), the Applicant has committed to a minimum depth of 1.2m to the top of the duct across all land, which supersedes the minimum depth of 1.05m to the top of duct in 'normal' agricultural land as detailed in Chapter 5 Project Description (document 6.1.5, APP-218). This commitment has been made to appreciate that land may be subject to 'deep ploughing' in the future and to simplify the installation process and specification. The additional minimum depth does not impact on the assessments as no additional materials are required and the time required to excavate a further 0.15m of trench depth is negligible to the works programme.

13.4 Public Health

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q13.4.1	The Applicant	**Mental Health** In the ES Chapter 27 Human Heath [APP-240], how has the impact of the volume and frequency of construction traffic movement on the mental health and well-being of children, vulnerable users and other users been considered?	ES Chapter 27 Human Health (APP-240) provides an assessment which follows best practice guidance (Cave et al., 2017a), in considering health effects with regard to the general population and vulnerable population groups. Populations are considered at both regional and local levels and the assessment follows the World Health Organisation (WHO) definition of health as a state of physical, mental and social wellbeing, as well as the absence of disease or infirmity. Similarly, it also considers issues of wellbeing as a state in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their, her or his community. The WHO and Public Health England (PHE) consider that health and wellbeing are influenced by a range of factors, termed the 'wider determinants of

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			health'. Determinants include the social and economic environment, the physical environment, and individual characteristics or behaviours. The assessment focussed on community health and wellbeing, and following consideration of potential health effects during the construction and operation phases of the project, there were not predicted to be any significant effects on physical or mental health as a result of the project under either Scenario 1 or Scenario 2.
Q13.4.2	The Applicant National Grid, Public Health England	**Effects of electromagnetic fields (EMF)** 1. In light of the representations made at the OFH on 13 November 2018 [EV4-004], can the Applicant confirm that the EMF exposure of the Proposed Development, especially at the location where the cable route crosses with the underground cables of Hornsea Project Three, is within the limits prescribed by the NPS EN suite and all other relevant UK regulations? 2. National Grid, to confirm the Applicant's assumptions and assessment regarding EMF in ES Chapter 27 Human Heath [APP-240]. 3. Public Health England, to confirm the Applicant's assumptions and assessment regarding EMF effects on Human Health in ES Chapter 27 Human Heath [APP-240].	The Applicant provided a response to concerns raised with respect to EMFs in its comments on relevant representations (AS-024) under Table 22 item 1 and associated documents including ES Chapter 27 Human Health (document 6.1.27, APP-240), Appendix 4.2 of the Consultation Report – FAQ documents (document 5.1.4.2, APP-033) and the analysis of potential EMF effects, undertaken by National Grid for Vattenfall Wind Power Ltd and Orsted, which is presented in two documents, Vattenfall EMF information sheet and Vattenfall and Orsted EMF information sheet (AS-025). The Applicant has provided a further detailed response at Deadline 1 in The Applicant's Response to the Open Floor Hearing (REP1-036). A summary of the key principles of the co-operation agreement between Vattenfall and Orsted has also been provided in the Statement of Common Ground with Orsted submitted at Deadline 2 (ExA.SoCG-27.D2.V1).

13.5 Other offshore industries and activities

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q13.5.1	The Applicant, Eni UK Limited	**Offshore petroleum production** NPS EN-3, para 2.6.176 to 2.6.188 requires decision makers to be satisfied that offshore wind farm site selection and design has been made to avoid or minimise disruption or economic loss or adverse	The Applicant met with Eni UK Limited on the 7th of October 2019 to discuss respective projects and the potential for any interaction between them in the offshore environment.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		effect on safety to other offshore industries. 1. Eni UK Limited to set out any specific geographic areas where you have concerns that the siting of infrastructure associated with the Proposed Development could / would have a significant adverse impact on your ability to carry out your proposed activities. 2. Are there any provisions you feel necessary for inclusion in the dDCO [AS-019]? 3. Confirm whether the Applicant has engaged with you with the aim of resolving issues. 4. The Applicant's views are also sought.	On the 3rd of December 2019 Eni UK Limited confirmed that it had relinquished the part of licence P1964 that extends into the Norfolk Boreas Site. With regard to current activities, Eni UK Limited has informed the Applicant of an exploratory drilling campaign scheduled for a duration of 55-60 days, commencing in October 2019 and taking place in the Aspen Well (53/14a-2). This well is located some 28km from the Norfolk Boreas Site at its closest point and 19km from the Norfolk Boreas offshore cable corridor at it closest point. The Applicant received a further update from Eni UK Limited on the 4th December 2019 which confirmed that operations on the Aspen well are completing with the expectation that the rig will leave site by mid-December 2019. As such, there is no potential for any interaction by Norfolk Boreas with the activities of Eni UK Limited and it is therefore not necessary or appropriate to include any provisions in the dDCO for the benefit of Eni UK Limited.
Q13.5.2	Interested Parties	**Other offshore industries** Set out any concerns that the siting of infrastructure associated with the Proposed Development could / would have a significant adverse impact on your ability to carry out your proposed activities covered in NPS EN-3 para 2.6.176 to 2.6.188 (ie excluding commercial fisheries and fishing and shipping and navigation – which are covered elsewhere in these questions).	

