

Norfolk Boreas Offshore Wind Farm Inter-relationship Report: Norfolk Boreas and Norfolk Vanguard

DCO Document 3.4

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Photo: Ormonde Offshore Wind Farm

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Glossary of Acronyms

AfL	Agreement for Lease
DCO	Development Consent Order
DML	Deemed Marine Licence
MMO	Marine Management Organisation
MW	Megawatts
OFTO	Offshore Transmission Owner
VWPL	Vattenfall Wind Power Limited

Glossary of Terminology

Cable logistics area	Existing hardstanding area to allow the storage of cable drums and associated materials and to accommodate a site office, welfare facilities and associated temporary infrastructure to support the cable pulling works.
Cable pulling	Installation of cables within pre-installed ducts from jointing pits located along the onshore cable route.
Ducts	A duct is a length of underground piping, which is used to house electrical and communications cables.
Jointing pit	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts
Landfall	Where the offshore cables come ashore at Happisburgh South
Landfall compound	Compound at landfall within which HDD drilling would take place
Landfall compound zone	Area within which the landfall compounds would be located.
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing low voltage electrical earthing links.
Mobilisation area	Areas approx. 100 x 100m used as access points to the running track for duct installation. Required to store equipment and provide welfare facilities. Located adjacent to the onshore cable route, accessible from local highways network suitable for the delivery of heavy and oversized materials and equipment.
Mobilisation zone	Area within which a mobilisation area would be located.
National Grid overhead line modifications	The works to be undertaken to complete the necessary modification to the existing 400kV overhead lines.
National Grid overhead line temporary works	Area within which the work will be undertaken to complete the necessary modification to the existing 400kV overhead lines.
National Grid substation extension	The permanent footprint of the National Grid substation extension.
National Grid temporary works area	Land adjacent to the Necton National Grid substation which would be temporarily required during construction of the National Grid substation extension.
Necton National Grid substation	The grid connection location for Norfolk Boreas and Norfolk Vanguard
Norfolk Vanguard	Norfolk Vanguard offshore wind farm, sister project of Norfolk Boreas.
Offshore cable corridor	The corridor of seabed from the Norfolk Boreas site to the landfall site within which the offshore export cables will be located.
Offshore electrical platform	A fixed structure located within the Norfolk Boreas site, containing electrical equipment to aggregate the power from the wind turbines and convert it into a suitable form for export to shore.
Offshore export cables	The cables which transmit power from the offshore electrical platform to the landfall.
Onshore cable route	The up to 35m working width within a 45m wide corridor which will contain the buried export cables as well as the temporary running track, topsoil storage and excavated material during construction.
Onshore 400kV cable route	Buried high-voltage cables linking the onshore project substation to the Necton National Grid substation
Onshore cables	The cables which take power and communications from landfall to the onshore project substation.
Onshore project substation	A compound containing electrical equipment to enable connection to the National Grid. The substation will convert the exported power from

	HVDC to HVAC, to 400kV (grid voltage). This also contains equipment to help maintain stable grid voltage.
Onshore project substation search area	The zone in which the onshore project substation may be constructed under Scenario 2.
Onshore project substation temporary construction compound	Land adjacent to the onshore project substation which would be temporarily required during construction of the onshore project substation.
Overhead Line	An existing 400kV power line suspended by towers.
Order limits	The area of the land (as defined by the DCO) within which the project may be constructed, operated and maintained.
Project interconnector cable	Offshore cables which would link either turbines or an offshore electrical platform in the Norfolk Boreas site with an offshore electrical platform in one of the Norfolk Vanguard sites.
Project interconnector search area	The area within which the project interconnector cables would be installed.
Running track	The track along the onshore cable route which the construction traffic would use to access work areas.
The Applicant	Norfolk Boreas Limited
The project	Norfolk Boreas Wind Farm including the onshore and offshore infrastructure.
Trenchless crossing compound	Pairs of compounds at each trenchless crossing zone to allow boring to take place from either side of the crossing.
Trenchless crossing zone	Areas within the onshore cable route which will house trenchless crossing entry and exit points.

