

# Norfolk Vanguard Offshore Wind Farm

# Consultation Report

## Appendix 9.18 Landscape and Visual Impact and Land Use Minutes Pre-S42

Applicant: Norfolk Vanguard Limited  
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*Photo: Kentish Flats Offshore Wind Farm*



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**Meeting Title: Norfolk Vanguard Evidence Plan Process – Meeting with NNDC**

**Meeting Date:** 6<sup>th</sup> March 2017

**Meeting Location:** Lewis Meeting Room, Royal HaskoningDHV Offices, Bretton, Peterborough, PE3 8DW

**Attendees:**

*Vattenfall Wind Power Ltd (VWPL)*  
Rob Driver (RD), Kathy Wood (KWD)

*Royal HaskoningDHV (RHDHV)*  
Ruth Henderson (RH)

*North Norfolk District Council (NNDC)*  
Geoff Lyon (GL), Kerys Witton (KWN), James Wilson (JW), Rob Goodliffe (RG)

*OPEN*  
Jo Phillips (JP)

**Apologies:** N/A

**Next meeting date:** TBC

**Minutes** (including summary of key discussions):

1. Summary of key actions	
KWD	Set up Purchase Order for NNDC to invoice against
GL	Provide comments as required on the Evidence Plan Terms of Reference (including Logistics appendix)
RH	Re-circulate project related material (presentation, maps, and method statements) with NNDC.
NNDC	Provide comments on any method statements to be considered as part of ongoing assessments.
KWN	Provide contact details of Jane Harris at the Barbastelle bat Group
KWD	Send invite to a site visit (potentially morning of 22 <sup>nd</sup> March (Wednesday) to discuss landscape and ecology considerations of cable relay stations
RG	Provide bathymetry data
RG	Provide the archaeological report for the rock relocation
RH	Contact Environment Agency to obtain data on coastal monitoring
RH	Share proposed noise monitoring locations with JW
RH	Share proposed viewpoint / heritage locations with KWN
JW	Provide Noise Code of Practice procedure for Bacton Gas Terminal Site
JW	Provide more details on the pipelines from the Bacton Gas Terminal Site
JW	Provide more details on contaminated sites within NNDC boundary
RH	Contact Environment Agency for details on permitted noise data from Bacton Gas Terminal Site
KWD	Contact Pigneys Wood Trust and Dilham Canal landowner regarding proposed

	crossing technique
GL	Screen for any planning applications / pre-planning applications within proposed onshore infrastructure works footprints and share with team
GL	Provide details on the park and ride planning applications
KWD	Share Susan Falch-Lovesey contact details with NNDC
KWD	Discuss with Vattenfall Communications team about opportunities associated with Deep History Coast
GL	Provide list of any additional members within NNDC who would like to attend Topic Group Meetings under the Evidence Plan Process
<b>Attendee</b>	<b>Comment</b>
<b>2. Evidence Plan Process</b>	
RH	<p>Mechanism to help agree information required to help ensure compliance with EIA and HRA</p> <p>Non-statutory, voluntary process</p> <p>Give greater certainty on amount and type of evidence required</p> <p>Address issues pre-application</p> <p>Ensure evidence requirements are proportionate to Project's impacts</p> <p>Enable resources and time to be understood and optimised</p> <p>Provide audit trail / agreement log</p>
<b>3. Site Selection Process</b>	
RH	<p>Aim is to avoid (or where this is not possible, to minimise) potential impacts and identify areas for opportunities</p> <ul style="list-style-type: none"> <li>- Constrains mapping exercise <ul style="list-style-type: none"> <li>- Amenity, cultural or scientific value of the sites;</li> <li>- The local context, planning policy and guidance</li> <li>- Existing land use; and</li> <li>- Feedback from the community and other stakeholder consultation.</li> </ul> </li> <li>- Site visits and data review</li> <li>- The public drop-in-exhibitions</li> <li>- Scoping Opinion</li> </ul>
<b>1. PDS</b>	
RH and RD	<p><u>HVAC and HVDC</u></p> <p>Two different electrical solutions will be taken forward as part of the consent (HVAC or HVDC options). The electrical solutions are driving the onshore infrastructure.</p> <p>HVDC requires less land take but only a small number of suppliers provide this option and there is limited confidence in the technology at this stage. All other UK projects use HVAC to date (East Anglia THREE is seeking consent for HVDC).</p> <p>EIA will assess worst case scenario of the options associated with HVAC or HVDC e.g. HVAC requires larger cable corridor and a cable relay station, whereas HVDC requires a taller substation.</p>
RD	<p>A cable relay station is a compound with grey boxes and a small control room building (parameters are outlined in the method statement). RD shared a 3D mock-up of an indicative cable relay station.</p>