14 Traffic and Transportation

14.0 Traffic and Transport

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q14.0.1	Norfolk County Council	**Outline Traffic Management Plan (OTMP)** The OTMP [APP-699] is the same as that submitted for the Norfolk Vanguard application. Norfolk County Council is asked to confirm if the submitted OTMP [APP-699] is up to date and relevant for the Proposed Development	
Q14.0.2	Norfolk County Council, Highways England (HE)	**Operational traffic impacts** ES Chapter 24 [APP-237, section 24.5.1.3, paragraph 75] states that operational traffic impacts are scoped out of the assessment through agreement at the Expert Topic Group (ETG) meeting due to the limited traffic movements required. However, in paragraph 373, the Applicant identifies the potential for adverse road safety impacts from new access points on the highway network. The Applicant explains that the detailed design of each access point would be set out in the AMP, which would be agreed post-consent based on the OAMP (which includes generic designs). Norfolk County Council and Highways England to confirm that they are content with the approach undertaken by the Applicant and that the level of detail in the OAMP is sufficient to inform future approvals. If not, what additional information should be included in the OAMP?	
Q14.0.3	The Applicant	**Cumulative peak traffic impacts** ES Chapter 24 [APP-237, paragraph 91] states that as part of HE's road investment strategy (RIS) six improvement schemes are proposed along the A47 corridor with an expected start date of 2019/2020. Paragraph 45 states that due to information	The revised OTMP [REP1-022 to 026], Table 3.5 contains the following commitment: *"..It is therefore proposed that, should the two projects overlap, Norfolk Boreas Limited and its Contractors would engage with HE to establish opportunities to co-ordinate activities and avoid peak traffic impacts."*

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		available at this stage, it is not possible to provide a meaningful assessment of cumulative impacts. Furthermore Table 24.45 states that if consent was granted, the Applicant and its contractors would engage with stakeholders to establish opportunities to coordinate activities and avoid cumulative peak traffic impacts. This commitment would be contained in the OTMP which would be contained in the final dDCO submission. The OTMP [APP-699] refers to the OCoCP [APP-692] for this commitment. However, there is no evidence of this specific commitment within the OCoCP [APP-692]. How would this commitment be secured?	
Q14.0.4	The Applicant	**Collision site cluster** Mitigation is applicable to each collision site cluster, including the introduction of high friction surfacing. While this is secured through the OTMP [APP-699] and dDCO [AS-019], it is not specified that this mitigation should be carried out before construction commences. Set out when this mitigation would be carried out and where this is secured.	The OTMP Section 3.7 will be updated to commit to the implementation of mitigation measures prior to the commencement of construction.
Q14.0.5	The Applicant	Mitigation for Link 69 (Little London Road from the B1145 Lyngate Road junction to an access point approximately 210m east) ES Chapter 24 [APP-237, paragraph 238] states that that the mitigation for link 69 may comprise of mitigation measures that include: extended construction programme, location of trenchless crossing points, and sequential planning for construction activities. 1. How would certainty of the mitigation measures be provided? There would be residual significant adverse effects on Link 69 in terms of pedestrian	1. ES Chapter 24 [APP-237] Table 24.31 sets out the resultant HGV demand following mitigation and indicates a maximum HGV flow of 48 daily movements. The mitigation measures presented are indicative 'logistic tools' at the contractor's disposal to achieve the 'capped' HGV flow of 48 movements for Scenario 2. The revised OTMP [REP1-022 to 026] Appendix 2, reaffirms a commitment to a Scenario 2 daily HGV flow cap of 48 movements for Link 69. The full details of the mitigation measures to be adopted by the contractor to meet the HGV cap would be agreed with Norfolk County Council as Highway Authority and secured via a final Traffic Management Plan (TMP) to be submitted pursuant to the discharge of dDCO Requirement 21.