1 EXECUTIVE SUMMARY

1. Norfolk Boreas Limited (Norfolk Boreas or the Applicant) is proposing to develop the Norfolk Boreas Offshore Wind Farm, which comprises a 725km² area located approximately 73km from the Norfolk coastline within which wind turbines would be located (the Project). Norfolk Boreas would have a maximum export capacity of 1,800 megawatts (MW). The offshore wind farm would be connected to the shore by offshore export cables installed within the offshore cable corridor from the wind farm to a landfall point at Happisburgh South, Norfolk. From there, onshore cables would transport power over approximately 60km to the onshore project substation near Necton, Norfolk.
2. Norfolk Boreas is seeking to develop the Project alongside its sister company, Norfolk Vanguard Limited (Norfolk Vanguard). Norfolk Vanguard submitted a separate Development Consent Order (DCO) application in June 2018. Norfolk Boreas is currently running one year behind Norfolk Vanguard. However, should both projects obtain consent and proceed to construction, Norfolk Boreas will optimise synergies and efficiency savings from enabling works put in place by Norfolk Vanguard.
3. This document sets out some of those efficiencies and explains the relationship between both projects with respect to the project infrastructure and Order limits where both Norfolk Vanguard and Norfolk Boreas proceed to construction (i.e. under Scenario 1 (as defined in section 2.1 below)). Whilst the Norfolk Boreas application, in particular the DCO (document reference 3.1) and the associated plans, outlines the works required for Norfolk Boreas under Scenario 1 and Scenario 2 (defined in section 2.1 below), this document seeks to explain the interaction that Norfolk Boreas would have with Norfolk Vanguard where both projects proceed to construction, particularly with respect to the onshore project substation areas.

2 INTRODUCTION

2.1 Background to Norfolk Boreas and Norfolk Vanguard

4. Vattenfall AB (Vattenfall), the parent company of Vattenfall Wind Power Limited (VWPL) and Norfolk Boreas Limited, is the Swedish state-owned utility company and one of Europe's largest generators of electricity and heat. Vattenfall is also the second largest developer in the global offshore wind sector. Vattenfall's purpose is to power climate smarter living and the company is strongly committed to significant growth in wind energy, both onshore and offshore.
5. VWPL (the parent company of Norfolk Boreas Limited) is also developing Norfolk Vanguard, a 'sister project' to Norfolk Boreas. Norfolk Vanguard is of the same maximum export capacity and comprises two distinct areas offshore, to the east (Norfolk Vanguard East) and to the west (Norfolk Vanguard West), which are adjacent to the Norfolk Boreas site. Norfolk Vanguard's development programme is approximately one year ahead of Norfolk Boreas. The Norfolk Vanguard DCO application was submitted in June 2018 and the examination closed on 10 June 2019.
6. As explained further within section 2.2 below, should both projects receive consent and proceed to construction, Norfolk Boreas would share a grid connection location and also much of the offshore and onshore cable corridors with Norfolk Vanguard. Therefore VWPL has adopted a strategic approach to planning infrastructure for the two projects with the aim of optimising overall design and reducing impacts and disruption where practical.
7. If both projects secure consent and proceed to construction, certain enabling works for Norfolk Boreas will be provided for and carried out pursuant to the Norfolk Vanguard DCO. This is the preferred option and considered to be the most likely. However, Norfolk Boreas needs to consider the possibility that Norfolk Vanguard may not proceed to construction. In order for Norfolk Boreas to stand as an independent project, this possibility must be provided for within the Norfolk Boreas DCO. Thus, consent will be sought for the following two alternative scenarios within the DCO, and both scenarios have therefore been assessed as part of the Environmental Impact Assessment (EIA):
 - **Scenario 1** – Norfolk Vanguard proceeds to construction and installs ducts and other shared enabling works for Norfolk Boreas.
 - **Scenario 2** – Norfolk Vanguard does not proceed to construction and Norfolk Boreas proceeds alone. Norfolk Boreas undertakes all works required as an independent project.
8. A full description of the project including the works required under each scenario is provided in Chapter 5 Project Description of the Environmental Statement

(document reference 6.1.5). Appendix 5.1 contains a detailed comparison of what is included in the two different scenarios across all onshore elements of the Project. With regards to the offshore elements of the Project, as explained further in section 3.1 and 3.2 below, under Scenario 1 the main cable corridor for both projects covers the same offshore area. Under Scenario 1, the Applicant would also have the option to utilise project interconnector cables to connect the Norfolk Vanguard and Norfolk Boreas offshore electrical platforms.

