

Norfolk Boreas Offshore Wind Farm

Appendix 19.1

Norfolk Vanguard Ground Conditions and Contamination Consultation Responses

Environmental Statement

Volume 3

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Glossary of Acronyms

CoCP	Code of Construction Practice
CPRE	Campaign to Protect Rural England
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
HDD	Horizontal Directional Drilling
OCoCP	Outline Code of Construction Practice
PEIR	Preliminary Environmental Information Report
PRA	Preliminary Risk Assessment
SAC	Special Areas of Conservation
SSSI	Sites of Special Scientific Interest
SoS	Secretary of State
SPZ	Source Protection Zone
WFD	Water Framework Directive

Glossary of Terminology

The project	Norfolk Boreas Wind Farm including the onshore and offshore infrastructure.
Onshore infrastructure	The combined name for all onshore infrastructure associated with the project from landfall to grid connection
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.

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1 Introduction

1. Consultation is a key driver of the Environmental Impact Assessment (EIA) process, and throughout the lifecycle of the project, from the initial stages through to consent and post-consent.
2. As the Norfolk Boreas and Norfolk Vanguard projects are sister projects due to the proposed strategic development of both projects (Chapter 5 Project Description), much of the consultation undertaken as part of the Norfolk Vanguard Evidence Plan Process (EPP) is also relevant to the Norfolk Boreas project. Such consultation has directly influenced the Norfolk Boreas project and has been taken into consideration and integrated into the impact assessment for Norfolk Boreas.
3. This appendix contains the results of the Norfolk Vanguard consultation which have been used to inform the Norfolk Boreas assessment.

2 Consultation responses Norfolk Vanguard

4. Table 2.1 summarises the consultation that has been undertaken for Norfolk Vanguard that is relevant to and has informed the development of Chapter 19 Ground Conditions and Contamination of the Norfolk Boreas ES and provides details of how it has been taken into consideration.

Table 2.1 Norfolk Vanguard Consultation Responses

Consultee	Date /Document	Comment	Response / where addressed in the Norfolk Boreas ES Chapter 19
Secretary of State (SoS)	11 th November 2016 Scoping Opinion	The ES [Environmental Statement] should identify and assess potential impacts on the Mineral Safeguarding Areas underlying the onshore scoping area (see the comments of Norfolk County in Appendix 3 of this Opinion).	Mineral safeguarding data has been shared by Norfolk County Council and is considered within the assessment in sections 19.2 and 19.7.4.7.
SoS	11 th November 2016 Scoping Opinion	Paragraph 304 of the Scoping Report notes there is rapid cliff erosion on the coast of north east Norfolk. The potential impacts of landfall works on coastal processes, including erosion and deposition, should be addressed with appropriate cross reference to other technical reports including landscape and visual impacts. Reference should be made to the Kelling to Lowestoft Ness Shoreline Management Plan, where appropriate.	Rapid cliff erosion on the coast of north east Norfolk is considered within the assessment in sections 19.6 and 19.7.4.1. Appendix 4.5 Coastal Erosion Study of Chapter 4 Site Selection and Assessment of Alternatives also provides information in relation to coastal erosion.
SoS	11 th November 2016 Scoping Opinion	The Secretary of State welcomes the proposal to employ a Code of Construction Practice (CoCP) during site works to ensure that all appropriate Pollution Prevention Guidelines and good practice guidelines are followed. The proposal to provide a draft CoCP with the DCO application is welcomed and the Secretary of State recommends that this document contains sufficient information as to the minimum measures required to achieve the requisite level of mitigation.	Details of embedded mitigation measures which includes the provision of an Outline Code of Construction Practice (OCoCP) to be submitted with the Development Consent Order (DCO) application can be found in section 19.7.4.2.
SoS	11 th November 2016 Scoping Opinion	The Scoping Report has scoped out all operational impacts on ground conditions and contamination, with the exception of cumulative impacts. The only justification for this is that operation and maintenance activities would follow standard procedures. Despite the limited justification provided, the Secretary of State does not consider there would be any significant effects from operation and therefore agrees this can be scoped out.	As per the Scoping Opinion, all operational impacts on ground conditions and contamination are scoped out from further assessment (section 19.3).
SoS	11 th November 2016 Scoping Opinion	The Secretary of State welcomes the consideration of construction impacts on Water Framework Directive (WFD) groundwater bodies (see Section 4 of this Opinion for further details) and designated geological sites. Further comments on WFD assessment are provided in the Water Resources and Flood Risk section of this Opinion below.	Impacts on WFD groundwater bodies and designated geological sites are considered within the assessment. Details of WFD assessment can be found in Chapter 20 Water Resources and Flood Risk and