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		amenity and severance for Scenario 2 despite mitigation, but no residual significant adverse effects identified following mitigation for Scenario 1. ES Chapter 24 [APP-237, paragraph 241] states that the contractor would engage with the community to further mitigate residual adverse effects on Link 69 in terms of pedestrian amenity and severance. 2. Clarify if the appointed contractor would undertake community engagement to identify periods that are particularly sensitive to HGV movements. 3. How would the appointed contractors' commitment to undertake community engagement be secured? 4. Explain how this would influence the assessment of significant adverse effects. 5. What confidence can the Applicant provide that the measures would be effective? 6. Would monitoring be required and what remedial measures could be implemented? 7. Where is the mitigation and monitoring secured?	2&3. The OCoCP [APP – 692] Section 24, gives a firm commitment to *"open communication with local residents and businesses that may be affected by noise or other aspects affecting amenity caused by the construction works."* Communications will be co-ordinated by a designated member of the construction management team and would extend to identifying periods that are particularly sensitive to HGV movements. Final details of local community engagement would be secured in the Communications Plan contained in the Code of Construction Practice to be submitted pursuant to dDCO Requirement 20. 4. Noting the impact affects a small number of dwellings and the durations of HGV movements are relatively small, a proactive engagement would serve to ensure the impacts are not significant by ensuring access is maintained, delays are minimised, sensitive periods are avoided where possible and generally reduce anxiety by keeping the community informed. 5, 6 and 7. The revised OTMP [REP1-022 to 026] Section 5 sets out a comprehensive monitoring and enforcement regime to give assurance that the measure would be both effective and achievable. Key measures include: • Local community liaison; • Establishing the role of a Traffic Management Plan Co-ordinator with responsibility for implementing the TMP; • Identification of potential breaches of the TMP to establish the grounds for enhancement; and Enforcement under the jurisdiction of the contract and UK employment law and corrective processes.
Q14.0.6	The Applicant, Norfolk County Council, Broadland District Council, Cawston Parish Council, Oulton	**Traffic effects in Cawston and Oulton** The RRs from Broadland District Council [RR-028], Cawston Parish Council [RR-016] and Oulton Parish Council [RR-017] raise concerns about the traffic assessment surrounding the villages of Cawston and Oulton. This includes concerns regarding the same	1. The Applicant has committed to adopting the Orsted highway intervention scheme as a basis for mitigation through the B1145 Cawston in section 4.3.2 of the OTMP (REP1022). Section 4.3.2 provides the details of the mitigation, and plans showing the scheme are included in OTMP Appendix 6 (REP1-024)

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
	Parish Council, Corpusty and Saxthorpe Parish Council	access routes to Norfolk Vanguard, the Proposed Development and Hornsea Project Three during potentially the same time frame, and traffic impacts on the B1145 through Cawston.The Applicant's response to the RRs [AS-025, Table 19, row 3] refers to a 'highway intervention scheme' developed by Orsted for the objective of mitigating the construction traffic impacts of Hornsea Three and cumulative impacts with Norfolk Vanguard and Norfolk Boreas through Cawston. 1. The Applicant to confirm if it would adopt the same 'highway intervention scheme' to mitigate the construction traffic impacts through Cawston. If yes, the Applicant to provide details of the 'highway intervention scheme'. 2. How has the impact of the proposed 'highway intervention scheme' been assessed in the ES Chapter 24 [APP-237]? 3. In the response to the RRs [AS-025, Table 19, row 3], you refer to 'the final SoCG (REP9-047) with Norfolk County Council at the close of the Norfolk Vanguard examination'. Submit the final SoCG with NCC for the Norfolk Vanguard Examination. 4. NCC, to provide comments on the 'highway intervention scheme'. List any changes necessary for the Proposed Development, Scenario 1 and Scenario 2. 5. Has the proposed 'highway intervention scheme' been adequately secured through mitigation set out in the ES Chapter 24 [APP-237] and in the dDCO [AS-019]? 6. Broadland District Council, Cawston Parish Council, Oulton Parish Council and Corpusty and	As detailed in the Applicant's response to RRs [AS-024] on close of the Norfolk Vanguard examination, Norfolk County Council confirmed in their final Statement of Common Ground (REP9-047) *"The intervention scheme drawings and proposal before us are very much 'work in progress'. In short, the scheme needs several changes, but they will be amendments rather than a complete re-think."* The Applicant is currently engaging with Norfolk County Council and Cawston Parish Council to refine the scheme design. 2. The highway intervention scheme is part of a package of mitigation measures that would serve to reduce traffic impacts through Cawston. These measures are set out in the revised OTMP [REP1-022] and include: • Prohibition of deliveries during term time school pick up and drop off times (07:30-9:00 and 15:00-16:00); • HGV cap of 112 movements per day and 239 movements per day (cumulative with Horsea Project Three); • Delivery management measures; and • Driver induction, information and safety awareness measures; • Communication, monitoring and enforcement measures. With these mitigation measures in place the residual impacts on Link 34 (B1145 through Cawston) are assessed in ES Chapter 24 (APP-237) in Section 24.8.2.5.2 – *Link 34*, to be reduced below significant levels. 3. The Norfolk Vanguard SoCG with NCC (REP-047) is presented in Appendix 14.1 to this response. 4 & 5. The current position of Norfolk County Council on the Cawston Mitigation is included in the Applicant's Statement of Common Ground with Norfolk County Council, submitted at Deadline 2 (ExA.SoCG-19.D2.V1). 5. The Applicant believes the mitigation scheme is adequately secured. The intervention is detailed in and secured through the OTMP (REP-022) and dDCO