2.2 Rationale for Co-location

9. In 2016, Norfolk Boreas was awarded an Agreement for Lease (AfL) by The Crown Estate for the seabed areas within which it will develop the Project, with a proposed export capacity of up to 1,800MW. The AfL for the Project is located adjacent to two marine blocks, where a separate AfL has been awarded to Norfolk Vanguard. Given the proximity of these marine blocks, VWPL recognised the potential to develop and operate Norfolk Vanguard and Norfolk Boreas in sequence, as a “cluster”, with potential ultimate benefits for the consumer including, keeping down costs through:
 - a) Shared infrastructure;
 - b) Improved knowledge of constructing and operating in the area;
 - c) Phased deployment; and
 - d) Best-in-class technology.
10. Co-locating infrastructure also minimises local disruptions and reduces overall environmental impacts. This benefit is particularly apparent through Norfolk Vanguard carrying out enabling works for Norfolk Boreas including the installation of ducts for Norfolk Boreas across the onshore cable route length in a single construction process.

3 AREAS OF INTER-RELATIONSHIP

11. Should Norfolk Vanguard and Norfolk Boreas both be consented and proceed to construction, as described under Scenario 1, Norfolk Boreas will benefit from the efficiencies and shared infrastructure from Norfolk Vanguard which includes:
 - Pre-construction works throughout the onshore cable route such as ecological preparations, archaeological preparations, hedge and tree netting / removal, access modifications and any pre-construction drainage works. These works will be sufficient for Norfolk Vanguard and Norfolk Boreas duct installation.
 - The installation of cable ducts. Norfolk Vanguard will install ducts for both Norfolk Vanguard and Norfolk Boreas throughout the length of the onshore cable route, in a single construction campaign.
 - Creation of access tracks. Norfolk Vanguard will create a permanent access, including any modifications to the A47 junction for safe access, to the co-located onshore project substations.
 - Modifications to the National Grid overhead line. Norfolk Vanguard will carry out works to the National Grid overhead line as part of the Norfolk Vanguard DCO which will also be sufficient to accommodate Norfolk Boreas in the event of Scenario 1.

12. As consent for Norfolk Boreas will be sought for two alternative scenarios, the Order limits reflect the furthest extent of land required for both scenarios. However some of the onshore project areas within the Order limits are not required by Norfolk Boreas under Scenario 1 - for example, temporary work areas along the onshore cable route, including mobilisation areas and trenchless crossing compounds. These elements would be used by Norfolk Vanguard during the duct installation works for both projects. Similarly, at the National Grid extension for example, the area required for the overhead line modification works will not be required under Scenario 1 as these works would be undertaken by Norfolk Vanguard. This is depicted further within the Land Plan (document reference 2.2) and the Works Plan (document reference 2.4), in particular Sheets 40 to 42, which show the works and land required under each scenario for the onshore project substation and National Grid substation extension works. Notwithstanding this, the Applicant must include all land required under Scenario 1 and Scenario 2 within the current Order limits to govern the possibility of Norfolk Vanguard not proceeding to construction, which would result in the Applicant implementing Scenario 2, under which these areas of land would be required.

13. Further details on the interactions between the Norfolk Boreas and Norfolk Vanguard Order limits are set out below.

3.1 Offshore Cable Corridor

14. The Order limits for Norfolk Boreas and Norfolk Vanguard each include their respective offshore cable corridors. The main cable corridor for both projects cover the same offshore area and these offshore cable corridor Order limits are therefore identical. However, there are areas that branch off from the offshore cable corridor as follows:
- a) A "spur" which connects the main shared corridor with the western side of Norfolk Vanguard West;
 - b) A "spur" which connects the main shared corridor with the eastern side of Norfolk Vanguard West;
 - c) A "spur" which connects the main shared corridor to the southern part of Norfolk Vanguard East; and
 - d) A "spur" connecting the main cable corridor to the south western part of the Norfolk Boreas site within the eastern end of the offshore cable corridor.
15. Spurs (a) and (c) are not included within the Norfolk Boreas Order limits as they are only relevant for the Norfolk Vanguard works. Spur (b) is included in both the Norfolk Vanguard and Norfolk Boreas Order limits as this is included in the Project Interconnector search area (see section 3.2 below). Spur (d) is not included within the Norfolk Vanguard Order limits as it is only relevant for the Norfolk Boreas works. A plan which shows an overlay of the Norfolk Boreas and Norfolk Vanguard offshore Order limits is attached as Figure 1.

3.2 Offshore Project Interconnector Search Area

16. The Norfolk Boreas Order limits also include a project interconnector search area to accommodate cables which may be required to connect the offshore electrical platforms associated with the Norfolk Boreas project with the offshore electrical platforms associated with the Norfolk Vanguard project (Project Interconnector). This area overlaps with the Order limits for the north western part of Norfolk Vanguard East and the southern part of Norfolk Vanguard West (as shown by Work No. 3B and Work No. 1(f) on the Works Plan (Offshore) (document reference 2.4) and in Figure 6.2.5.1 of the ES (document reference 6.1.5)).