RH	<p>There are currently 3 landfall options (Bacton Green, Walcott Gap, Happisburgh South). The PEIR will have 1 final option, informed by stakeholder feedback, early assessment work and public consultation.</p> <p>A cable relay station is required for the HVAC option only, in order to allow transfer of electricity along the long underground onshore cable corridor.</p>
RD	<p>Due to needing space to drill that avoids going under properties, only the landfall option at Happisburgh can accommodate the HVAC option for both Vanguard and Boreas.</p> <p>There are options at the landfall in terms of engineering methodology: Short HDD to intertidal zone; or Long HDD to subtidal to around 5m water depth.</p> <p>HVDC needs only 2 ducts for each project so Boreas and Vanguard could then both go to any of the 3 landfall options, but consent must allow for HVAC or DC and therefore a suitable location for both options.</p>
RH	<p>For the onshore cable corridor HVAC represents the worst case scenario – The cable easement for Vanguard will be 50m or combined with Boreas the total easement is 100m. The DCO will include the option of Vanguard alone and Vanguard and Boreas combined.</p> <p>Maps currently show a 200m corridor to allow for micrositing. The DCO application boundary will, however, be 100m as the red line boundary has to reflect only what is needed.</p>
RH	Indicative mobilisation areas and crossing compounds are also shown on the method statement figure. Final locations will be within the redline boundary.
RH	Access tracks will also be required.
RH	Search zones for the substation have been refined since scoping following consultation and ongoing constraints analysis. A separate substation is required for Norfolk Boreas which will be in the same search zone. PEIR will have final locations.
RH	The substation footprint will be 250 x 300m for AC and DC. DC equipment is taller.
RH	National Grid extension works – map shows land boundary within which the extension would be required. Will be consented under Vanguard DCO to ensure strategic impact assessment and mitigation development.
RH	Reconfiguration of overhead lines – altered orientation, no new overhead lines.
<b>2. Discussion (Areas of focus for NNDC)</b>	
RD	Soil warming as a result of the cables to be considered within the Land Use Chapter of the PEI. The potential for soil warming will be greater with AC rather than DC option
GL	ENI are moving away from the Bacton Gas Terminal site - may be opportunities to explore land in the Bacton area for cable relay station
KWN	Advantage of cable relay station near Bacton Gas Terminal site of existing industrial area which reduces visual impacts. However, there are bats from Paston Barn which use linear features for foraging. Existing woodland belts are used for screening. There are sub populations of bats around Honing and Fox Hill. Need to be considered as part of siting and assessments.
RH	Advantage for siting the cable relay station at Happisburgh due to strategic approach to both projects, and opportunity to link in with Deep History Coast. Advice from the British Museum (AHOB Project) early on in the process will also help establish any potential benefits of using Happisburgh, if this is the required landfall option.
KWN	Need to consider hum and vibration associated with reactors from cable relay station for potential interference with bats



