

# Norfolk Vanguard Offshore Wind Farm

# DCO Non- Material

# Change 2

Supporting Statement for increase in  
ducts and drills at Landfall

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

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## Glossary

BEIS*	Business, Energy and Industrial Strategy
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
DML	Deemed Marine Licence
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HE	Historic England
HGV	Heavy Goods Vehicles
HHW SAC	Haisborough, Hammond and Winterton Special Area of Conservation
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current HVAC
HVDC	High Voltage Direct Current
km	Kilometre
kV	Kilovolt
LAT	Lowest Astronomical Tide
MCA	Maritime and Coastguard Agency
MMO	Marine Management Organisation
MW	Megawatt
NB	Norfolk Boreas
NE	Natural England
NMC	Non-material Change
NV	Norfolk Vanguard
NVE	Norfolk Vanguard East
NVW	Norfolk Vanguard West
OWF	Offshore wind farm
SoS	Secretary of State
UXO	Unexploded Ordnance
WFD	Water Framework Directive
WTG	Wind Turbine Generator

\* BEIS was replaced by the Department for Energy Security and Net Zero (DESNZ) in 2023

## 1 INTRODUCTION

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### 1.1 Purpose of this document

1. A Development Consent Order (DCO) was granted by the Secretary of State (SoS) for Business, Energy and Industrial Strategy for the Norfolk Vanguard Offshore Wind Farm on 11 February 2022 and came into force on 05 March 2022, herein referred to as 'the DCO'. The DCO was subsequently amended by the Norfolk Vanguard Offshore Wind Farm Amendment Order 2022, which came into force on 29 September 2022 and removed the cap on the electrical export capacity of the wind farm.
2. The offshore wind farm (OWF) comprises two distinct sites, Norfolk Vanguard East (NVE) which is being developed by Norfolk Vanguard East Limited and Norfolk Vanguard West (NVW) which is being developed by Norfolk Vanguard Limited ('the OWF sites') located approximately 70km and 40km off the coast of Norfolk. Together Norfolk Vanguard East Limited and Norfolk Vanguard Limited are the 'Applicant' for this Non-Material Change.
3. Each OWF site will be connected to the shore by an offshore export cable which will comprise a positive and a negative cable bound together to form a single cable bundle. The two export cable bundles will be installed within the offshore cable corridor from the OWF sites to a landfall zone at Happisburgh South, Norfolk (the location of the landfall zone is displayed in Figure 2). From there, onshore cables will be ducted to transport power along an approximately 60km onshore cable route to the onshore project substation at Necton, Norfolk. The onshore project substation will contain two converter stations which will convert the exported power from High Voltage Direct Current (HVDC) to High Voltage Alternating Current (HVAC) and to 400kV (grid voltage) to connect into the existing Necton National Grid substation.
4. The Norfolk Vanguard DCO application assumed that, where the export cables were brought ashore through cable ducts, each cable bundle (one for NVE and one for NVW) would be housed within one single duct and therefore only two ducts would be required. However, as part of the detailed design process, it has been determined that the export cable bundle will need to be separated into two individual cables at an offshore location close to shore before being pulled through two separate ducts in order to make landfall (further detail is provided in section 1.2 and section 2). This will ensure the cables do not overheat. To facilitate this, a Non-Material Change (NMC) is being sought to amend the Order to increase the number of cable ducts at the landfall from two to four.
5. The ducts are to be installed under the cliff and beach at landfall using a method known as Horizontal Directional Drilling (HDD). In order to increase the number of



ducts at landfall it will also be necessary to increase the number of HDD reserve drills which can be used in the event of drill failure. Although not directly secured by the Norfolk Vanguard DCO, the assessment undertaken within the Environmental Statement (ES) assessed the impacts caused by a single reserve drill. As part of this NMC an assessment is completed to allow an increase from one reserve drill (as originally assessed) to two reserve drills (further information is provided in section 1.2).

6. This statement, which is provided in support of the NMC application, demonstrates that an increase in the number of ducts and drills at landfall would not result in any change to conclusions of the Environmental Impact Assessment (EIA) (see section 3.2) and the Habitats Regulations Assessment (HRA) (see section 3.3). It also demonstrates in section 3.2 and section 3.5 that, as there would be no change in significance of impacts there will be no change to the effects on local communities. In addition, as the works will be completed within the Order land no further compulsory acquisition powers will be required (see section 3.4).
7. Vattenfall Wind Power Ltd (the parent company of Norfolk Vanguard Limited and Norfolk Vanguard East Limited), is also developing Norfolk Boreas OWF, a 'sister project' to Norfolk Vanguard. Norfolk Boreas shares the landfall zone with Norfolk Vanguard as well as much of the offshore and onshore cable corridors and cable routes. Therefore, in order to minimise impacts, Norfolk Vanguard and Norfolk Boreas are being developed strategically by Vattenfall Wind Power Ltd. Norfolk Boreas Limited was granted consent for the Norfolk Boreas Offshore Wind Farm on 10 December 2021 and the order came into force on 1 January 2022. For clarity, no changes are proposed for the Norfolk Boreas project as that project will only have one export cable bundle and therefore already has sufficient ducts (two) and drills (three) within its consent to allow the positive and negative cables to be installed into separate ducts. The fact that Boreas will now only have one export cable bundle and not two as originally assessed within its ES means that impacts of that project (and therefore the cumulative effects of Norfolk Vanguard and Norfolk Boreas) are anticipated to be less than originally predicted.
8. The upper limit of many design parameters (for example the number of transition pits) have been secured within the DCO and supporting documents and therefore the design envelope is well defined. This document provides a summary, in section 2, of the parameters which are relevant to this proposed NMC.
9. The document then provides a review of the receptors assessed within the Norfolk Vanguard ES and considers whether there will be any changes in impact to that described within the original application as a result of the increase in number of ducts and drills at landfall. It also considers whether the proposed changes would

alter the conclusions of the HRA undertaken in respect of the DCO. Due to the localised nature of the proposed changes and the fact the technologies used to install the infrastructure are the same as that described within the ES no additional impacts have been identified.

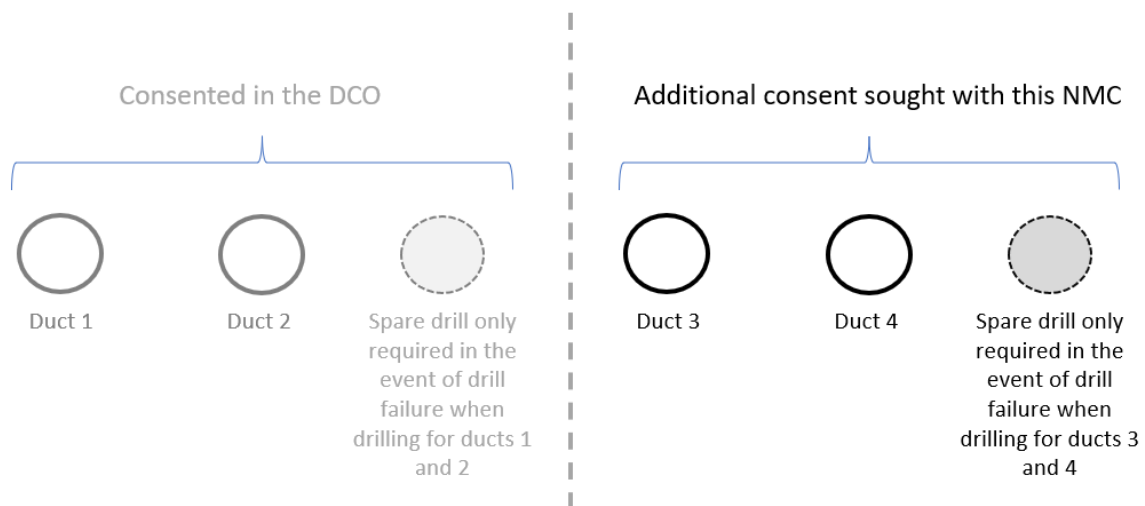
10. This document follows the advice and guidance outlined in the Planning Act 2008: Guidance on Changes to Development Consent Orders from the Department for Communities and Local Government (DCLG). The changes proposed are considered in light of the guidance at section 3.1 below.

## **1.2 Need for the Non-material Change**

11. The DCO grants consent for two sets of bundled marine cables, to transmit power generated within the OWF sites to shore. Each set of bundled cables will be laid within a single trench within the seabed. Since the DCO was granted in 2022 detailed design work has been ongoing to determine the specification of the marine cables. There will be one marine cable bundle for Norfolk Vanguard West and one for Norfolk Vanguard East. As described in the Norfolk Vanguard Environmental Statement (Norfolk Vanguard Limited 2018a), in order to bring the cables ashore, ducts (metal or plastic pipes within which the export cables are housed) will be installed under the cliff, south of Happisburgh, using a method of HDD.
12. As described in the Environmental Statement (ES) a 'long HDD' method will be used to avoid direct impacts on the cliff, beach, or intertidal areas. The landfall entry point for the ducts will be located at a sufficient distance back from the cliff to ensure that the infrastructure is not affected by natural coastal erosion and the exit point will be located offshore, east of the 5.5m depth contour and therefore the HDD and ducts will be up to 1,450m in length. The depth profile used for the HDD will be such that the drills will pass at a sufficient distance below the cliff edge to ensure that there will be no impact on the cliff, beach, or intertidal areas. As the geological materials through which the HDDs will pass are consolidated and would have sufficient strength to maintain their integrity the same principles and calculations apply whether two ducts are installed (as assumed in the original ES) or four ducts are installed (as proposed by this NMC).
13. As part of the detailed design work, modelling and testing of the type of marine cables that will be required has shown that due to a combination of factors including the ground conditions around the cable entry point, and the physical properties of the cables themselves, cables, if bundled within the ducts are likely to reach temperatures at which the insulating material will start to degrade. In order to avoid this, it will be necessary to separate the positive and the negative cable (which together form the bundle) and locate them in separate ducts at landfall (see Figure



- 2). With two marine cable bundles (one from Norfolk Vanguard East and one from Norfolk Vanguard West) being separated on approach to shore, four separate ducts will be required at landfall to house the separated cables. Requirement 16 (14)<sup>1</sup> of the DCO restricts the number of landfall ducts for the Vanguard OWF to two and therefore this NMC application is seeking to change the DCO to allow for up to four ducts to be installed.
14. As described in section 1.1 the ES assessed impacts associated with a third drill (termed a reserve drill) for the purposes of providing a contingency in the unlikely event of a drill failure. The number of reserve drills was not directly secured within the DCO however as this formed the basis of the design envelope for the ES, the proposed change to the number of reserve drills required has also been considered in this document. In order to increase the number of ducts from two to four a second reserve drill will be required (i.e., one reserve drill for every two ducts). This additional reserve drill would only be required in the event of a drill failure. Therefore, this supporting statement assesses the impacts associated with adding this additional drill as well as the two extra ducts described above. Figure 1 illustrates the infrastructure which is already consented by the DCO and what is being sought additionally as part of this NMC application.