3.3 Onshore Landfall

17. At the landfall zone, the Order limits for Norfolk Vanguard and Norfolk Boreas cover the same area and are identical. This is as a result of the shared onshore and offshore cable routes. Separate landfall compounds within the landfall zone will be required for Norfolk Vanguard and Norfolk Boreas to facilitate the duct installation for each project and the associated transition pit. Landfall duct installation for

Norfolk Boreas could be conducted in parallel with Norfolk Vanguard or separately as illustrated in Table 5.38 of Chapter 5 Project Description of the ES (document reference 6.1.5).

3.4 Onshore Cable Route

18. Throughout the onshore cable route, the Order limits for Norfolk Vanguard and Norfolk Boreas cover the same area and are identical. This is as a result of the shared onshore cable route. Separate trenches and ducts will be required within the onshore cable route for Norfolk Vanguard and Norfolk Boreas, however under Scenario 1 Norfolk Vanguard will install ducts for Norfolk Boreas. Therefore, as outlined in paragraph 122 above, the mobilisation areas (save for mobilisation area MA1a, which is required for construction of both onshore project substations) and trenchless crossing compounds will not be required by Norfolk Boreas under Scenario 1, but are included in the Order limits under Scenario 2 for the reasons given above.
19. Separate cables, jointing pits and link boxes will be required within the onshore cable route for Norfolk Vanguard and Norfolk Boreas. This infrastructure will be installed by each project separately and their locations will be determined post consent.

3.5 Construction and Operation Accesses

20. Construction and operation accesses associated with the onshore cable route cover the same area and are identical for Norfolk Vanguard and Norfolk Boreas. These accesses are required for both projects to facilitate cable pulling (construction accesses) and access during operation if required (construction and operation accesses).

3.6 Cable Logistics Area

21. The cable logistics area within the Order limits is the same area for both Norfolk Vanguard and Norfolk Boreas. This is required to facilitate cable pulling, which will be undertaken separately for each project. The cable logistics area is located near Oulton and is shown on Sheet 18 of the Works Plan (document reference 2.4).

3.7 Onshore Project Substation

22. The Norfolk Vanguard and Norfolk Boreas onshore project substations are proposed to be located adjacent to each other. Figure 2 shows the Order limits for Norfolk Boreas and Norfolk Vanguard in the area of the onshore project substation. The Norfolk Boreas Order limits fully contain and encapsulate the Norfolk Vanguard Order limits, with the exception of a small slither of land along the western boundary of the Norfolk Vanguard onshore project substation. This area falls outside of the Norfolk Boreas Order limits as it is proposed for landscape mitigation planting for

Norfolk Vanguard only. It is required for Norfolk Vanguard, and not Norfolk Boreas, due to the westerly location of the Norfolk Vanguard onshore project substation. Under Scenario 2 (i.e. without Norfolk Vanguard), landscape mitigation planting for Norfolk Boreas will take place within the area of land which is identified as the Norfolk Vanguard substation location.

23. As the Applicant explains in section 3 above, the correlation in Order limits also allows for the eventuality that Norfolk Vanguard does not obtain consent or proceed to construction and Norfolk Boreas proceeds to implement Scenario 2. To ensure complete clarity as to the extent of land and nature of works required for Scenario 1 and Scenario 2 in the location of the onshore projection substation, the Land Plan (document reference 2.2) and Works Plan (document reference 2.4) include separate sheets for Scenario 1 and Scenario 2 (sheets 40a, 40b, 41a, 41b, 42a, and 42b). A combined Scenario 1 and Scenario 2 plan is also provided for both the Works Plan and the Land Plan (sheets 40, 41, and 42 respectively) to illustrate the full extent of the land required for the Order limits.
24. Figure 3 shows the infrastructure which will be required for both projects (i.e. under Scenario 1), and the inter-relationship between them. To the east of the Norfolk Vanguard onshore project substation, part of Norfolk Vanguard's temporary construction compound zone will become the footprint for the Norfolk Boreas onshore project substation. This can occur due to the sequential development of the substation construction; for instance, areas used for temporary works for Norfolk Vanguard will no longer be required by Norfolk Vanguard during Norfolk Boreas' construction. The Norfolk Vanguard and Norfolk Boreas temporary works zone also extends to the north. The temporary works zone to the north could be used by both Norfolk Vanguard and Norfolk Boreas for the construction of both onshore project substations or by Norfolk Boreas for the construction of its substation, should Norfolk Vanguard have used land to the east of its substation on the Norfolk Boreas substation footprint. The potential re-use of Norfolk Vanguard's temporary infrastructure by Norfolk Boreas, and the mechanism within the DCO to enable this, is considered further below in Section 4 and Section 5.
25. Similarly, there is an overlap of the temporary works zone to the north with the Norfolk Vanguard onshore cable route entry into the onshore project substation area, attenuation pond zone and indicative mitigation planting. This overlap can occur as the cables will be installed underground and therefore can be installed underneath the temporary works area; the attenuation pond can be microsited within the zone to coexist with the temporary works; and the indicative mitigation planting in this area is species rich grassland which can be installed post construction.