Consultee	Date /Document	Comment	Response / where addressed in the Norfolk Boreas ES Chapter 19
			Appendix 20.2 WFD Compliance Assessment
SoS	11 th November 2016 Scoping Opinion	The ES should justify the extent of the study areas used in the assessment.	The study area is defined by the distance over which impacts on ground conditions and contamination from the project may be and by the location of any receptors that might be affected by those potential impacts. This has been established by professional judgement supported by a Preliminary Risk Assessment (PRA) undertaken for Norfolk Boreas. Section 19.5.1
Norfolk County Council	Scoping Opinion November 2016	<p>3.2.1.2 Geology</p> <p>This section should refer to the Mineral Safeguarding Areas (sand and gravel) that underlie the onshore scoping area. The Mineral Safeguarding Area is shown in the adopted Revised Policies Map (Oct 2013) which is available to view on the County Council's website at: www.norfolk.gov.uk/nmwdf on the 'Adopted policy documents' page.</p> <p>The onshore scoping area also includes safeguarded operational, permitted and allocated sand and gravel extraction sites which should be referred to in this section. Policy CS16 of the adopted Minerals and Waste Core Strategy is relevant. Norfolk County Council has produced Mineral Safeguarding Guidance which outlines the measures needed to ensure that non-mineral development on Mineral Safeguarding Areas within Norfolk complies with adopted policy on the safeguarding of mineral resources.</p>	Mineral safeguarding data has been shared by Norfolk County Council and is considered within the assessment in sections 19.2 and 19.7.4.7
Environment Agency	Scoping Opinion November 2016	Horizontal directional drilling (HDD) is mentioned at paragraph 834 as an embedded mitigation process and potential risks are discussed at paragraph 873. Although HDD is a recognised method to address sensitive locations there are residual risks to the environment which should be addressed in detail in the EIA. The potential risks to both groundwater resources and surface water bodies from leakage of drilling fluid	Initial assessments of the use of trenchless crossing technique at each sensitive location can be found in section 19.4.

Consultee	Date /Document	Comment	Response / where addressed in the Norfolk Boreas ES Chapter 19
		<p>should be addressed with sufficient information provided in the EIA to provide assurance that the risks to the water environment are fully understood and can be addressed through appropriate measures.</p> <p>Assessments of the use of HDD at each sensitive location should include site and ground investigations, risk assessment, appropriate mitigation and remediation.</p>	<p>Ground investigations required to develop a risk assessment, appropriate mitigation and remediation have been undertaken. The results of the ground investigation are provided by Terra Consult (2017) and GHD (2018).</p>
Environment Agency	Scoping Opinion November 2016	<p>We agree with the approach to identifying land contamination as set out in section 3.2. The EIA should identify any areas of land contamination found within the cable corridor and provide a Preliminary Risk Assessment for each area. The Preliminary Risk Assessment [PRA] should provide sufficient information for the risks to the water environment to be fully understood and include site investigation and remediation measures. In respect of water resources, we agree the approach outlined in the Scoping Report. We recommend that the cable corridor does not cross or touch any areas designated as source Protection Zone 1.</p>	<p>PRA was undertaken as part of the assessment and no major sources of contamination were found within the study area. The impacts on the water resources are considered in section 19.7.4. as well as Chapter 20 Water Resources and Flood Risk.</p>
National Farmers Union	Norfolk Vanguard PEIR December 2017	<p>Details of how soils will be treated and where stored during construction must be provided. Along with how sub and top soils will be kept separate and kept clean during the construction period. Due to the damage to soils during construction works must only take place when conditions are acceptable. During very wet conditions and if soils are waterlogged construction should be stopped. Further it is important for Vattenfall to set out how after soil has been reinstated what measures will be put in place to bring the soil back to its condition and quality before the works took place. An after care plan should be included in a Code of Construction. To enable the aftercare plan to be put in place Vattenfall must make sure that a record of condition is taken pre –construction including soil samples to determine the soil structure and the nutrients. This can then be used to set a soil target specification for each field on a holding. The soil target must also include yield records which can be provided by the landowner/occupier. The NFU is pleased to see that a Code of Construction has been mentioned along with a Soil Management Plan but the NFU would have expected to see draft details of these two documents within this PIER. The NFU</p>	<p>Potential impacts on soils are discussed in Chapter 21 Land use and Agriculture. Handling and protection of soils, including measures such as the separate storage of topsoil and subsoil, and ceasing work during wet weather, will be managed through the Soil Management Plan, which has been produced and submitted alongside the DCO application. The OCoCP also includes best practice measures for soil handling, which has been produced and submitted alongside the DCO application.</p>