**Figure 1 Representation of what is consented within the Norfolk Vanguard DCO and what is being sought through this NMC application**

15. The ES describes how the offshore bundled export cables would be installed within two trenches (one for the NVE offshore export cable bundle and one for the NVW offshore export cable bundle) and buried within the seabed. In order for the

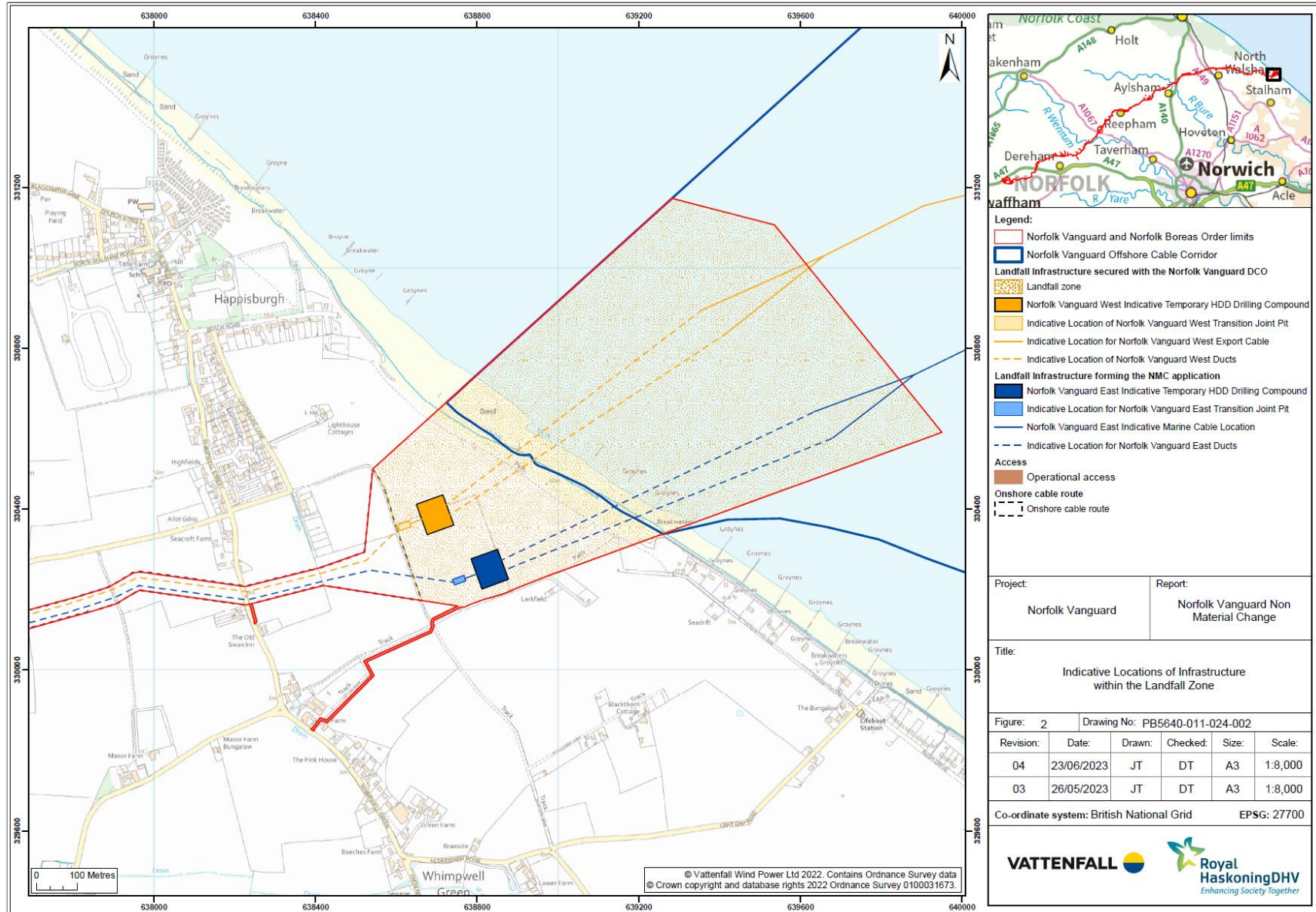
<sup>1</sup> Requirement 16 (14) of the Norfolk Vanguard DCO states that “The number of underground cable ducts to be installed at the landfall must not exceed two”

separate positive and negative cables to be pulled through separate ducts (as applied for within this NMC and described above) the cables would no longer be bundled on approach to the ducts allowing the cables to be buried in separate trenches. The separation point where the cables would no longer be bundled would be at a location between 500m and 750m to the east of where the cables enter the ducts as shown indicatively in Figure 2.

16. The methods used for burying the offshore cables have not changed from those described within the ES, however the need for permanent protection (in the form of concrete mattresses or rock protection) at the offshore exit point of the duct, which was anticipated within the ES is now not likely to be required. This is because the detailed design has shown that the permanent burial of the exit point and installed export cable is the preferred option. Temporary protection would however still be required during the time period between when duct installation is complete and when cable pull through operations start. This is required to stabilise the cable entry point and allow it to be relocated for cable pull through.
17. Although some additional trenching and burial of marine export cables will now be required due to the separation of the cable bundles (and this is assessed within section 3), this would not result in an increase in the overall maximum duration of cable installation activity assessed within the ES. This is due to the very short distances involved (up to 1.5km additional trenching to the maximum 200km total length of marine export cable trenching assessed in the ES).
18. Due to the fact that each landfall duct would contain a single cable rather than a bundle of cables, the diameter of the duct, and drill required to install all ducts, would reduce in size (from approximately 750mm in diameter to 600mm in diameter). There would still be an increase to the overall maximum volume of drill arisings (as assessed in section 3) as up to six drills at the smaller diameter amounts to more than three drills at the larger diameter).
19. Onshore, the methods used for establishing temporary drilling compounds for the long HDDs would remain as described within the ES. However, due to the increase in number of drills and ducts, the size of the compounds would increase by the dimensions presented in Table 1. With larger drilling compounds it will be necessary to import more material to the landfall site (such as aggregate for constructing the compounds) and export that same material following the drilling operation. Furthermore, due to the increase in number of ducts there will also be a greater amount of arisings to be removed from the landfall than previously anticipated in the DCO application. In order to ensure that this will not increase peak traffic movements, the programme of works at landfall would be extended from 20 weeks (as described within the ES) to 22 weeks. This is to allow two weeks to import all the

material required and two weeks to remove it rather than the one week for import and one week for removal assumed in the ES. The time allowed for drilling operations has not changed and would still be limited to 20 weeks duration as assessed within the ES.

20. The methods of installing the transition pits (where the offshore cables are connected to the onshore cables) is the same as that presented within the ES. The dimensions of the transition pits have changed, and these changes are presented in Table 1. The transition pits would be located outside of the temporary HDD drilling compound (see Figure 2 for indicative locations and maximum areas occupied by the infrastructure).



**Figure 2 Indicative locations of (and areas occupied by) Norfolk Vanguard infrastructure within the landfall zone**

## 2 DESIGN ENVELOPE

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### 2.1 Comparison of consented and proposed envelope parameters

21. A comparison of consented and proposed parameters relevant to this NMC application is provided in It should be noted that the proposed NMC only has the potential to affect parameters associated with the number of ducts and drills and does not affect any other parameters associated with other structures within the wind farms, offshore cable corridor, onshore cable route, onshore project substation or National Grid substation extension (and associated works).

22. Table 1 below. It should be noted that the proposed NMC only has the potential to affect parameters associated with the number of ducts and drills and does not affect any other parameters associated with other structures within the wind farms, offshore cable corridor, onshore cable route, onshore project substation or National Grid substation extension (and associated works).