26. The Order limits for the permanent access from the A47 to the Norfolk Vanguard onshore project substation is the same for both projects as this access will be used by both projects for construction and operation (shown in yellow on Figure 3). This is also the case for the mobilisation area at the onshore project substation (MA1a) which will be used by both projects for construction of the respective onshore project substations. The access road installed by Norfolk Vanguard would be extended by Norfolk Boreas by approximately 300m to facilitate access to the Norfolk Boreas onshore project substation (as outlined by Work No. 12A on the Norfolk Boreas DCO (document reference 3.1) and shown on Sheet 40a of the Works Plan (document reference 2.4).

3.8 Onshore National Grid Extension and Overhead Line Modification

27. The existing Necton National Grid substation will be extended for each project independently. Norfolk Vanguard will extend in a westerly direction (as shown on Figure 3 in dark purple) and Norfolk Boreas will extend in an easterly direction (as shown on Figure 3 in dark orange).
28. The Order limits overlap to the south and west of the Norfolk Vanguard National Grid substation extension, as this National Grid temporary works area adjacent to the A47 will be required to support construction of the National Grid substation extensions for both projects (see Figure 3). As stated in paragraph 11 above, the overhead line modifications completed for the connection of Norfolk Vanguard at the grid connection point will be sufficient to accommodate Norfolk Boreas, therefore no further overhead line works are required by Norfolk Boreas under Scenario 1.
29. The Order limits overlap to the east of the existing Necton National Grid substation. For Norfolk Vanguard alone, this area is required to construct additional attenuation capacity for drainage associated with the Norfolk Vanguard National Grid extension to the west. However, for Norfolk Boreas (under Scenario 1), this area is required to accommodate the Norfolk Boreas National Grid substation extension. Therefore, should both projects come forward, this area would accommodate the National Grid substation extension to the east for Norfolk Boreas and the additional attenuation capacity will be sited further to the north (as shown on Figure 3).
30. Each project has separate onshore 400kV cable routes which link their onshore project substation with the respective National Grid substation extension (as shown on Figure 3). The onshore 400 kV cable routes overlap in a single location where a crossing is made of the Norfolk Vanguard and Norfolk Boreas cables to allow entry into the western and eastern National Grid substation extensions respectively. The Norfolk Boreas onshore 400 kV cable route also overlaps with 45m of Norfolk Vanguard mitigation planting (comprising species rich grassland) which is required to

be removed (or the planting delayed if it is known that Norfolk Boreas is proceeding) to allow the 400 kV cables to connect to the eastern National Grid substation extension. This planting would be undertaken (or reinstated if appropriate) on completion of the relevant Norfolk Boreas construction works.

31. The Order limits overlap at the existing permanent access from the A47 to the National Grid substation extensions as this access will be used by both projects for construction and operation (as shown by the brown and grey access tracks to the south of the National Grid extensions on Figure 3).

4 DELIVERY

4.1 Construction Programme

32. The current indicative construction programmes anticipate that Norfolk Vanguard is expected to undertake pre-construction works in 2020 – 2021 with the main duct installation works taking place in 2022 - 2023. Under Scenario 1, Norfolk Boreas anticipates commencing construction in 2022 with operation and maintenance commencing in 2028/9. The Environmental Statement (document reference 6.1), at Section 5.4.15 and Section 5.6.5, provides a further breakdown of the onshore and offshore construction activities.

4.2 Re-use of Infrastructure and Works

33. Some temporary construction areas required by Norfolk Vanguard may be re-used by Norfolk Boreas. For example, Norfolk Boreas may reuse the Norfolk Vanguard temporary construction compound at the onshore project substation, dependant on its siting within the temporary construction compound zone which is subject to micro-siting during detailed design. The mobilisation area at the onshore project substation will also be re-used by Norfolk Boreas.
34. Norfolk Boreas will also reuse Norfolk Vanguard accesses to the onshore cable route for cable pulling, including construction accesses and any retained/ reinstalled sections of running track (limited to 12km of the total route length).