RH	Micrositing within the redline boundary could be considered by reducing the easement and micrositing within corridor. Potentially HDD if the constraint is large and fills the corridor.
RG	Potential construction issue for working at the landfall for tourism and recreational activities along the coast in this area. Sensitive timing of works may be required.
RG	There is ongoing monitoring on the cliffs from extensive work with Historic England.
RG	Long HDD option for landfall is outside of the main risk zone for coastal erosion.
RG	Deep History Coast project at Cart Gap – potential opportunity to link in with geological and archaeological interests in the area.
RG	Hold the line boundary and managed realignment in the area, The Shoreline Management Plan (SMP) is an ‘intent of policy’ and is a non-statutory document.
RG	Sand Engine scheme from Bacton Gas Terminal site to be considered
RG	Beach levels are low at Walcott Gap and there is overtopping / flooding at Walcott Gap. Needs to be considered for construction. Potential pollution risk issues with flood zone.
RG	Fractured relationship between Parish Council and community at Walcott Gap
RG	At Cart Gap there is a mixture of properties – permanent and holiday homes. There is the England Coast Path and natural defence along the sand dunes
RG	Beach at Happisburgh is privately owned and NNDC have a lease agreement with the Lord of the Manor
JW	Concern over the drilling operations to nearby properties and will comment on the proposed noise monitoring locations
	Happisburgh lighthouse is a key heritage consideration for cable relay station siting in the southern options
JP	In terms of landscape and visual impacts, the landfall area is very contained and localised area and the impacts are mainly to be associated with the cable relay station. Advance planting could be considered where it will help screen the proposals – does not necessarily need to be adjacent to the development but would respect the local ecological areas. Opportunities to bolster existing hedgerows and restoring historic landscapes/patterns. Viewpoint locations will be shared with NNDC in order to provide comment.
KWN	Pigneys Wood meadow area is a conservation area. Should engage with Pigneys Wood Trust and Dilham Canal Trust which are linked to Waterways Trust.
JW	Potential contaminated areas which NNDC can share with the project team
GL	A number of potential planning applications in this area which can be provided by NNDC to the project team.

**Meeting Title:** LVIA

**Meeting Date:** 19/07/2017

**Meeting Location:** The Union Building, 51-59 Rose Lane, Norwich, NR1 1BY

**Attendees:**

**Jo Phillips (OP-EN)**  
**Sophie Thompson (RHDHV) (ST)**  
**Ruth Henderson (RHDHV) (RH)**  
**Kathy Wood (Vattenfall) (KW)**  
**Rob Driver (Vattenfall) (RD)**  
**Zoe Tebbutt (Norfolk County Council) (ZT)**  
**Mark Symonds (Broadland District Council) (MS)**  
**Cathy Batchelar (North Norfolk District Council) (CB)**  
**Peter Coe (Capita on behalf of Breckland Council) (PC)**  
**Michael Brennan (Breckland Council) (MB)**

**Apologies:**

*Kerys Witton (North Norfolk District Council)*  
*Geoff Lyon (North Norfolk District Council)*  
*Debi Sherman (Breckland Council)*

**Next meeting date:** TBC

**Minutes:**

Attendee	Comment	Action
<b>1. Introduction</b>		
1.1	KW provides H&S information and goes through introductions.	
1.2	KW provides aim of the meeting to provide an update on the project, and to agreement and feedback on going forward.	
1.3	RH goes through agenda.	
<b>2. Consultation update</b>		
2.1	RH provides update on Scoping Report completion and ETG meetings to date.	
2.2	S42 to be submitted Q4 2017. DCO application to be submitted in Q2 2018.	
2.3	RH runs through work to date on project since last meetings – surveys, public consultation, landowner discussions, PEIR, newsletters etc.	

Attendee	Comment	Action
<b>3. Norfolk Vanguard Update</b>		
3.1	<p>RH runs through refined project areas.</p> <p>CB asks for slides to be circulated after meeting</p>	<b>ACTION: ST circulate slides with minutes.</b>
3.2	<p><b>Landfall</b></p> <p>RH runs through the key reasons for choosing Happisburgh South as the preferred landfall location.</p>	
3.3	<p><b>Cable relay station</b></p> <p>RH explains why cable relay station search zones 5 and 6 are currently being considered for siting co-located cable relay stations for Norfolk Vanguard and Norfolk Boreas.</p> <p>CB asks if there is a preference for (High Voltage Alternating Current).</p> <p>RD explains that Vattenfall are currently considering both for optionality post consent when discussing with suppliers. There is no preference for either at this stage.</p> <p>RH states that for the purposes of EIA Vattenfall need to consider a worst case scenario.</p> <p>CB notes that option 5a is quite exposed.</p> <p>JP explains that existing mature trees and hedgerows feed into the consideration as existing screening.</p> <p>CB asks if accesses are included in LVIA.</p> <p>JP confirms this is the case.</p>	
3.4	<p><b>Onshore cable corridor</b></p> <p>RH explains that the consent will include a 100m wide corridor. Currently 200m wide.</p> <p>Trenchless crossing techniques are being considered for various crossings including main rivers, landfall etc.</p> <p>PC asks about constructional and operational footprint.</p> <p>RH explains 100m for HVAC construction and 70m for HVDC construction.</p> <p>CB asks about the trenchless crossing techniques.</p>	<b>ACTION: ST to send the indicative easement diagrams.</b>