**Table 1: Maximum landfall parameters for the consented envelope compared with the proposed envelope**

Row no.	Relevant parameter	Consented envelope		DCO/ DML reference	Proposed change
		ES Assumption	2022 DCO/ DML		
	<b>General</b>				
1	Area of Norfolk Vanguard offshore cable corridor	236km <sup>2</sup>	Secured through the Order Limits		No change
2	Area for onshore cable route	5.26km <sup>2</sup>	Secured through the Order Limits		No change
3	The number of underground cable ducts to be installed at the landfall	2	2	Requirement 16(18)	Increased to 4
	<b>Onshore</b>				
4	Number of temporary landfall compounds	2	NA	NA	No change
5	Area of each temporary landfall compound	3000m <sup>2</sup>	NA	NA	Increase to 5,600m <sup>2</sup> (no change required to DCO)
6	Number of reserve drills in case of failure	1	NA	NA	Increased to 2
7	Number of weeks allowed for drilling activity at landfall	20 weeks	NA	NA	No change
8	Number of transition pits	2	NA	NA	No change
9	Size of transition pit (length × width × depth)	15m × 10 × 5m	NA	NA	Changed to 25m × 5m × 3.5m
10	Peak daily traffic movements*	61	NA	NA	No change
	<b>Offshore (Export cable corridor)</b>				
11	Area of Horizontal Directional Drill (HDD) exit point cable protection. Concrete mattress, plus rock dump.	86m <sup>2</sup>	NA	NA	No change
12	Total area of disturbance in the offshore cable corridor.	6.10km <sup>2</sup>	NA	NA	Increased to 6.12km <sup>2</sup>
13	Area of disturbance within the Norfolk East WFD water body**	0.540km <sup>2</sup>	NA	NA	Increased to 0.585km <sup>2</sup>
14	The total length of export cables	400km	400km	Schedule 1, Condition 2	No change
15	Area of export cable protection	140,000m <sup>2</sup>	102,086m <sup>2</sup>	Schedule 1, Condition 2	No change

Row no.	Relevant parameter	Consented envelope		DCO/ DML reference	Proposed change
		ES Assumption	2022 DCO/ DML		
16	Volume of export cable protection	NA	59,836m <sup>3</sup>	Schedule 1, Condition 2	No change
17	Maximum Number of Vessel Movements during construction	1,800	NA	NA	No change
<b>Offshore wind farm sites (Array areas)</b>					
18	Maximum number of Turbines	200	158 (reduced to 145 by Norfolk Vanguard Amendment Order 2022)	Schedule 1 Requirement 3 (1)	No change
19	No more than two-thirds of the total number of wind turbine generators*** must be located in Norfolk Vanguard West			Schedule 1, Requirement 3 (1) (a)	No change
20	No more than one-half of the total number of wind turbine generators*** must be located in Norfolk Vanguard East.			Schedule 1, Requirement 3 (1) (b)	No change
21	Maximum rotor diameter	303m	303m	Schedule 1, Requirement 2(c)	No change
22	Maximum tip height	350m	350m	Schedule 1, Requirement 2 (2) (a)	No change
23	Minimum draught height	22m	35m for WTG below and including 14.6MW and 30m for WTG 14.7MW and above	Schedule 1, Requirement 2 (2) (e)	No change
<b>Turbine Foundations</b>					
24	Maximum seabed footprint area of a wind turbine foundation (excluding scour protection)	1,963m <sup>2</sup>	1,963m <sup>2</sup>	Schedule 9, Condition 4 (2)	No change

Row no.	Relevant parameter	Consented envelope		DCO/ DML reference	Proposed change
		ES Assumption	2022 DCO/ DML		
25	The total maximum amount of scour protection for the wind turbine generators, accommodation platform, meteorological masts, offshore electrical platforms and LIDAR measurement buoys		5,196,703m <sup>2</sup> and 25,983,515m <sup>3</sup> .	Schedule 1 Requirement 11	No change
26	Maximum amount of disposal material allowed that is associated with WTG	3,807,566m <sup>3</sup>	1,648,824m <sup>3</sup>	Schedule 9, Part 3 (1)(d)(i)	No change
27	Total maximum amount of disposal material allowed within the wind farm sites	39,895,132m <sup>3</sup>	37,736,390m <sup>3</sup>	Schedule 9, Part 3 (1)(d)	No change
28	Maximum total amount of foundation drill arisings allowed to be disposed of	400,624m <sup>3</sup>	400,624m <sup>3</sup>	Schedule 9, Part 3 (1)(f)	No change
29	Maximum total amount of scour protection for the offshore electrical platforms	20,000m <sup>2</sup> and 100,000m <sup>3</sup>	20,000m <sup>2</sup> and 100,000m <sup>3</sup>	Schedule 11, Condition 3(1)(b)	No change
30	Maximum Hammer energy for monopiles	5,000kJ	5,000kJ	Schedule 9, Condition 14(3)	No change

\* The daily traffic movements for import and removal of material from the landfall site have been split over two weeks rather than the one week assumed in the ES to remain within the peak daily traffic numbers

\*\*The North East Water body (GB650503520003) is designated under the Water Framework Directive and overlaps with the nearshore area within the offshore cable corridor. Changes associated with increasing the number of ducts will only have effects on the nearshore area of the offshore cable corridor.

\*\*\* rounded to the nearest whole number

### 3 MATERIALITY OF THE CHANGE

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#### 3.1 Background

23. There is no statutory definition of what constitutes a material or non-material change for the purposes of Schedule 6 of the Planning Act 2008 and Part 1 of the Infrastructure Planning (Changes to, and Revocation of, Development Consent Orders) Regulations 2011 (referred to as the 2011 Regulations). However, the Government has issued guidance on this point. Criteria for determining whether an amendment should be material or non-material is outlined in the Department for Communities and Local Government “Planning Act 2008: Guidance on Changes to Development Consent Orders” (December 2015). Paragraphs 9 -16 of this document sets out the four characteristics which act to provide an indication on whether a proposed change to a DCO is material or non-material. The following characteristics are stated to indicate that an amendment is more likely to be considered 'material'.
- *A change should be treated as material if it would require an updated Environmental Statement (from that at the time the original DCO was made) to take account of new, or materially different, likely significant effects on the environment).*
  - *A change is likely to be material if it would invoke a need for a Habitats Regulations Assessment. Similarly, the need for a new or additional licence in respect of European Protected Species is also likely to be indicative of a material change.*
  - *A change should be treated as material that would authorise the compulsory acquisition of any land, or an interest in or rights over land that was not authorised through the existing DCO.*
  - *The potential impact of the proposed changes on local people will also be a consideration in determining whether a change is material.*
24. Consideration of each of these four points is provided in sections 3.2 to 3.5 below.

#### 3.2 Consideration of the effects of the change on the Environmental Statement

25. This section considers the potential implications of increasing the number of landfall ducts and drills in relation to all topics assessed during the original EIA process.
26. Consideration has been given to the effects of the proposed change and whether these changes could result in new impacts or impacts of significance which differ to those identified in the existing ES as certified by the SoS under the 2022 Order.

27. It has been determined that, as the proposed changes do not introduce any new installation techniques or effect any new areas the changes do not give rise to any new impacts.
28. The assessment of how the proposed changes will affect the significance of those impacts identified in the ES is provided in Table 2 below.

**Table 2: Assessment of effects of changes in context of the Norfolk Vanguard ES**

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
<b>Offshore</b>		
Marine Geology, Oceanography and Physical Processes (Chapter 8)	<p>Impacts assessed within Chapter 8 which are of relevance to the Non-Material Change (NMC) are:</p> <ul style="list-style-type: none"> <li>• Changes in suspended sediment concentrations due to seabed preparation;</li> <li>• Changes in seabed level due to seabed levelling;</li> <li>• Indentations on the Seabed due to Installation Vessels;</li> </ul> <p>At the landfall, cables were assessed to be installed using long Horizontal Directional Drill (HDD) through two offshore ducts, with cable burial on the seaward side of the HDD exit point. The ducts would exit in water deeper than -5.5m LAT but within 1km of the onshore drilling location. The ends of the export cables would be pulled through the cable ducts from the landward side located greater than 150m landward of the cliff edge. Three drill holes were considered as the worst-case scenario, which included an allowance for one reserve drill. Therefore, a total of three drill holes (two of which would house ducts) was considered the worst case.</p> <p>An assumption was made that cable protection would only be used at the HDD exit point. This would entail one mattress (6m long, 3m wide and 0.3m high) plus rock dumping (5m long, 5m wide and 0.5m high) at each of the two exit points resulting in a footprint of 86m<sup>2</sup> and a volume of 35.8m<sup>3</sup> for the project. This means that cable protection in the shallow nearshore zone where sediment transport is most active along the coast would be limited to short lengths at each of the exit points.</p> <p>Given that there would be very limited protrusions from the seabed associated with cable protection at the exit points, there would be minimal effect on sediment transport and</p>	<p>The assessment for Marine Geology, Oceanography and Physical Processes is informed by parameters associated with the physical footprint and seabed material displaced or disposed of as a result of construction. The parameters which informed the Environmental Impact Assessment (EIA) are detailed in the following rows of Table 1: 1, 3, 11, 12, 14, 15, 16, 18, 24, 25, 26, 27, 28 and 29.</p> <p>In relation to impacts relating to seabed preparation, seabed levelling, sandwave levelling, changes to sediment transport regime and morphology, the NMC would result in a very small increase in the area of disturbance on approach to landfall of approximately 0.7%.</p> <p>The installation methodology and geographical area within which the infrastructure would be located would be the same (the use of a long HDD through which ducts would be installed with drill entry points set well back from the edge of the cliff) as described within the ES, but the worst-case number of ducts and drill holes would increase to four and six respectively (Table 1: 3 and 6). Detailed design work shows that cable protection around the ducts is likely to now be limited to temporary mattresses or grout bags with no rock dump required. Therefore, despite the increase in number of ducts there will be no overall increase in the total area of cable protection required. Furthermore, the detailed design work indicates that once the cables have been pulled through the ducts the exit points will be buried and the protection will be removed, however for the purposes of this assessment it will be assumed that cable protection could remain in place but overall, this would not occupy an area any larger than that assessed in the ES.</p> <p>Regardless of the number of ducts and drill holes, the long HDD would still pass at a sufficient depth below the coastal shore platform and cliff base to have no effect on coastal erosion. The material through which the larger number of HDDs would pass has the same geological make-up; it is consolidated and would have sufficient strength to maintain its</p>



ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
	<p>hence erosion and accretion at the coast.</p> <p>Ducts would be installed by the HDD at sufficient depth below the coastal shore platform and cliff base (including a significant margin for safety), to have no effect on coastal erosion during both construction and operation. Erosion would continue as a natural phenomenon driven by waves and subaerial processes, which would not be affected by the Norfolk Projects. The geological materials through which the HDD will pass, and through which the cables will ultimately be located, is consolidated and would have sufficient strength to maintain their integrity during the construction process and during operation. Also, the cable would be located at sufficient depth to account for shore platform steepening (downcutting) as cliff erosion progresses, and so would not become exposed during the life of the project. The impact assessment concluded that the Norfolk Vanguard long HDDs would have no impact on coastal erosion.</p> <p>Impacts to marine geology, oceanography and physical processes were all assessed to be of <b>minor adverse or negligible</b> significance.</p>	<p>integrity during the construction process and during operation. Although there would be an increase in the number of HDDs, the diameter of these drills would decrease (drill diameters of 750mm were considered within the ES for the original three drills and the maximum diameter for each of the six drills would be 500mm) and this would not change the stability of the cliff, and erosion would continue to be a natural process unaffected by the landfall infrastructure.</p> <p><b>Therefore, the proposed amendments will not result in any change to the impacts as described in the ES.</b></p>
<p>Marine water and sediment quality (Chapter 9)</p> <p>Note impacts on water bodies designated under the Water Framework Directive are assessed under the Water Resources and Flood Risk (Chapter 20) section below</p>	<p>Impacts assessed within Chapter 9 which are of relevance to the NMC are:</p> <ul style="list-style-type: none"> <li>• Deterioration in water quality due to increased suspended sediment concentrations; and</li> <li>• Deterioration in water quality due to re-suspension of sediment bound contaminants.</li> </ul> <p>In the nearshore environment, the potential for dispersion is limited and would approach 400mg/l. However, these plumes would be localised to within 1km of the release location and would persist for no longer than a few hours. Following cessation of activities, the plume would rapidly disperse.</p>	<p>The assessment for marine water and sediment quality is informed by parameters associated with the physical footprint and seabed material displaced or disposed of as a result of construction. The parameters which informed the E IA are detailed in the following rows of Table 1: 1, 3, 11, 12, 14, 15, 16, 18, 24, 25, 26, 27, 28 and 29.</p> <p>In reference to the proposed NMC, there would be no change in the technology or methods used for installation to those described within the Environmental Statement (ES). There would be a slight increase in the area disturbed (of approximately 0.7%) however this would not result in a significant increase in the quantities of sediment dispersed or dispersal time for any produced plumes.</p> <p><b>Therefore, the proposed amendments will not result in any change to</b></p>

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	Impacts to Marine water and sediment quality were all assessed to be of minor adverse or negligible significance.	<b>the impacts as described in the ES.</b>
Benthic and Intertidal Ecology (Chapter 10)	<p>Impacts assessed within Chapter 10 which are of relevance to the NMC are:</p> <ol style="list-style-type: none"> <li>1. Temporary habitat loss/disturbance</li> <li>2. Temporary increase in suspended sediment concentrations and associated sediment deposition</li> <li>3. Underwater noise and vibration</li> <li>4. Permanent loss of seabed habitat through the presence of seabed infrastructure</li> <li>5. Temporary seabed disturbances from maintenance operations</li> <li>6. Colonisation of cable protection/scour protection</li> <li>7. Electromagnetic Fields (EMF) from installed export cables</li> </ol> <p>As the landfall would make use of a long HDD and duct installation with an exit point in the subtidal zone beyond 5.5m LAT and approximately 1km from the onshore drilling location the ES predicted that there would be no impacts on the intertidal zone.</p> <p>No sensitive benthic features were identified within the nearshore subtidal area; the dominant biotope in this section of the offshore cable corridor is SS.SMx.CMx Cirralittoral mixed sediment.</p> <p>Impacts due to the physical disturbance caused by cable installation were deemed to be of minor adverse significance. This was due to receptors of a greater sensitivity, such as the HHW SAC, which are located further offshore with no sensitive features identified in the nearshore area and therefore within the impact range for HDD activity.</p> <p>Impacts from increased suspended sediment and smothering</p>	<p>The assessment for benthic and intertidal ecology is informed by parameters associated with the temporary and permanent physical disturbance and seabed material displaced or disposed of as a result of construction. The parameters which informed the Environmental Impact Assessment are detailed in the following rows of Table 1: 1, 3, 11, 12, 14, 15, 16, 18, 24, 25, 26, 27, 28 and 29.</p> <p>In reference to the proposed NMC, there would be an increase to the maximum area of temporary habitat loss from that assessed in the ES. However, this increase would be very small (approximately 0.7%) and would therefore not change the impact significance within the ES.</p> <p>The installation methodology and geographical area within which the infrastructure would be located would be the same as described within the ES, but the worst-case number of ducts and drill holes would increase to four and six respectively (Table 1: 3 and 6). Detailed design work shows that cable protection around the ducts is likely to now be limited to mattresses or grout bags with no rock dump required (as was assumed in the ES). Therefore, despite the increase in number of ducts there would be no overall increase in the total area of cable protection required. Furthermore, the detailed design work indicates that once the cables have been pulled through the ducts the exit points would be buried and the protection would be removed. However, for the purposes of this assessment it is assumed that cable protection could remain in place but overall, this would not occupy an area any larger than that assessed in the ES and therefore the impact of underwater noise and permanent habitat loss would remain unchanged.</p> <p>Due to the fact that the cables would separate on approach to the duct exit point, there would be a small increase in area of effect by EMF; however, the increase would again be less than 1% of the overall cable length and therefore would not result in a change in magnitude or significance of the impact.</p> <p><b>Therefore, the proposed amendments will not change the impact</b></p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
	<p>were assessed as being of minor adverse significance. The project would cause temporary increased suspended sediment levels in the nearshore, however these would likely to be within background levels and less than those experienced during storm conditions.</p> <p>Impacts relating to underwater noise and vibration were assessed as minor adverse significance within the ES, the main contributor to underwater noise was piling within the wind farm site. Impacts associated with UXO detonation were also included, however due to the one-off nature of a detonation compared with piling which may last several hours, UXO was deemed to contribute less to the magnitude of the impact.</p> <p>Impacts associated with permanent habitat loss were assessed as being of minor adverse significance, however this was mainly due to features of higher sensitivity being identified further offshore and the action of installing hard material on the seabed was assessed as being of negligible magnitude.</p> <p>Colonisation of foundations and cable and scour protection was assessed as being of minor adverse significance with the greater magnitude of effect occurring within the wind farm site. At the landfall any cable protection would likely be periodically covered with sediment and therefore unlikely to support new biological communities.</p> <p>Impacts of EMF were assessed as being of negligible significance due to the intention to bury cables within the seabed and therefore the range at which EMF could be detected would be very small.</p>	<p><b>conclusions stated in the ES.</b></p>
Fish and Shellfish Ecology (Chapter 11)	<p>Impacts assessed within Chapter 11 of relevance to the NMC are:</p> <ol style="list-style-type: none"> <li>1. Physical disturbance and temporary loss of seabed</li> </ol>	<p>The assessment for fish and shellfish is informed by parameters associated with the temporary and permanent physical disturbance and seabed material displaced or disposed of as a result of construction. The parameters which informed the EIA are detailed in the following rows of</p>

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	<p>habitat</p> <ol style="list-style-type: none"> <li>2. Increased suspended sediments and sediment re-deposition</li> <li>3. Underwater noise from other construction activities</li> <li>4. Underwater noise from UXO clearance</li> <li>5. Permanent loss of seabed habitat</li> <li>6. Introduction of hard substrate</li> <li>7. EMFs</li> </ol> <p>No sensitive features of fish or shellfish ecology were identified within the nearshore environment or along the majority of the offshore cable corridor. The seabed in the nearshore area was identified as circalittoral mixed sediment and, as with the rest of the offshore cable route, was found to be highly mobile making it unsuitable for fish which reside in the seabed such as sand eels and for fish which deposit their eggs on the seabed such as herring.</p> <p>The majority of fish species found in the offshore cable corridor area were highly mobile and would therefore be able to make use of suitable undisturbed areas in the vicinity of works. As a result, it was determined that impacts from physical disturbance, increased suspended sediment and underwater noise would all be of minor adverse significance.</p> <p>Due to the fact that noise sensitive features such as herring spawning grounds were not identified within the offshore cable corridor and acknowledging that impacts would occur at individual rather than at population levels impacts from UXO clearance were assessed as being of minor adverse significance.</p> <p>Due to the fact that the amount of infrastructure placed on the seabed (especially within the export cable corridor where this would be limited to cable protection at a few locations)</p>	<p>Table 1: 1, 3, 11, 12, 14, 15, 16, 18, 24, 25, 26, 27, 28 and 29. As discussed above in benthic ecology the overall area of temporary disturbance within the nearshore would increase by less than 1% from that assessed within the ES and therefore, there would be no increase in the significance of this impact. The worst-case number of potential UXO could also increase by a small amount, however this would not increase the magnitude enough to change the significance of disturbance or increased suspended sediment related impacts.</p> <p>The methods for installing the ducts and cable pulling would remain as described within the ES and therefore there would be no change in the significance of impacts associated with underwater noise. The drilling period is restricted to 20 weeks as described in the ES and therefore the duration of the most noise intensive works would not change.</p> <p>Detailed design work shows that cable protection around the ducts is likely to now be limited to mattresses or grout bags with no rock dump required. Therefore, despite the increase in number of ducts there will be no overall increase in the total area of cable protection required. Furthermore, the detailed design work indicates that once the cables have been pulled through the ducts the exit points would be buried and the protection would be removed. Therefore, there will be no increase in the amount of permanent habitat loss or introduced hard substrate.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>