4.3 Proposals for Reinstatement

35. All temporary works areas associated with the duct installation undertaken by Norfolk Vanguard will be fully reinstated at the end of the duct installation. This includes mobilisation area compounds (with the exception of MA1a which is needed for the Norfolk Boreas onshore project substation as set out above) and trenchless crossing compounds.
36. The onshore cable route will be fully reinstated following duct installation, with the exception of up to 12km of running track across the onshore cable route which may be retained for the cable pull through. Alternatively, if the running track has been reinstated by Norfolk Vanguard, a 12km section of the running track will be reinstalled for cable pulling. The retained or reinstalled running track will be used for cable pulling for Norfolk Vanguard and then again for the cable pulling for Norfolk Boreas.
37. Following completion of the Norfolk Boreas construction works, all temporary construction areas will be fully reinstated.

4.4 Advance Landscaping, Drainage and Operational Access

38. Each onshore project substation will have a separate attenuation pond. However, as described in paragraph 29 above, should both projects be commenced, a single attenuation pond associated with the National Grid extensions will be constructed for both projects as joint drainage mitigation. Similarly, the permanent access from the A47 to the onshore project substations will be used by both projects during construction and operation as joint traffic management mitigation.

39. A strategic approach has also been taken with regards to the mitigation planting associated with the onshore project substations, National Grid substation extensions and the A47. Each project has their own planting scheme however they have been designed to work together to enhance landscape character and bio-diversity in the local area. Mitigation planting associated with Norfolk Vanguard could potentially be implemented in the early stages of the project which would mean that these areas could already have had approximately three or four years of growth prior to completion of construction and first operation of the Norfolk Boreas project. Due to the co-location of infrastructure, Norfolk Vanguard's landscape planting would benefit both projects.