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		would like to see draft documents as soon as further details are available and before the submission of the DCO.	
Environment Agency	Norfolk Vanguard PEIR December 2017	In common with comments made regarding WFD issues for surface waterbodies, neither designation nor WFD status is a satisfactory indication of sensitivity to impacts. We disagree with Secondary Aquifers being identified as a low sensitivity receptor. These aquifers are often very important in supplying base flow to surface waters and are frequently in hydraulic continuity with the underlying principal aquifer particularly in the east of the application area. Similarly, we would not consider unlicensed water supplies low risk.	Designations and WFD status are not used as an indication of sensitivity to impacts on surface water bodies. The Secondary Aquifers sensitivity was changed to moderate and Secondary B / undifferentiated remained designated as low. See section 19.7.4.2.
Environment Agency	Norfolk Vanguard PEIR December 2017	We agree with the recommendation in paragraph 57 to undertake ground investigation and further assessment of the made ground in the on-site source areas at the dismantled railway lines and Bacton oil terminal. As well as establishing the risk to construction and potential for the re-use of soils, the investigation should also consider potential risks to controlled waters. We agree with paragraph 59 that protocols for dealing with unexpected contamination should be set in place prior to construction with the procedures agreed with the Regulators. This should include proposals to deal any waste soils extracted from the cable run.	Embedded mitigation measures related to contaminated land management are described in Table 19.14.
Campaign to Protect Rural England (CPRE)	Norfolk Vanguard PEIR November 2017	<p>7. Table 19. National Planning Statement describes the National Planning Statements for Nationally Significant Projects and quotes two which are relevant to the project. These are the overarching NPS for Energy EN-1 DECC 2011a and Electricity Networks Infrastructure EN-5 DECC, 2011b. EN-1 at section 5.3 states that the applicant clearly sets out any effects on designated sites of ecological or geological importance, protected species and on habitats and other species important to the conservation of biodiversity. The ENS section states that underground lines do not require development consent under the Planning Act 2008.</p> <p>Comment: There are in practice constraints on undergrounding, see comments by the Environment Agency at page 6 and tables 19.3 and 19.4 Both EN-1 and EN-5 are superseded on one important issue by the National Planning Policy Framework of March 2012, and this is particularly important for EN-1. EN-1 does not make any reference to ecological networks, and there is inadequate or no comment by</p>	Reference to North Norfolk District Council Policy EN 9 Biodiversity Appendix B on the ecological network and the importance to the Chalk Rivers in the district is made in section 19.2.2.

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		Vattenfall (or Ørsted). Both companies should note and act on what the NPPF says at Chapter 11 Conserving and enhancing the natural environment on this point. Paragraph 109 Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. The North Norfolk District Council Policy EN 9 Biodiversity has a six-page Appendix B on the ecological network and the importance to the Chalk Rivers in the district.	
CPRE	Norfolk Vanguard PEIR November 2017	41. Ground investigations are ongoing at key trenchless (e.g. HDD) crossing locations listed: Crossing 1 – A47; Crossing 2 –Norfolk Railway east and west sides; Crossing 3 – River Wensum east and west; Crossing 4 - River Bure west and east/Crossing 5 – A140; Crossing 6 – A149/Crossing – Norfolk Railway; Happisburgh South Landfall. We note that in addition there are trenchless crossings to the north west of North Walsham (from the route corridor maps looks to be the North Walsham and Dilham Canal), and just north of Bacton Wood/Witton Heath, presumably to underground the road running north-south to Horning and the Broads, a major tourism area. Comment: We would be supportive of these two additions, but suggest that there are a number of other locations which would benefit from a trenchless approach, and these should be identified in the next stage of work.	Trenchless crossing techniques have been identified for a range of locations, and these are summarised in detail in Chapter 5 Project Description and Chapter 20 Water Resources and Flood Risk.
CPRE	Norfolk Vanguard PEIR November 2017	58. The onshore cable corridor crosses four main catchment river catchments. Some tributaries and wetland areas for each river are listed. For the River Bure the most notable tributary is King’s Beck. The downstream reaches of the river have a range of wetland features, including Hoveton Great Broad and Marshes, Woodbastwick Fens and Marshes, Bure Marshes. The River Wensum and several of its tributaries would be crossed, most notably Wendling Beck and the Blackwater Drain. The River Wissey headwaters fall within the area for the Necton National Grid substation extension. The North Walsham and Dilham Canal is crossed at North Walsham (see 41 above; note also a leisure interest). Comment: The tributaries and wetlands listed above and others should be considered for a trenchless crossing to minimise the risk of silt entering the river	Trenchless crossing techniques have been identified for a range of locations, and these are summarised in detail in Chapter 5 Project Description and Chapter 20 Water Resources and Flood Risk