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	<p>would be relatively small and the fact that the fish and shellfish species likely present use comparatively large areas for spawning, nursery grounds and for foraging, the impacts of introduction of hard substrate and loss of habitat were assessed as being of minor adverse significance.</p> <p>Based on the research available, the sensitivity of fish and shellfish species to EMFs was considered to be low and due to the intention to bury cables within the seabed therefore reducing the range at which EMF could be detected, impacts associated with EMF were assessed as being of minor adverse significance.</p>	
Marine Mammal Ecology (Chapter 12)	<p>Impacts assessed within Chapter 12 which are of relevance to the NMC are:</p> <ol style="list-style-type: none"> <li>1. Underwater UXO Clearance</li> <li>2. Behavioural impacts resulting from underwater noise during construction activities, other than piling</li> <li>3. Vessel underwater noise and disturbance</li> <li>4. Vessel interaction (collision)</li> </ol> <p>Taking into account the secured mitigation and due to the localised and short-term impact of UXO clearance the impact of UXO clearance was assessed to be of minor adverse significance.</p> <p>Due to the fact that less than 1% of the reference populations would be temporarily affected by underwater noise caused by activities other than piling this impact was assessed as being of minor adverse significance.</p> <p>As the range of predicted response to vessels is low and the fact that the impact would be temporary and intermittent the impact of vessel underwater noise and disturbance was assessed as being of minor adverse significance.</p>	<p>The assessment for marine mammals is informed by parameters associated with the temporary and permanent disturbance as a result of construction. The parameters which informed the EIA are detailed in the following rows of Table 1: 1, 3, 12, 15, 17, 18, 25, 27 and 30.</p> <p>As discussed above in benthic ecology the overall area of temporary disturbance within the nearshore would increase by less than 1% from that assessed within the ES and therefore, there would be no increase in the significance of this impact. The worst-case number of potential UXO detonations may also increase due to the increased area of disturbance however that would also be by less than 1% and therefore there would be no increase in significance.</p> <p>Furthermore, the methodology for installing the ducts and export cables and particularly the maximum number of vessel movements and numbers of vessels on site during construction and operation assessed within the ES would not increase as a result of the NMC.</p> <p>In addition, mitigation to reduce adverse effects on marine mammals is secured within the DCO (Schedules 9-12, Condition 14(f)) and would not change.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>

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	Due to the fact that the vessel speeds during construction will be very low allowing marine mammals to avoid possible collisions the impact was assessed as being of minor adverse significance.	
Offshore Ornithology (Chapter 13)	<p>Impacts assessed within Chapter 13 which are of relevance to the NMC are:</p> <ol style="list-style-type: none"> <li>1. Disturbance and displacement; and</li> <li>2. Indirect effects due to prey species displacement.</li> </ol> <p>The only impacts that are relevant to the nearshore area and therefore could be affected by the changes in design for offshore ornithology are disturbance and displacement from increased vessel activity and indirect effects as a result of displacement of prey species due to increased noise and disturbance to seabed. These were both determined to be impacts of negligible to minor significance.</p>	<p>There would be a small increase in the area of disturbance (by less than 1%) due to the additional drills and ducts at landfall, however the duration of the drilling activity would remain limited to 20 weeks and therefore the significance of the impact would not change.</p> <p>As there will be no change in significance of impacts to benthic species, or fish and shellfish as a result of the NMC (see Benthic and Intertidal Ecology (Chapter 10) and Fish and Shellfish Ecology (Chapter 11) rows above) there would be no change to indirect effects due to prey species displacement.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p> <p><i>It should be noted that Ornithological impacts relevant to this NMC are associated with the landfall and not the wind farm sites (array areas). Therefore, no assessment for ornithological impacts at the windfarm sites is required here.</i></p>
Commercial Fisheries (Chapter 14)	<p>Impacts assessed within Chapter 14 which are of relevance to the NMC are:</p> <ol style="list-style-type: none"> <li>1. Adverse impacts on commercially exploited fish and shellfish populations</li> <li>2. Temporary loss or restricted access to traditional grounds</li> <li>3. Displacement of fishing activity into other areas</li> <li>4. Increased steaming times to fishing grounds</li> <li>5. Interference with fishing activities</li> <li>6. Safety issues for fishing vessels</li> <li>7. Obstacles on the seabed</li> </ol> <p>The ES identified that vessels which fish the inshore areas</p>	<p>The assessment for commercial fisheries is informed by parameters associated with the location and quantity of infrastructure installed, the installation methods and interactions with project vessels. The parameters which informed the EIA are detailed in the following rows of Table 1: 1, 3, 11, 12, 14, 15, 17, 19, 20, 23, 24, 25, 27, 28 and 30. It should be noted that since the DCO application was made the area occupied by infrastructure has been greatly reduced due to the fact that the maximum number of turbines has been reduced from 200 to 145. This also has the benefit of reducing the length of array cables and the area from which commercial fisheries could be displaced from.</p> <p>The NMC will only affect the nearshore area (within 2km of the coast). As specified within the ES, activity in the nearshore areas is mainly potting for lobster, edible crab and whelk. As the area of disturbance</p>



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	<p>affected by the Norfolk projects are limited to UK vessels which operate from beach launches at Sea Palling, Caister, Cromer and the ports of Lowestoft and Great Yarmouth. Activity in the nearshore areas is potting for lobster, edible crabs and whelks with netting and long-lining for fish species also taking place, however at much lower levels. Therefore, impacts were assessed as being of minor or negligible significance.</p>	<p>would only increase by less than 1% as a result of the NMC there will be no change in the significance of impacts on benthic species or fish and shellfish species (see Benthic and Intertidal Ecology (Chapter 10) and Fish and Shellfish Ecology (Chapter 11) rows above). Therefore, there would not be a change in significance of impacts on commercially exploited fish and shellfish populations.</p> <p>As the ES assessed for displacement from the entire export cable corridor and all of the new proposed offshore works would be undertaken within the offshore cable corridor this would not represent a change to the impact.</p> <p>Due to the location of the landfall area next to the coast, it would not interfere with any likely fishing vessel steaming routes and therefore the increase in number of ducts would not affect steaming times.</p> <p>With an increase in the number of ducts from 2 to 4 there would be an increase in the number of locations where temporary infrastructure would be located on the seabed (at the exit locations of the ducts which will be located between 750 and 1000m from the coast), these would have the potential to interfere with any fishing activity occurring in that area. Detailed design work shows that cable protection around the ducts is likely to now be limited to mattresses or grout bags with no rock dump now required. Therefore, despite the increase in number of ducts there will be no overall increase in the total area of cable protection (obstacles on the seabed) required. Furthermore, the detailed design work indicates that once the cables have been pulled through the ducts the exit points would be buried and the protection would be removed. Therefore, the impact would change from permanent as assumed within the ES to temporary. The mitigation described within the ES will be followed and all items placed on the seabed will be marked on nautical charts, with the MMO notified within 5 days of the activity occurring. Therefore, the risk of snagging gear would remain "Within acceptable limits".</p> <p><b>In conclusion, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
Shipping and Navigation (Chapter 15)	<p>The change proposed by the NMC would not change the assessments of impacts to Shipping and Navigation as shipping activity does not occur in the nearshore area at landfall. Furthermore, any protection placed around the HDD exit points would be required to be within the safe limits stipulated for navigation (i.e., no reduction of navigable water depths by more than 5%). Therefore, the magnitude of any impact would not increase.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>	
Aviation and Radar (Chapter 16)	<p>The change proposed by the NMC would not alter the assessments of impacts to Aviation and Radar in any way as there is no change to the wind farm site or the turbine array area. Therefore, this has not been considered further.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>	
Offshore and Intertidal Archaeology and Cultural Heritage (Chapter 17)	<p>Impacts assessed within Chapter 17 which are of relevance to the NMC are:</p> <ol style="list-style-type: none"> <li>1. Direct impact to known heritage assets</li> <li>2. Direct impact to potential heritage assets</li> <li>3. Indirect impact to heritage assets from changes to physical processes</li> <li>4. Impacts to the setting of heritage assets and historic seascape character</li> <li>5. Impacts to site preservation conditions from drilling fluid breakout</li> <li>6. Impacts to site preservation conditions from heat loss from installed cables</li> </ol> <p>The landfall and nearshore areas at Happisburgh are particularly sensitive as they have high potential for palaeolithic material of international importance to be present therefore significant work was undertaken within the ES to assess the magnitude of potential impacts and apply the necessary mitigation to ensure these impacts were reduced to minor significance or below (in EIA terms).</p>	<p>The assessment for Offshore and Intertidal Archaeology and Cultural Heritage is informed by parameters associated with permanent disturbance as a result of construction. The parameters which informed the EIA are detailed in the following rows of Table 1: 1, 3, 11, 12, 15, 18, 24 and 25.</p> <p>In reference to the proposed NMC, as the overall area affected by disturbance will only increase by a very small amount (less than 1%) from that assessed within the ES, the significance of the impact on archaeological features would not change.</p> <p>The increase in the number of ducts and associated drills as a result of the NMC would increase the risk of impacts interaction with unknown archaeological features. However, with the mitigation described within the ES and due to the distance from shore of the HDD exit points and the depth of bore beneath the cliff this is likely to remain of negligible significance as reported in the ES.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Infrastructure and Other Users (Chapter 18)	<p>The change proposed in the NMC would not alter the assessments of impacts to Infrastructure and Other Users as there are no assets within the offshore area of the NMC, i.e., the nearshore area at landfall.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>	