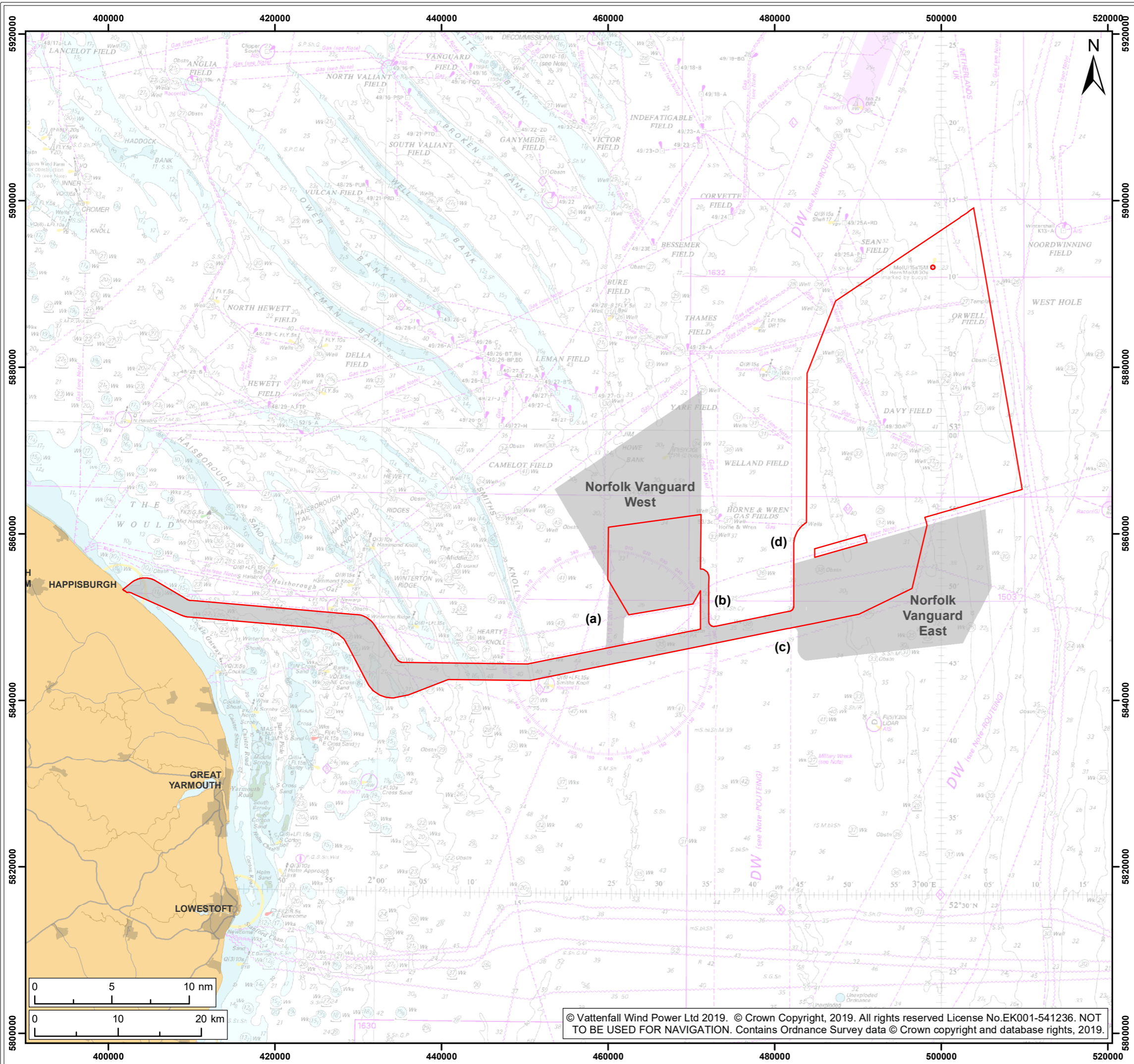
5 MECHANISMS FOR DELIVERY IN THE DCO

40. Whilst Norfolk Vanguard and Norfolk Boreas will initially be owned by the same parent company (VWPL), each of the respective transmission assets associated with the projects will be transferred to an Offshore Transmission Owner (OFTO). Accordingly, the Norfolk Boreas DCO includes a mechanism to safeguard the assets of Norfolk Vanguard. This is in the form of protective provisions within the DCO. These can be located at Part 9 of Schedule 17. The protective provisions include procedures to govern the principles of notification of commencement of the works, approval of plans prior to commencing works, and liability for damage or interference to apparatus. The parties also expect to enter into private agreements in order to govern the commercial arrangements and cooperation between each project company.
41. The Norfolk Boreas DCO includes a standalone Deemed Marine Licence (DML) at Schedule 13 of the draft DCO. This DML authorises the works associated with the Project Interconnector between the Norfolk Boreas offshore project site and Norfolk Vanguard West and Norfolk Vanguard East. The DMLs also include a mechanism to govern co-operation between Norfolk Vanguard and Norfolk Boreas in respect of the Project Interconnector (for example, see Condition 15 of Schedule 13). This provides that Norfolk Boreas must send relevant schemes, plans, documents, and/or protocols to the Norfolk Vanguard offshore undertaker prior to submitting them to the Marine Management Organisation (MMO) for approval, in order to allow Norfolk Vanguard the opportunity to comment on the documents. Norfolk Boreas must also participate in liaison meetings with the undertaker of the offshore element of the Norfolk Vanguard Offshore Wind Farm as requested from time to time by the MMO. These meetings may consider such matters as are determined by the MMO relating to the efficient operation of the offshore element of both of the authorised projects.
42. As noted in Section 4 above, Norfolk Boreas will need to utilise the Norfolk Vanguard accesses, including to the onshore cable route and sections of the running track for the purposes of cable pulling. Other Norfolk Vanguard temporary works may also be re-used, such as the mobilisation area and any temporary compound areas at the onshore project substation site and the cable logistics area. The Norfolk Boreas DCO also includes a Requirement (Requirement 35 at Part 3 of Schedule 1) to govern the reuse of the Norfolk Vanguard temporary work areas before they are reinstated by Norfolk Vanguard. This enables Norfolk Boreas to re-use these areas provided that a scheme, containing details of the temporary works to be re-used by Norfolk Boreas and a timetable for their re-use, is submitted for approval to the relevant planning authorities. Those temporary works would then fall to be reinstated by Norfolk Boreas along with any other temporary works undertaken by the Project.

6 CONCLUSIONS

43. The strategic approach to co-locate both Norfolk Vanguard and Norfolk Boreas brought with it the ability to optimise synergies and efficiency savings across the projects. This document aims to demonstrate the inter-relationship between Norfolk Vanguard and Norfolk Boreas and, in doing so, shows how some of the synergies will be realised through the siting and construction of the project infrastructure under Scenario 1.