Attendee	Comment	Action
	<p>RH explains about main rivers, roads, sensitive areas of woodland etc would be crossed using trenchless crossing techniques e.g. HDD.</p> <p>AH explains about the current campaign of ground investigation survey work to feed into trenchless crossing techniques and hard linear constraints that cannot be avoided.</p> <p>CB asks about temporary compound locations. AH explains they are close to arterial road network and roughly 10km apart. Traffic assessment is looking at the impacts of this for delivery of construction materials. Running track in easement will allow the construction, with deliveries of personnel and materials concentrated at the mobilisation areas, approximately 100m<sup>2</sup>.</p>	
3.5	<p><b>Onshore project substation</b> RD explains that the onshore project substation refined from 3km area to smaller area close to Necton with 4 co-located (NV&amp;NB) options. By the time of the DCO application this will be refined to one onshore project substation location.</p> <p>PC asks about screening and vegetation. JP explains about the options for mitigation such as mounds, planting (nursery species for short term and longer growing for long term) etc. MB asks about temporary construction compound size and time of construction. AH explains about 2 years for enabling and construction of onshore project substation, and a size of approximately 200m x 100m.</p>	
3.6	<p><b>Assessment scenarios</b> RH runs through HVAC and HVDC assessment scenarios and phasing options.</p>	
<b>4. LVIA</b>		
4.1	<p><b>Data collection and survey design techniques</b> A discussion was had on the methodology and viewpoint selection at the cable relay station.</p> <p>CB asks that views from top of lighthouse and church tower at Happisburgh need to be considered. JP explains that a lot of the assessment work will</p>	<p><b>ACTION: JP update viewpoint list to provide viewpoints from Happisburgh Lighthouse and Church Tower.</b></p>

Attendee	Comment	Action
	<p>focus on potential significant effects. Preliminary assessment will identify the wider area and non-significant effects. This will be provided as an appendix. JP agrees that these viewpoints can be considered from the east.</p> <p>PC agrees that graphic proof is required for those areas of potential no significant effects.</p> <p>CB explains that there are concerns at Ridlington about visual impacts.</p> <p>Vattenfall confirm that a consultation event was held on 18<sup>th</sup> July at Happisburgh Wren Evan Centre to address these concerns.</p> <p>CB agrees that with topography and correct screening then impact will not be large.</p> <p>CB asks if planting can be done early on.</p> <p>JP explain that 3 year prior to construction can be considered (2019 onward if consent received)</p> <p>CB asks what the feeling was from the community.</p> <p>RD explains that HVAC was not wanted as a consideration so options were not considered in detail.</p> <p>CB asks if there are any of this type of structure that can be shown as an example.</p> <p>RD explains that no-one has built an offshore wind farm that has required an onshore cable relay station yet. Triton Knoll will be the first but is awaiting a decision.</p> <p>PC requests a full methodology for the LVIA and photomontaging.</p>	<b>ACTION: ST share Method Statement with Peter Coe.</b>
4.2	<p><b>CIA</b></p> <p>CB asks if CIA will be considered.</p> <p>RH notes that we will have to consider CIA for the assessment and not just Norfolk Boreas but other projects. PEIR will assess CIA.</p>	
<b>5. Updated Viewpoint Selection</b>		
5.1	JP goes through the viewpoints of the CRS options 5a, 6a and 6b.	
5.2	<p>JP goes through the viewpoints of the substation options 1-4.</p> <p>HVAC option impacts are less, HVDC options are potentially higher (up to 25m). Option 4 on plateau would be higher impact than option 1.</p>	<b>ACTION: Interim planting option photomontage to be produced by JP for substation and cable</b>