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		Saxthorpe Parish Council to highlight the specific areas of the Applicant's assessment that you have concerns with. Outline what else the Applicant would need to take into account when assessing the effects of traffic in Oulton and Cawston.	Requirement 21 requires that the final TMP must be in accordance with the OTMP.
Q14.0.7	The Applicant, Norfolk County Council, Interested Parties	**Assessment of Link 34 (B1145 from the B1149 Holt Road junction, through Cawston village to the eastern town extents of Reepham)** 1. Link 34 is assessed as a medium sensitive route [APP-237, paragraph 500]. Justify this classification in light of the highway width, direct frontage development, narrow footways, resident parking, and frequency of use of footways by children and other users. 2. The Proposed Development Scenario 2's HGV third peak in combination with Hornsea Project Three's peak construction HGV traffic is stated as 260 daily movements [APP237, paragraph 504]. Justify how a 896.5% increase in HGVs on Link 34 is assessed as an impact of moderate adverse significance.	1. In their role as Local Highway Authority, Norfolk County Council (NCC) have classified the High Street through Cawston as the B1145, a 'Main Distributor'. The Main Distributor category indicates a route linking Primary Distributors (i.e. linking significant settlements to A roads serving the County) and are not subject to any restrictions on Heavy Goods Vehicles (HGV). Whilst the assessment recognised that Cawston does have concentrations of sensitive receptors the route has been designated as suitable for HGV traffic and therefore, on balance medium sensitivity classification was deemed appropriate. 2. ES Chapter 24 [APP-237] Section 24.4 sets out the magnitude and impact significance thresholds which form the basis for a detailed assessment. Link 34 is subject to a cumulative 896.5% increase in HGV traffic, applying the thresholds detailed in Table 24.6 for pedestrian amenity, the magnitude falls in the low to high banding. Assessed as medium magnitude when applied to the significance matrix in Table 24.8 for a medium sensitivity receptor the resultant impact significance is moderate adverse. Moderate adverse is deemed significant in EIA terms and therefore (having established no suitable alternative routes exist, see Q14.0.8 response) a package of mitigation measures was developed and assessed to reduce the residual impact below significant levels.
Q14.0.8	The Applicant, Norfolk County Council, Interested Parties	**Construction traffic route through Cawston** 1. Were other construction traffic routes considered, that would eliminate the need for construction traffic to go through the settlements of Cawston and Oulton Street? 2. Explain why Link 34 was the preferred option for	1 and 3. **Cawston** A detailed assessment of two possible alternative routes applicable for the Norfolk Vanguard Project to avoid the B1145 through Cawston (Link 34) was undertaken and submitted during Deadline 7 of the Norfolk Vanguard Examination. Given the similarities between Norfolk Boreas and Norfolk