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		systems, and not adding to the loading caused by arable run-off, a major problem for all rivers entering the Broads (Bure, Wensum and Ant). Those running into the Wensum have the additional issue is that the whole upper reach of the river is designated SAC.	
CPRE	Norfolk Vanguard PEIR November 2017	<p>59. The baseline hydrology is described in more detail in Chapter 20 Water Resources and Flood Risk, but we note Tables 19.10 and 19.13 which show the status of the Broadland Rivers Chalk and Crag groundwater body and that of the North Norfolk Chalk groundwater body.</p> <p>114. It is anticipated that surface watercourses are in hydraulic connectivity with groundwater contained within superficial deposits throughout the study area. The River Wensum is a chalk river that is designated as an Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) and is therefore considered to have high sensitivity. Tributaries of the Wensum such as Wendling Beck and the Blackwater drain are also considered to have high sensitivity, on the basis of their direct connectivity with the main River Wensum, on their basis of their direct connectivity with the main River Wensum.</p> <p>Comment: A team at UEA shows that much of the silt getting into a river system does so in a heavy rain event; and that in a drainage ditch will move on in the next heavy rain event until it reaches the main river. As such ditches only periodically in hydraulic contact with the groundwater also pose a risk.</p>	Reference to the connectivity between groundwater and surface drainage systems has been included in section 19.7.4.5.
CPRE	Norfolk Vanguard PEIR November 2017	<p>116. The overall impact on indirect or contamination of surface watercourse based on the situation which includes the integration of measures adopted in section 19.7.1 is considered to be minor adverse which is not significant in EIA terms.</p> <p>Comment: We consider there is a divergence between the theory and what happens on the ground. As a marker consider the persistent and severe problems with agriculture and arable run-off, in spite of good practices ELS, etc. As well as the adverse impact on rivers, it can also result in flooding of property.</p>	The risk associated with adverse impact on rivers resulting in flooding of property is discussed in Chapter 20 Water Resources and Flood Risk section 20.7.4.

Consultee	Date /Document	Comment	Response / where addressed in the Norfolk Boreas ES Chapter 19
Anglian Water	Norfolk Vanguard PEIR December 2017	<p>We have had discussions with Vattenfall relating to ground investigations associated with the onshore cable route in the vicinity of an existing borehole in Anglian Water's ownership.</p> <p>The proposed onshore corridor includes a number of locations in groundwater source protection zone 1. Further consideration should be given to any potential implications for existing boreholes in Anglian Water's ownership from the construction of proposed onshore elements of the proposal.</p>	Embedded mitigation measures related to works undertaken within Source Protection Zone 1 (SPZ1) areas are described in Section 19.7.4.
Anglian Water	Norfolk Vanguard PEIR December 2017	Reference is made to a number of groundwater source protection zones in the area of the above project. We would wish to ensure that the proposals and any related development do not have an adverse impact on existing boreholes which are used for the supply of potable water by Anglian Water.	Embedded mitigation measures related to works undertaken within SPZ areas are described in section 19.7.4.

3 References

Norfolk Vanguard Limited (2018). Norfolk Vanguard Offshore Wind Farm Environmental Statement. Available online at:
<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/norfolk-vanguard/>.
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