Attendee	Comment	Action
	<p>PC requests that when an option is selected, an interim planting visualisation should be produced.</p> <p>PC asks if lighting is required. RD confirms no operational lighting at CRS. Substation not as defined yet whether this will be manned or not.</p> <p>CB asks about operational traffic. RD explains occasional small scale (1 operative) maintenance visits, potentially monthly.</p> <p>CB asks about security fencing. AH explains typically metal fencing 2.5m high. Can be any colour.</p>	<p><b>relay station at 15 years after planting (for PEIR. 5 years after planting will also be included but in the ES).</b></p>
5.3	<p>MB asks when 200m corridor will be refined to 100. RH explains that PEI will be based on 200m corridor. Between PEI and the full DCO application this will be narrowed down. Full ES and application would be 100m easement.</p>	
5.4	<p><b>Landscape Character</b> PC asks view on character. JP explains that it is unlikely there will be an impact on character from landfall or cable corridor. Might be localised effects on localised landscape character. CRS and substation landscape character type is more sensitive. Substation has influence from existing Necton NG substation. An area will be defined to describe localised effect and where it would be significant.</p> <p>CB asks if this will be defined over time how it diminishes. JP explains that the plateau, mitigation planting etc will be assessed over time for success. 15 year period is the usual time when expecting 7m growth and when we can say the effect diminishes from significant to not significant. Varied size of plant stock? JP explains in past have gone for 1m, expecting 3-4m growth a year. Consultation raised question of bunding, but usually brings more attention.</p> <p>PC asks about sinking the structure.</p>	

Attendee	Comment	Action
	<p>RD raises issues around flooding, more vehicle moving.</p> <p>AH notes high water table at CRS. Questions were asked about the consultation about removing 1m-1.5m would it make much difference, and the answer is no.</p> <p>CB asks about the visualisation, the layout of the site is known. So will an indicative layout plan and elevation plan be included?</p> <p>JP explains that the ES will have a project description and a chapter of components figures, elevations and plans. Within the LVIA we list out the worst case, maximum envelope.</p> <p>RD explains there are concept level designs for CRS and onshore project substation for HVAC/HVDC which is in a 3d model in the visualisations. Vattenfall can't guarantee this is exactly what will be built.</p> <p>RH explains the PEI will have upfront chapters with design, parameters, and then separate LVIA chapter will draw out specific worst case components.</p> <p>PC asks about LVIA, and how much interaction between ecology, archaeology etc.</p> <p>JP explains that there will be crossovers, particularly hedgerow removal along onshore cable corridor. Cultural heritage will also be considered for inter-relationships.</p>	
5.5	<p>PC asks if visuals will be done for the CIA?</p> <p>JP explains that for Boreas yes, but depends on the visuals. Substation only CIA is with Boreas. Sequential CIA will be considered in terms of going along the same roads, or wider landscape character type. Sequential effects will be considered.</p>	
<b>6. Next meeting</b>		
6.1	<p>RH explains we will circulate the information as discussed. PEI will be due in October and shared by the Planning Inspectorate but Vattenfall will be in touch to ensure access to these documents.</p>	<b>ACTION: Circulate substation viewpoint location figures.</b>
<b>7. Summary of actions</b>		
7.1	<p><b>ACTION: ST circulate slides with minutes.</b></p> <p><b>ACTION: ST to send the indicative easement diagrams.</b></p>	

Attendee	Comment	Action
	<p><b>ACTION: JP update viewpoint list to provide viewpoints from Happisburgh Lighthouse and Church Tower.</b></p> <p><b>ACTION: ST share Method Statement with Peter Coe.</b></p> <p><b>ACTION: Interim planting option photomontage to be produced by JP for substation and cable relay station at 15 years after planting (for PEIR. 5 years after planting will also be included but in the ES).</b></p> <p><b>ACTION: Circulate substation viewpoint location figures.</b></p> <p><b>ACTION: CB to ask arboriculturalist to send over planting mix.</b></p>	

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