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<b>Onshore</b>		
Ground Conditions and Contamination (Chapter 19)	<p>Impacts assessed within Chapter 19 which are of relevance to the NMC are those relating to the principal aquifer within which the Landfall is located and impact to the coastline. These were assessed as follows within the ES.</p> <p>The principal aquifer which underlies the superficial deposits at the landfall is considered to be of high vulnerability and classified as a receptor of high sensitivity.</p> <p>Direct impacts to the principal aquifer may occur from deep ground workings related to HDD operations. There is potential for drilling fluid to leak along the drill path, or from the immediate area of the mud pits or tanks which could cause contamination of groundwater. The impacts are predicted to be of local spatial extent and of intermittent occurrence therefore the magnitude is considered to be low, representing a potential moderate adverse impact. With agreed mitigation for the protection of groundwater, secured through the DCO this impact was assessed to be of minor adverse significance.</p> <p>The HDD is secured beneath the coastal shore platform and the base of the cliff at sufficient depth and the material through which the HDD would pass is consolidated and would have sufficient strength to maintain its integrity during construction and operation. As such the assessment concluded that the integrity of the geological materials and the depth of burial of the cable meant that there would be <b>no impact</b> on coastal erosion during construction or operation.</p>	<p>Up to six drills may be undertaken at the landfall (for 4 ducts plus 2 reserve drills, if required) as a result of the NMC, where previously there were up to three drills (for 2 ducts plus 1 reserve drill). Six drills would still represent a low magnitude of effect on a high sensitivity receptor (the principal aquifer), which, with the agreed mitigation, represents an impact of minor adverse significance, i.e. an impact no greater than that assessed in the original application, and there would be no requirement for additional mitigation over and above that already secured.</p> <p>The geological materials remain consolidated and with sufficient strength to maintain the integrity of the ground formation. The long HDD would still pass at a sufficient depth below the coastal shore platform and cliff base to have no impact on coastal erosion regardless of an increased number of ducts and drill holes.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Water Resources and Flood Risk (Chapter 20) and <u>Water Framework Directive Compliance Assessment</u> (Appendix 20.2)	<p>Impacts assessed within Chapter 20 which relate to this NMC application are those associated with surface catchments and onshore and nearshore waterbodies. These were assessed as follows within the ES.</p> <p>The <b>onshore</b> landfall works are located within the New Cut</p>	<p>As a result of the proposed NMC, the <b>onshore</b> works at the two landfall compounds and transition pits would represent an area of disturbed ground (and potential area for sediment generation) of 1.3ha, which represents 0.6% of the overall sub-catchment catchment size. Whilst there is an increase (of 0.3%) in the total area of the New Cut sub-catchment affected this still corresponds to a negligible magnitude of</p>

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	<p>sub-catchment (part of the wider River Bure catchment). Works at the landfall compound were assessed as an area of disturbed ground (and potential area for sediment generation) of 0.6ha, which represents 0.3% of the overall sub-catchment catchment size. This was assessed as being a negligible magnitude of effect on a high sensitivity receptor, which represents an impact of minor adverse significance.</p> <p><u>Water Framework Directive Compliance Assessment</u></p> <p>The <b>offshore</b> landfall works are located within the Norfolk East (offshore) water body. The offshore works were assessed as an area of disturbance of 0.54km<sup>2</sup> which represents 0.26% of the overall area of the water body. This was assessed as being a negligible magnitude of effect on a medium sensitive receptor, which represents an impact of minor adverse significance</p>	<p>effect on a high sensitivity receptor, which represents an impact of minor adverse significance, i.e., an impact no greater than that assessed in the original application.</p> <p><u>Water Framework Directive Compliance Assessment</u></p> <p>As a result of the need to separate the bundled cables at a distance of up to 750m from the HDD exit point the <b>offshore</b> landfall works would cause an increase in area of disturbance from 0.54km<sup>2</sup> to 0.59km<sup>2</sup> which represents 0.28% of the overall area of the water body. Whilst there is an increase in the total area of the Norfolk East (offshore) water body affected (of 0.02%) this still corresponds to a negligible magnitude of effect on a medium sensitive receptor, which represents an impact of minor adverse significance, i.e. an impact no greater than that assessed in the original application.</p> <p>The onshore works associated with the proposed NMC are not located within any onshore WFD water body or defined catchment and therefore would not affect any waterbody designated under the WFD.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Land Use and Agriculture (Chapter 21)	<p>Impacts assessed within Chapter 21 which relate to the NMC are those related to land take in the landfall zone, these were assessed as follows.</p> <p><b>Construction</b></p> <p>Up to 0.6ha (2 x 50m x 60m compound) of Grade 1 agricultural land (highest quality) will be temporarily lost for the duration of the landfall construction phase for the project (which equates to approximately 36 weeks including: up to 20 weeks for duct installation followed by up to 16 weeks for cable pulling over a period which could be up to four years). The assessment was based on the footprint of the onshore cable installation, including landfall (105ha) upon the whole agricultural resource along the cable route (assessed as high</p>	<p>The proposed NMC would give rise to the following:</p> <p><b>Construction</b></p> <p>Up to 1.3ha (2 x 80m x 70m compounds and 2 x 50m x 20m transition pit compounds) of Grade 1 agricultural land (highest quality) would be temporarily lost for the duration of the construction phase (which equates to approximately 38 weeks (increase of 2 weeks) including: 2 weeks for site preparation and demobilisation 20 weeks for duct installation and up to 16 weeks for cable pulling over a period of approximately four years).</p> <p>Whilst the additional landfall compound and transition pit size represents an increase in the area disturbed, it remains within the overall potential footprint of the works assessed (105ha).</p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
	<p>sensitivity).</p> <p><b>Operation</b></p> <p>Up to 0.015ha (2 x 15m x 10m) of arable land will be permanently lost representing the operational easement at the transition pit.</p> <p>The assessment was based on the footprint of all the permanent land take along the onshore cable route, including link boxes, joint bays and transition pits (<b>0.6775ha</b>).</p> <p>Prior to additional mitigation, the greatest magnitude of effect arising from the onshore infrastructure is low, as the total land take covered by the onshore project area accounts for 0.05% of county agricultural resource, on a receptor with an at worst high sensitivity.</p> <p>This was assessed as being of moderate adverse significance, which was reduced to a minor adverse significance with agreed mitigation which is secured through the DCO.</p>	<p>As such, the impact associated with the proposed amendment would be no greater than that assessed in the original application, and there would be no requirement for additional mitigation over and above that already secured in the original application.</p> <p><b>Operation</b></p> <p>Up to 0.025ha (2 x 25m x 5m) of arable land would be permanently lost representing the operational easement at the two joint transition pits.</p> <p>The proposed change would represent a small increase to the overall footprint of the permanent land take from 0.6775ha to 0.6875ha (a 1.5% increase).</p> <p>Prior to additional mitigation, the greatest magnitude of effect arising from the onshore infrastructure remains low, as the total land take covered by the onshore project area accounts for 0.05% of county agricultural resource, on a receptor with an at worst of high sensitivity.</p> <p>The impact significance is therefore predicted to be moderate adverse without mitigation and minor adverse with mitigation, i.e., an impact no greater than that assessed in the original application, and there would be no requirement for additional mitigation over and above that already secured in the original application.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Onshore Ecology (Chapter 22)	<p>Impacts assessed within Chapter 22 which relate to the NMC are those which would result in disturbance (it should be noted that there will be no permanent habitat loss at landfall as a result of the NMC) and this was assessed as follows in the ES.</p> <p>Up to 0.6ha (2 x 50m x 60m compound) of arable land will be temporarily lost for the duration of the construction at landfall (which equates to approximately 36 weeks including: up to 20 weeks for duct installation followed by up to 16 weeks for cable pulling over approximately four years).</p> <p>The habitat affected would be of low ecological value due to</p>	<p>The proposed NMC would lead to an increase in the area temporarily impacted at landfall compared to the original assessment and there would also be a small increase in the maximum duration for the works of 2 weeks. Up to 1.3ha (2 x 80m x 70m compounds and 2 x 50m x 20m transition pit compounds) of arable land would be temporarily lost for the duration of the construction at landfall (which equates to approximately 38 weeks including: 2 weeks for site preparation and demobilisation 20 weeks for duct installation and up to 16 weeks for cable pulling over a period of approximately four years).</p> <p>However, due to the low ecological value of habitats and lack of protected species, impacts associated with the proposed change would</p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
	the homogeneity of the habitat as well as farming practices and the presence of insecticides and herbicides within the crops; as such the habitat is of negligible importance and given the extent of habitat in the surrounding area the magnitude of effect was assessed as negligible. No protected species were recorded within the potential zone of influence at the landfall. Overall, the impact on ecological receptors at the landfall was assessed as negligible significance.	be no greater than that assessed in the original application which was that impacts would be negligible significance.  <b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b>
Onshore Ornithology (Chapter 23)	<p>Impacts assessed within Chapter 23 which relate to the NMC are those which would result in temporary habitat loss and disturbance of birds (it should be noted that there will be no permanent habitat loss at landfall), and this was assessed as follows in the ES.</p> <p>Bird species in the vicinity of the landfall have been identified in numbers of negligible to medium importance. Up to 0.6ha (2 x 50m x 60m compound) of arable land will be temporarily lost for the duration of the construction phase for the project (which equates to approximately 36 weeks including: up to 20 weeks for duct installation followed by up to 16 weeks for cable pulling over approximately four years).</p> <p>This represents a low magnitude of effect in relation to temporary visual, noise and light disturbance of bird species utilising arable or coastal habitats, which represents an impact of minor adverse significance.</p>	<p>The proposed NMC would lead to a small increase in the area temporarily impacted at the landfall compared to the original assessment and an increase of 2 weeks duration for the works. Up to 1.3ha (2 x 80m x 70m compounds and 2 x 50m x 20m transition pit compounds) of arable land would be temporarily lost for the duration of the construction at landfall (which equates to approximately 38 weeks including: 2 weeks for site preparation and demobilisation, 20 weeks for duct installation and up to 16 weeks for cable pulling over a period of approximately four years).</p> <p>These changes would not increase the magnitude of effect from low and as such the impact would remain of minor adverse significance, i.e. an impact no greater than that assessed in the original application, and there would be no requirement for additional mitigation over and above that already secured in the original application.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Traffic and Transport (Chapter 24)	<p>Impacts assessed in Chapter 24 during of construction traffic at the landfall assumed a 20-week programme with a maximum of one compound in operation at any one time. Peak construction traffic occurs in week 1 (61 two-way daily HGV movements associated with mobilisation) and week 20 (61 two-way daily HGV movements associated with demobilisation).</p> <p>Impacts related to severance, pedestrian amenity, driver delay and road safety were all assessed as negligible to minor</p>	<p>The proposed NMC increases the maximum size of landfall compounds, and it has been assumed as a worst case that both compounds would be constructed at the same time. The programme for operation of the temporary landfall compounds would be extended from 20 weeks as described in the ES to 22 weeks. This is to allow an additional week for the compound construction and an additional week for demobilisation. As a result, peak activity during construction and demobilisation would be split over two weeks rather than occurring in one week as was assessed within the original ES.</p>



ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
	<p>adverse significance for road links relevant to the landfall works.</p>	<p>The peak construction traffic would be spread over weeks 1 and 2 during site preparation, and over weeks 21 and 22 during demobilisation. This would result in 48 two-way daily HGV movements during weeks 1 and 2 (site preparation) and weeks 21 and 22 (demobilisation) of the landfall construction programme.</p> <p>This decrease from 61 to 48 two-way movements a day would not result in a change to the magnitude of effect originally assessed for traffic impacts. Impacts related to: severance, pedestrian amenity, driver delay and road safety would remain negligible to minor adverse significance for all road links relevant to the landfall works, i.e. an impact no greater than that assessed in the original application, and there would be no requirement for additional mitigation over and above that already secured in the original application.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Noise and Vibration (Chapter 25)	<p>Impacts assessed within Chapter 25 which relate to the NMC are those associated with drilling activity due to the fact that the number of drilling rigs in concurrent operation at landfall is the only operation that would change. All other aspects relating to noise, such as construction methodology, traffic routing, demobilisation and cable pulling at landfall would remain the same as assessed within the ES.</p> <p>The worst-case scenario assumed in the ES was that only one drilling rig would be in operation at any one time within the landfall zone. This assessment concluded that there would be a negligible impact on receptors at the landfall during the daytime, evening and weekends. A minor to major adverse potential impact was identified at the closest receptor (LFR2H) during night time construction (see section 25.2.1 of the Appendix 25 of the ES). However, with the enhanced mitigation at this receptor, secured under the DCO, the residual impact was assessed to be reduced to negligible.</p>	<p>The proposed NMC assumes as a worst case that two drilling rigs would be operating at the same time. The Norfolk Vanguard ES did not undertake an assessment of two drilling rigs in concurrent operation, however the Norfolk Boreas ES (Norfolk Boreas Limited, 2019) did as part of its cumulative assessment with Norfolk Vanguard.</p> <p>Regardless of whether one or two drilling rigs are operating at the same time the enhanced mitigation measures secured within the Norfolk Vanguard (and Norfolk Boreas) DCO would ensure that the drilling noise is reduced to level which would result in impacts of no greater than negligible significance.</p> <p>The Norfolk Boreas cumulative assessment, which is only mentioned here for illustrative purposes, found that noise levels at the landfall receptors were judged to be of negligible impact during daytime, evening and weekends and that during the night time reference period a minor adverse impact was identified at the closet receptor. However, with the implementation of enhanced mitigation measures this was assessed to reduce impacts to negligible.</p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
		<p>With two drill rigs working concurrently as would be the case with this NMC the impact would be the same as that assessed in the cumulative assessment for Norfolk Boreas, and with the application of the enhanced mitigation already secured through the DCO the impacts would remain as negligible, and therefore be no worse than that assessed in the ES for the original application.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Air Quality (Chapter 26)	<p>The assessments in Chapter 26 were based on the footprint of the onshore cable installation, including landfall (105ha) and the potential for dust generation associated with earthworks at that scale.</p> <p>With the implementation of the appropriate mitigation measures, in addition to embedded mitigation measures, the residual impacts from construction were assessed to be not significant.</p>	<p>Whilst the increase in size of landfall compound represents an increase in the area disturbed, it remains within the overall potential footprint of the works assessed (105ha). The equipment and techniques for construction would be no different from those described within the ES.</p> <p>As such, the impact associated with the proposed amendment would be no greater than that assessed in the original application, and there would be no requirement for additional mitigation over and above that already secured in the original application.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>
Human Health (Chapter 27)	<p>Population health was assessed in Chapter 27 in relation to changes in health outcomes associated with disruption of, or reduced environmental quality (noise, dust, air quality and views). Overall, the assessment of health impacts at the landfall were assessed as negligible for the general population and negligible for vulnerable groups.</p>	<p>The increase in the landfall compound works programme from 20 weeks to 22 weeks increases the duration of the visual effects at the landfall but, these would still be described as significant but short-term. The increase in drilling rigs in concurrent operation from one to two, would be mitigated by the enhanced measures already secured through the DCO and therefore impacts would remain as negligible, and be no worse than that assessed in the ES.</p> <p>In relation to health of the general population, and vulnerable groups, it is not anticipated that the proposed changes would lead to an increase in the impacts reported in the original assessment. As such, there would be no change to the previously reported findings.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
Onshore Archaeology and Cultural Heritage (Chapter 28)	<p>The assessment in Chapter 28 identified that construction activities in the landfall area that have the potential to directly impact buried archaeological remains are those associated with HDD works (up to a maximum of three onshore drills), the excavation of the transition pit (to be sited within the landfall compounds within the landfall compound zone), and groundworks associated with the HDD compound area and associated access route.</p> <p>The landfall compound zone intersects a small number of potential linear features, extensive crop-marked multi period landscape, field trackways, and ditches.</p> <p>The ES concluded that in the absence of mitigation, all direct impacts to areas of possible archaeological interest at the landfall could result in a minor to moderate adverse impact significance, based upon a worst-case assumption. However, with the application of site-specific additional mitigation measures (where required), it was anticipated that such impacts could be reduced to residual levels considered non-significant in EIA terms.</p>	<p>The new project envelope remains wholly within the landfall compound zone previously assessed for onshore archaeology and cultural heritage (Figure 2) and the proposal does not affect known buried heritage assets or any of the receptors assessed in the heritage settings assessment to any greater extent than previously assessed, i.e. impacts would be no greater than that assessed in the original applications.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES</b></p>
Landscape and Visual Impact (Chapter 29)	<p>Within Chapter 29 the impacts assessed at landfall (and therefore relevant to this NMC) during the construction phase included the following features of the construction process:</p> <ul style="list-style-type: none"> <li>• The effect on the landscape element of agricultural land owing to the 6,000m<sup>2</sup> (2 x 60m x 50m) surfaced landfall compound, the 150m<sup>2</sup> (15m x 10m) transition pit and the temporary 6m wide running track connecting to Whimpwell Street.</li> <li>• The effect on landscape character and visual amenity owing to the activity associated with the excavation and construction of the two transition pits, HDD drilling, pulling through of cables and construction of temporary running track.</li> </ul>	<p>The proposed change would result in an increase in the area subjected to construction activities due to an increase in the overall size of compounds from 6,000m to 13,200m. In addition, it could lead to a small increase in the total length of time the construction works would take place from 20 weeks to up to 22 weeks in total.</p> <p>Whilst the increase in the size of compounds represents a relative increase in the working areas affected, these compounds remain wholly within the previously assessed landfall compound zone. As such, the effect would remain localised to the same stretch of Coastal Path.</p> <p>The increase in the duration of the works from 20 weeks up to 22 weeks in total would still be considered a short-term effect.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES</b></p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
	<ul style="list-style-type: none"> <li>The duration of an indicative 20-week construction period for duct installation and up to 10 weeks for cable pulling.</li> </ul> <p>The impacts were assessed as not significant with the exception of a short term and reversible localised significant effect on a short stretch of Coastal Path, which would reduce to not significant post-construction.</p>	
Tourism and Recreation (Chapter 30)	<p>Impacts assessed within Chapter 30 which relate to the NMC are those which would result in impacts on blue flag beaches and tourist and recreation receptors.</p> <p><b>Blue flag beaches</b></p> <p>The worst-case scenario changes in suspended sediment concentrations were predicted to be low in magnitude and the sensitivity of the water quality in the offshore project area was considered to be low. Baseline conditions of suspended sediment concentrations were expected to return to normal rapidly following cessation of activity and therefore any impact was assessed only to be present during the installation process. Therefore, the overall worst-case impact was predicted to be at worst minor adverse.</p> <p><b>Tourist and recreation receptors</b></p> <p>The assessment was based on:</p> <ul style="list-style-type: none"> <li>A 20-week maximum construction period</li> <li>No significant construction noise impacts at the nearest receptors</li> <li>No visual impacts greater than short-term</li> </ul> <p>The impact to tourism and recreation receptors was assessed to be localised, short term and reversible, representing an impact of minor adverse significance.</p>	<p><b>Blue flag beaches</b></p> <p>In reference to the proposed NMC, there would be no significant increase in the quantities of sediment dispersed or dispersal time for any produced plumes (see physical processes assessment above). There would also be no change in the installation methods from those previously assessed within the ES. As a result, there would be no change to the findings of the ES (i.e. minor adverse).</p> <p><b>Tourist and recreation receptors</b></p> <p>The proposed change would increase the works programme from 20 weeks to 22 weeks which has the potential to marginally increase the duration of the visual effects at the landfall, however these would still be considered significant but short-term.</p> <p>There would be an increase in the number of concurrent drilling operations (from one to two) but with the application of the enhanced mitigation already secured through the DCO the impacts would remain as negligible, and therefore be no worse than that assessed in the ES (see the noise and vibration assessment above). As such the impacts to tourism and recreation receptions remain localised, short-term and reversible, representing an impact of minor adverse significance.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>