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		construction traffic movement. 3. Could or was a haul route within the cable corridor of the Proposed Development from the B1145 (north east of Reepham) to the B1149 (north east of Cawston) [APP-462, Map 5 of 9] considered? If not, why not?	Vanguard this assessment is also relevant for Norfolk Boreas. The document titled 'Alternative Construction Traffic Routes at Cawston' is provided in Appendix 14.2 and provides a detailed assessment of the following routes. • Route 1: To use the Norfolk Vanguard onshore cable route between Cawston and the B1149 near Oulton to divert construction traffic and avoid use of the B1145 through Cawston. • Route 2: To divert construction traffic off the B1145 and onto Heydon Road via an unclassified road to the west of Cawston. In summary Route 1, would require a 2.8km running track to be in situ for a period of up to 4 years with an increased construction depth to accommodate the increase in HGV flow. It was concluded this option would compromise the assessed impact on sensitive watercourses, flood risk, conservation, topsoil management and noise. For Route 2 it was noted Heydon Road is a single 2.5m wide carriageway stretching for approximately 2.5 km with no passing facilities. To facilitate HGV traffic the route would require significant improvements to the carriageway to accommodate the additional loading as well as frequent passing bays to ensure the construction vehicles and background traffic can pass. It was concluded that the use of Heydon Road would be counter to planning principles established by NCC's highway hierarchy, in that, traffic would be diverting from a Main Distributor to a minor local route. It was reasoned that works required to Heydon Lane would be disproportional, the enabling works would increase construction traffic demand and mitigation would be better concentrated on Link 34 to support the Main Distributor classification. **Oulton** The alternative route investigated involved construction HGV traffic diverting off the B1149 at its roundabout junction with the B1145 (Cawston Road). HGV traffic would head east for approximately 2.4km until the junction with Sankence Lane, which leads to the north. HGV traffic would head north on Sankence Lane for approximately 500 metres, then turning west, would leave the public highway and onto private farm routes. The final leg of the journey

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
			would involve heading north on the private farm tracks and entering Mobilisation Area 7 from the south. Upon review of the alternative route, a number of substantial constraints/infrastructure requirements were identified, including the following: • Major upgrade of the B1145 junction with Sankence Lane. • Provision of either full length carriageway widening or passing places along Sankence Lane. • Upgrade of the junction of Sankence Lane and farm track. • Requirement to cross Marriott's Way by HGV construction traffic. • Farm track identified as a Restricted byway (not for use by mechanically propelled vehicles). In conclusion, the impacts related to the requirement of major infrastructure works required to Sankence Lane and the use of restricted byways and crossing of Marriott's Way by HGV construction traffic were considered to potentially introduce significant environmental impacts and Link 68 would be a more viable route. 2. In their role as Local Highway Authority, Norfolk County Council (NCC) have classified the High Street through Cawston as the B1145, a 'Main Distributor'. The Main Distributor category indicates a route linking Primary Distributors (i.e. linking significant settlements to A roads serving the County) and are not subject to any restrictions on Heavy Goods Vehicles (HGV). Whilst the assessment recognised that Cawston does have concentrations of sensitive receptors the route has been designated as suitable for HGV traffic and therefore, on balance the route was deemed appropriate.
Q14.0.9	Highways England	**A47** The RR from HE [RR-025] states that it would be interested in any transport assessment or hearing where the A47 is involved either with construction	

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
		traffic or HGV movements. Do you have specific concerns surrounding the A47 and traffic and transport with the development as proposed that can be highlighted for examination? It is not currently clear whether access proposals for MA2 would be from the A47. But if so, do you have any views on the potential accessing of mobilisation areas such as MA2 from the A47?	
Q14.0.10	Norfolk County Council	The RR from Norfolk County Council [RR-037] states that for Scenario 1, it has no comments other than those made on the Norfolk Vanguard application, and for Scenario 2, it has the same comments made for the Vanguard scheme. Submit all relevant comments and concerns for both Scenario 1 and Scenario 2 into this Examination.	

15 Water Matters

15.0 Water Matters

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q15.0.1	The Applicant	**Crossings of watercourses within SPZs** The Applicant to clarify how crossings of watercourses within SPZs are secured in the dDCO [AS-019] other than those specified as requiring trenchless installation techniques for the purposes of passing under the River Wensum, King's Beck, Wendling Beck, the River Bure and North Walsham and Dilham Canal in Requirement 16.	The watercourses within Source Protection Zones which are not listed in Requirement 16 will be crossed using the open-cut trenching method. This is the standard method used across the onshore cable route and therefore no specific requirements need to be included in the dDCO. Requirement 25 of the dDCO does secure the commitment to develop a scheme and programme for all watercourse crossings and the OCoCP (REP1-019) secures the commitment that these will include site specific measures and controls. A schedule identifying the method of crossing for each watercourse is presented as ES Appendix 20.4 (APP-589).

16 General and cross topic questions

16.0 General

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q16.0.1	The Applicant	**Guide to the Application** Provide updates of the Guide to the Application [APP-004] at Deadlines set out in the Examination timetable. The level of detail will necessarily need to be presented to the level of each document or drawing to ensure all updates and/ or superseding is accurately recorded. You may wish to note an example document of this type at https://infrastructure.planninginspectorate.gov.uk/application-process/exampledocuments/	The Applicant will provide an updated Guide to the Application [APP-004] at each Deadline as set out in the Examination timetable. The comments on level of detail required have been noted.
Q16.0.2	The Applicant	**Response to points made at an Open Floor Meeting** Provide responses to points made by Interested Parties and others who spoke at the Open Floor Hearing on Wednesday 13 November 2019 at the Kings Centre in Norwich.	The Applicant has provided a response to points raised in the Open Floor Hearing in the 'Applicant's response to the Open Floor Hearing' (REP1-037) submitted at deadline 1.
Q16.0.3	The Applicant	**Red line boundary of offshore generation area** Explain or signpost to an explanation of the small circular red line near the northern extremity of the Norfolk Boreas proposed offshore generation array that appears on the Land Plan (Offshore) [APP-007].	A meteorological mast (Met Mast) which is owned and operated by East Anglia Offshore Wind is located within this area. The Met Mast and an associated 250m buffer are not part of the Norfolk Boreas Area for Lease and therefore this is excluded from the Norfolk Boreas site. The mast supports various instruments for measuring meteorological conditions.

16.1 Environmental Statement

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q16.1.1	The Applicant	**Significant adverse residual effects** In respect of the significant adverse residual effects identified in the ES, the Applicant to provide a robust justification as to why further mitigation has not been	Within the offshore environment (Chapters 8 (APP-221) to 18 (APP-231) of the ES) no residual impacts of moderate or major adverse significance were identified due to the project alone. Residual moderate adverse impacts were identified due to the cumulative effect of the project with

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		possible.	others. The moderate adverse impacts were identified for the Dutch and Anglo Dutch fishing fleets, however, It is important to note that the contribution of the Norfolk Boreas project to these cumulative impacts would be very small. As the residual impacts were cumulative and the contribution of the Norfolk Boreas project was very small it is not within the control of the Applicant to mitigate these impacts, to reduce them to a non-significant level. Within the onshore environment (ES Chapter 19 (APP-232) to ES Chapter 31 (APP-244)) significant adverse residual effects were identified with respect to landscape and visual impact (Chapter 26 APP-242) at three non-residential viewpoints under both scenarios. Significant effects would be experienced by walkers on Lodge Lane to the immediate south of the site, and by road-users on a very localised section of Ivy Todd Road to the south-west and a section of the A47 to the north. These effects would all occur within approximately 1.2km of the onshore project substation, making them localised. Mitigation planting will be introduced and has been designed with the aim of reducing these identified impacts. The planting includes areas of fast growing woodland species as this will provide the height required, as well as the density, to ensure effective screening. Mitigation planting would gradually reduce effects to not significant over time. There would be no significant effects on the views of residents at Ivy Todd and Necton. Under Scenario 1 no further significant adverse residual effects have been identified. Under Scenario 2 significant adverse residual effects have also been identified for water resources and flood risk (ES Chapter 20, AP0-

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			233), onshore ecology (ES Chapter 22, APP-235) and traffic and transport (ES Chapter 24, APP-237) and are detailed below. In ES Chapter 20 Water resources and flood risk (APP-233), potential moderate adverse residual impacts are identified on the River Bure catchment and River Wensum catchment as a worst case where permanent culverts are used, and due to increased sediment supply when assessed on a worse case sub-catchment basis. As such the assessment is based on the cumulative effect of multiple crossings within each sub-catchment, rather than the impacts associated with any single crossing. It is important to note that the moderate adverse residual impacts resulting from the proposed installation of multiple open cut crossings within the River Bure, King's Beck, Blackwater Drain, Wendling Beck and Penny Spot Beck sub-catchments reflect the worst case assumption that multiple permanent culverts could be constructed within each sub-catchment (which, in this case, are considered to have a greater potential to adversely impact on the hydrology and geomorphology of the surface watercourses than temporary disturbance during the installation of multiple temporary dams). However, permanent culverts will only be required where it may not be possible to use the temporary dam and divert technique for example for watercourse that are 1.5m or deeper. The measures outlined in ES Chapter 22 Table 20.22 would be highly effective in mitigating impacts on the geomorphology and hydrology of the watercourse at each crossing location because they would allow the free movement of water and sediment to continue with minimal interference. Furthermore, the installation of each trenched crossing is not considered to result in a significant effect when assessed individually. Whilst the worst case of permanent culverts are considered to result in some significant impacts when considered at a sub-catchment level,