ES Topic	Impacts described in ES Chapter	Assessment of change in impact significance due to the NMC
Socio-economics (Chapter 31)	<p>In Chapter 31 impacts to community infrastructure and the tourism economy related to:</p> <ul style="list-style-type: none"> <li>• Traffic delays</li> <li>• Construction noise and dust</li> <li>• Visual impacts</li> </ul> <p>The overall sensitivity of community infrastructure and tourism economy was assessed to be medium and the overall magnitude of effect was assessed to be negligible to low. The impact on community infrastructure was therefore assessed to be of minor adverse significance.</p>	<p>The proposed NMC would require a greater volume of material to be delivered to and removed from the landfall area. However, because the construction programme at landfall would be extended from 20 weeks to 22 weeks (note the drilling activity itself would still be undertaken within 20 weeks as assumed in the original application) the increase in two-way HGV movements would remain within the peak previously assessed which would result in no change in the significance of impacts to the local road network.</p> <p>The proposed change would increase the works programme from 20 weeks to 22 weeks which has the potential to increase the duration of visual effects at the landfall, however these would still be considered significant but short-term.</p> <p>The increase in the number of concurrent drilling operations (from one to two) has the potential to increase construction noise impacts at the nearest noise sensitive receptors, however this increase would not result in a change in the significance of the impact which would remain negligible (see the noise and vibration assessment above).</p> <p>Therefore, in relation to community infrastructure and the tourism economy it is not anticipated that the proposed change would lead to an increase in the magnitude of effect greater than low or negligible that was reported in the original assessments. As such, there would be no change to the previously reported findings of minor adverse significance.</p> <p><b>Therefore, the proposed NMC will not change the impact conclusions stated in the ES.</b></p>

### 3.3 Consideration of the effects of the change on HRA

29. As stated in section 3.1 *"A change is likely to be material if it would invoke a need for a Habitats Regulations Assessment"*.
30. The landfall area is not located within or adjacent to any terrestrial UK National Site Network protected areas and therefore there are no pathways for the changes described within this NMC to affect the onshore network.
31. The landfall zone does overlap with the Southern North Sea SAC which is designated for harbour porpoise and the Greater Wash SPA which is designated for six seabird species. As demonstrated in Table 2 there would be no change to impacts on marine mammals (see the Marine Mammal Ecology (Chapter 12) row within the table) or seabird bird species (see the Offshore Ornithology (Chapter 13) row within the table) and therefore there would be no change in the effects on marine UK National Site Network protected areas.
32. Therefore, the amendment does not give rise to any effects beyond those already assessed within the HRA.

### 3.4 Consideration of the effects of the change on land rights

33. As stated in section 3.1 *"A change should be treated as material that would authorise the compulsory acquisition of any land, or an interest in or rights over land that was not authorised through the existing DCO."*
34. The proposed change applies to activities being undertaken within the Order land. No additional land is required as a result of the proposed changes and no changes to land rights result from the proposed changes. Therefore, the Applicant is not seeking any changes to the compulsory acquisition powers secured within the DCO.

### 3.5 Consideration of the effects of the change on local people.

35. As stated in section 3.1 *"The potential impact of the proposed changes on local people will also be a consideration in determining whether a change is material."*
36. Section 2.1 states that the proposed NMC only has the potential to affect parameters associated with the number of ducts and drills, and therefore effects are limited to the Landfall zone (Figure 2). The changes do not affect the remainder of the offshore cable corridor, onshore cable route, onshore project substation or National Grid substation extension (and associated works). The works will take two weeks longer than proposed in the original ES however the drilling activity itself will occur over the same time duration (20 weeks) as originally assessed. Although it is proposed that two drilling rigs may now operate at the same time the effects would

be mitigated by using the measures described within the ES as secured in the DCO through the Outline Code of Construction Practice and therefore would have no greater impact than that assessed within the original ES.

37. It should be noted also that due to the use of the long HDD there will be no works occurring on the beach at landfall. This would mean that access to the beach for the public would be maintained and therefore there would be no change from the impacts assessed in the original ES.
38. Furthermore, as discussed in section 3.2 there will be no changes in impact significance regarding commercial fisheries and shipping and navigation and therefore the proposed amendment will not affect local offshore stakeholders.
39. The conclusions provided in Table 2 are that there would be no change in significance of any impacts from those assessed in the ES and therefore there would also be no change in any cumulative impacts. The changes proposed with this NMC are very localised (affecting only the landfall zone) with no pathways to interact with other developments. The only exception to this is the Norfolk Boreas project which shares the same landfall zone and was included within the original cumulative assessment contained within the Norfolk Vanguard ES. Due to the fact that the Norfolk Boreas impacts have not increased since that assessment was completed there would be no increase in cumulative impacts of the two projects.
40. Taking all of the above into account it can be concluded that the NMC will not result in any change to the effects as assessed in the ES on local people.



## 4 CONSULTATION

### 4.1 Pre-Application Consultation

41. The Applicant informed some consultees on the nature of the proposed amendments in advance of the formal consultation period. This included a combination of meetings and briefing emails to the Marine Management Organisation (MMO), Natural England (NE), Historic England (HE), The Maritime and Coastguard Agency (MCA), Local Planning Authorities, The Crown Estate and the Department of Energy Security and Net Zero (DESNZ). Table 3 below provides a summary of this engagement undertaken by the Applicant.

**Table 3: Summary of pre-submission consultation responses**

Consultee	Date of Consultation	Consultation Format	Summary of Consultation
Marine Management Organisation	29/03/2023	Meeting with case manager and case officer	Explanation of what the NMC would include, how to participate and anticipated programme of events
Natural England	16/03/2023 and 19/04/2023	Meeting with Senior responsible officer and case officer.	Explanation of what the NMC would include, how to participate and anticipated programme of events
Historic England	16/03/2023	Meeting with Head of Marine Planning and Science Advisor (East of England)	Explanation of what the NMC would include, how to participate and anticipated programme of events
The Maritime Coastguard Agency	01/04/2023	Email to the MCA	Informing them of the proposed NMC and how to participate.
Norfolk County Council	06/04/2023	Email to Norfolk County Council	Informing them of the proposed NMC and how to participate.
Breckland Council	06/04/2023	Email to Breckland Council	Informing them of the proposed NMC and how to participate.
Broadland District Council	06/04/2023	Email to Broadland District Council	Informing them of the proposed NMC and how to participate.
North Norfolk District Council	06/04/2023	Email to North Norfolk District Council	Informing them of the proposed NMC and how to participate.
National Infrastructure Planning	06/04/2023	Email sent to case officer	Informing of NMC and information on what the NMC would include.

Consultee	Date of Consultation	Consultation Format	Summary of Consultation
The Crown Estate	20/04/2023	Meeting	Informing of NMC and information on what the NMC would include.
Department for Energy Security and Net Zero	12/04/2023, 27/04/2023	Email sent to Head of Planning at Energy Infrastructure Planning.	Email sent informing of the intention to submit an NMC for duct increase at landfall

42. The Applicant has also issued letters via email inviting certain stakeholders to participate in the NMC consultation. Further information on these invitations and a list of recipients will be provided in the Regulation 7a Consultation Report.
43. More widely, stakeholders have been informed of the proposed NMC application via an e-shot – a regular update to currently more than 2,300 subscribers. An e-shot was issued on 29 June 2023 to inform stakeholders of the intention to make an NMC application. This included a link to the Planning Inspectorate’s project page, where details on the application will be published. Recipients of the e-shot include parish councils located along and neighbouring the Project’s onshore cable route, as well as other local groups and individuals taking an interest in Project development. The e-shot is also available on the “Vattenfall in Norfolk” web page<sup>2</sup>.

## 4.2 Post Application Consultation

44. The 2011 regulations set out, in regulations 6 and 7, how the Application is to be published and consulted on. Regulation 6 requires a notice of the Application (Regulation 6 Notice) to be published for two consecutive weeks in one or more local newspapers and in any other publication necessary in order to ensure that notice of the Application is given in the vicinity of the land. The Regulation 6 Notice will be published in the following newspapers:
- The Eastern Daily Press; and
  - Fishing news
45. Furthermore, as set out in regulation 7 of the 2011 Regulations, the Applicant is required to consult each person who has the benefit of the DCO, each person that was notified of the DCO application and any other person who may be directly affected by the changes proposed in the Application. Regulation 7(3) allows for this list of consultees to be reduced with the consent of the Secretary of State.

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<sup>2</sup> Vattenfall's Norfolk Vanguard and Norfolk Boreas Projects - Vattenfall

46. On 15 June 2023, the SoS confirmed agreement to a reduced consultee list for the NMC application.

## 5 CONCLUSION

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47. Norfolk Vanguard Limited and Norfolk Vanguard East Limited (the Applicant) are seeking to amend the DCO for the Norfolk Vanguard offshore wind farm to increase the number of landfall cable ducts from two to four, and update the assessment to allow an increase in the number of reserve drills at landfall from one to two (up to six drills in total, four which will house the ducts and two which will only be conducted if there are failures in one or two of the first four).
48. Consideration has been given to the four tests for material changes outlined in the 2015 DCLG Guidance on Changes to Development Consent Orders. It has been demonstrated that the proposed amendment would be non-material in nature due to there being:
- no change in the significance of any impacts or any new significant impacts from those described in the original ES,
  - no additional effects on the national sites network (and therefore no change to the HRA),
  - no change to land rights or new requirement for compulsory acquisition; and
  - no additional effects on local people.

## 6 REFERENCES

Department for Communities and Local Government (2015) Planning Act 2008: Guidance on Changes to Development Consent Orders. Available at:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/485064/Making\\_changes\\_guidance\\_to\\_Development\\_Consent\\_Orders.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485064/Making_changes_guidance_to_Development_Consent_Orders.pdf)

Norfolk Boreas Limited (2019) Environmental Statement Chapter 25 Noise and Vibration, Appendix 25.2 Construction Phase Assessment available at:  
<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-000831-6.3.25.2%20Environmental%20Statement%20Appendix%2025.2%20Construction%20Phase%20Assessment.pdf>

Norfolk Vanguard Limited (2018a). Environmental Statement Chapter 5 Project Description. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010079/EN010079-001493-Chapter%2005%20Project%20Description%20Norfolk%20Vanguard%20ES.pdf>

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<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010079/EN010079-001493-Chapter%2005%20Project%20Description%20Norfolk%20Vanguard%20ES.pdf>