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			where permanent culverts can be avoided any changes that occur as a result of temporary crossings will be temporary and reversible and, with mitigation would not result in significant residual impacts. In ES Chapter 22 Onshore ecology (APP-235) potential moderate adverse residual impacts have been identified for bats and hedgerows. Mitigation measures are identified in section 22.7.5.5.2 of ES Chapter 22 (APP-235) which will ensure that the habitat which is temporarily lost is replaced by improved hedgerow habitat which meets the criteria set out in the Norfolk Hedgerow Biodiversity Action Plan. Therefore, in the long-term, there will be a beneficial effect upon this receptor. However, given the duration of these temporary effects before reaching this point (up to 11 years for restored hedgerows to be greater value than that lost during construction), the magnitude of effect will remain low on a high importance receptor, resulting in a residual impact of moderate adverse significant. However, these impacts will reduce over time as replacement of hedgerows mature. In un-surveyed areas potential moderate adverse residual impacts have been identified for bats. Mitigation measures are identified in section 22.7.5.1.2 of ES Chapter 22 (APP-235) following the implementation of which, the risk of killing or injuring bats will be reduced to a negligible level. Potential fragmentation effects will also be reduced, although fragmentation effects will remain while the mitigation planting matures. In the long-term, once planting matures, there will be a beneficial effect upon this receptor. However, as above given the duration of these temporary effects before reaching this point (up to 11 years for restored hedgerows to be of greater commuting / foraging value than that lost

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			during construction), a residual impact of moderate adverse significance is expected but will reduce over time as replacement hedgerows mature. In ES Chapter 24 Traffic and transport (APP-237) moderate adverse effects on Link 69 – Little London Road from the B1145 Lyngate Road junction to an access point approximately 210m east. Mitigation measures are proposed (see section 24.7.6.1.1 of ES Chapter 24, APP-237) including reducing peak daily movements by elongating the construction programme and sequential planning of construction activities, and reducing traffic demand by placing the reception sides of the trenchless crossing to the areas Link 69 serves. As a result the mitigated traffic demand reduces to 48 daily HGV movements and the effect is considered to be of low magnitude. However, noting the high sensitivity of the receptor it is expected that the residual impact significance would be 'marginally' moderate adverse. However, the assessed impact is very localised (impacting on a small number of dwellings) and is for a relative short duration. It is considered community engagement to establish clear lines of communication to the appointed contractor would serve to identify periods that are particularly sensitive to HGV movements and that could further mitigate this impact. The Outline TMP (APP-699) contains a specific commitment to managing the HGV movements for Link 69 and notes the need for community engagement.
Q16.1.2	The Applicant	Changes have been made to the dDCO on 4 November 2019 relating to worst case scenarios. There may therefore be discrepancies between the ES and the DCO. How can this be resolved in the Examination of the dDCO?	All changes made to the dDCO have been in response to Relevant Representations or further discussions with stakeholders. In all cases, where changes affect worst case scenarios, these have been made to reduce the magnitude of the impacts. Although the magnitude of impacts have been reduced by these changes, they have not been reduced sufficiently to change the category of magnitude used in the ES and therefore the conclusions of the ES remain current. Therefore, the Applicant does not consider it appropriate or necessary to update the ES.

16.2 Ground conditions, contaminated land and ground and surface water

PINS Question Number	Question is addressed to:	Question:	Applicant's Response:
Q16.2.1	The Applicant	**HDD trenchless crossings of rivers:** Assist understanding of concerns and further information required, related to possible HDD drilling mud breakouts, particularly in relation to the River Wensum SAC.	The Applicant has provided the 'Clarification Note Trenchless Crossings and Potential Effects of Breakout on the River Wensum' at deadline 1 (REP1-039) to provide further information and assessment.
Q16.2.2	The Applicant	**Request for Ground investigation Report(s):** The Applicant's response [AS-024] to EA's [RR-095] states: *'A copy of the Terra Consult (2017) report were provided to the Environment Agency during the Norfolk Vanguard examination and appended to Norfolk Vanguard's Responses to the ExA's First Written Questions (Appendix 16.2 to- 16.7, Norfolk Vanguard reference REP1-023 to 028).'* The Applicant to submit a copy of the Terra Consult Ground Investigations report to the Norfolk Boreas Examination.	The Terra Consult Ground Investigations have been provided as separate documents at deadline 2 (ExA.AS-3.D2.V1) (Note the reports are submitted in parts due to their large file size).
Q16.2.3	The Environment Agency	**Ground Conditions and Contamination issues in EA's RR** Section 2 of the Environment Agency's [RR-095] identified a number of issues in relation to Ground Conditions and Contamination which it considers have not been addressed to its satisfaction, relating to construction phase impacts on: 1. The quality of surface water fed by groundwater; with particular regard to its observation that the ES does not provide the locations of where groundwaters and surface waters are hydrologically connected in relation to where construction activities are anticipated to take place; 2. Unlicensed water supplies; 3. Land quality; 4. Impacts on groundwater quality in the principal aquifer from trenchless crossings and piling; 5. Impacts on shallow groundwater due to changes to hydraulic regime as a result of soil compaction; and	The Applicant position regarding the approach to assessment of hydrological connectivity of groundwaters and surface waters in relation to where construction activities are anticipated to take place is: An assessment of potential impacts on the quality of surface water fed by groundwater during construction is presented in section 19.7.4.5 of ES Chapter 19 (APP-232). It states that the potential impact mechanism on surface water fed by groundwater are considered to be present under both scenarios and as such the impact assessment provided in section 19.7.4.5.1 is relevant to both scenarios. Section 19.7.4.5.1 identifies that the leaching or groundwater transport of contaminants may occur as a result of hydraulic connections between surface waters and superficial aquifers affected by the construction works (excavations or pilling). The assessment considers the findings of the ground investigation undertaken within the onshore cable route which confirmed the presence of shallow groundwater in many areas along the onshore cable route. Therefore, for the purposes of the assessment it

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		6. Data sources. The Environment Agency to comment on the Applicant's responses [AS-024] to theseconcerns submitted in response to the ExA's Rule 6 letter.	was anticipated that surface watercourses are in hydraulic connectivity with groundwater contained within superficial deposits throughout the study area, which would represent the worst case. The assessment considered the sensitivity of the surface watercourse within the onshore project area (detailed in section 19.4 of ES Chapter 19, APP-232), which ranged from low to high and concluded that the impact would be negligible to minor adverse, not significant in EIA terms.
Q16.2.4	The Applicant	**Ground conditions and contamination potential impacts addressed in Norfolk Vanguard case:** Provide an update of progress on agreeing common ground with the Environment Agency on EA "concerns that some issues concerning raised during the Norfolk Vanguard examination process have not been addressed in the Norfolk Boreas application ES Chapter 19.7 Potential Impacts".	The Environment Agency have updated their position and now consider that the Applicant has identified a methodology to address these concerns in the post consent period. As such this topic is now agreed in the Statement of Common Ground with the Environment Agency Version 2 submitted at Deadline 2 (ExA.SoCG-7.D2.V2).
Q16.2.5	The Applicant	**Assessment of contamination pathways:** Provide an update of progress on agreeing common ground with the Environment Agency on procedure and timescales for: 1. Identification of locations where the surface water and the groundwater systems are in hydraulic connection and cross-correlated with the extent of the construction works; 2. Identification of potential contaminants and their receptors and pathways; and 3. Local risk assessments to clarify the potential impacts on controlled waters and associated specific mitigation measures.	The Environment Agency have updated their position and welcome the commitment to addressing these concerns in the post consent period. They wish to review and comment on the refined conceptual site models and mitigation measures once post-consent ground investigations have been undertaken and prior to construction. As such this topic is now agreed in the Statement of Common Ground with the Environment Agency Version 2 submitted at Deadline 2 (ExA.SoCG-7.D2.V2).
Q16.2.6	The Applicant	**Assessment of contamination sources at landfall location:** Provide an update of progress on agreeing common ground with the Environment Agency on: more detailed assessment of contamination sources, current status,	Both parties are in agreement that the written scheme for the management of contamination secured through DCO Requirement 20 represents appropriate control measures for the discovery of potential contamination. The Environment Agency welcome the commitment to addressing our concerns in the post consent period and wish to review

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		extent of contamination, and potential receptor and transport (pathway) of the contaminants.	and comment on the refined conceptual site models and mitigation measures once post-consent ground investigations have been undertaken and prior to construction. As such this topic is now in the Environment Agency Version 2 submitted at Deadline 2 (ExA.SoCG-7.D2.V2).
Q16.2.7	The Applicant	**Development impact at shallow wells:** Provide an update of progress on agreeing common ground with Environment Agency on: 1. Potential for a significant impact at any shallow wells in close proximity to the excavations. 2. Assessment of abstractions within the study area to ensure that local water supplies are not compromised.	This topics is covered within the Statement of Common Ground with the Environment Agency Version 2 submitted at Deadline 2 (ExA.SoCG-7.D2.V2) and discussion are ongoing with the Environment Agency.