7 FIGURES



Legend:

- Norfolk Boreas Order Limits
- Norfolk Vanguard Order Limits

Project: Norfolk Boreas	Report: Inter-relationship Report
Title: Overlay of the Norfolk Boreas and Norfolk Vanguard offshore Order limits	

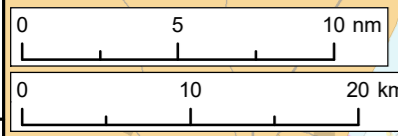
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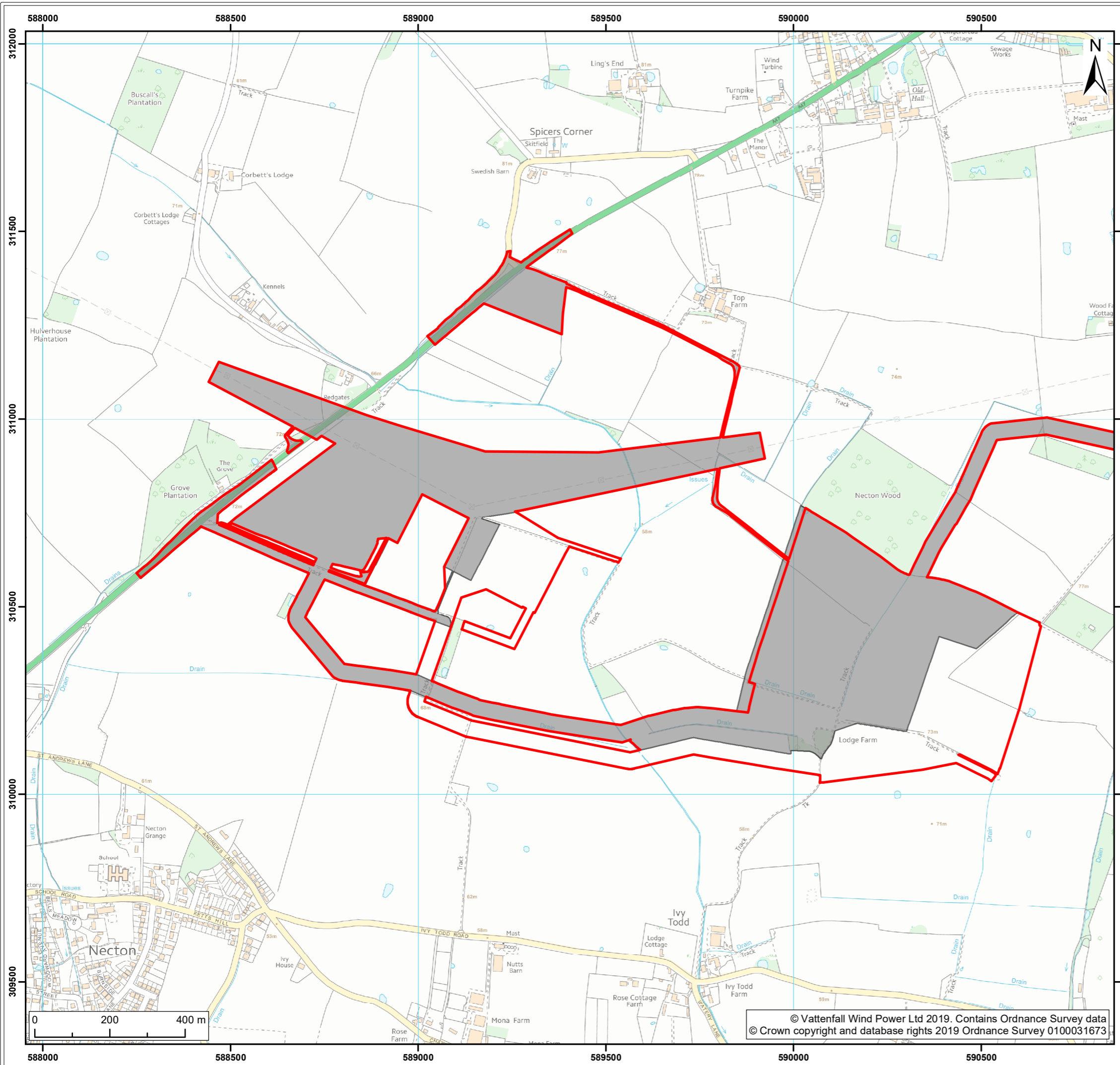
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Legend:

- Norfolk Boreas Order Limits (for Scenario 1 and Scenario 2)
- Norfolk Vanguard Order Limits

Project: Norfolk Boreas	Report: Inter-relationship Report
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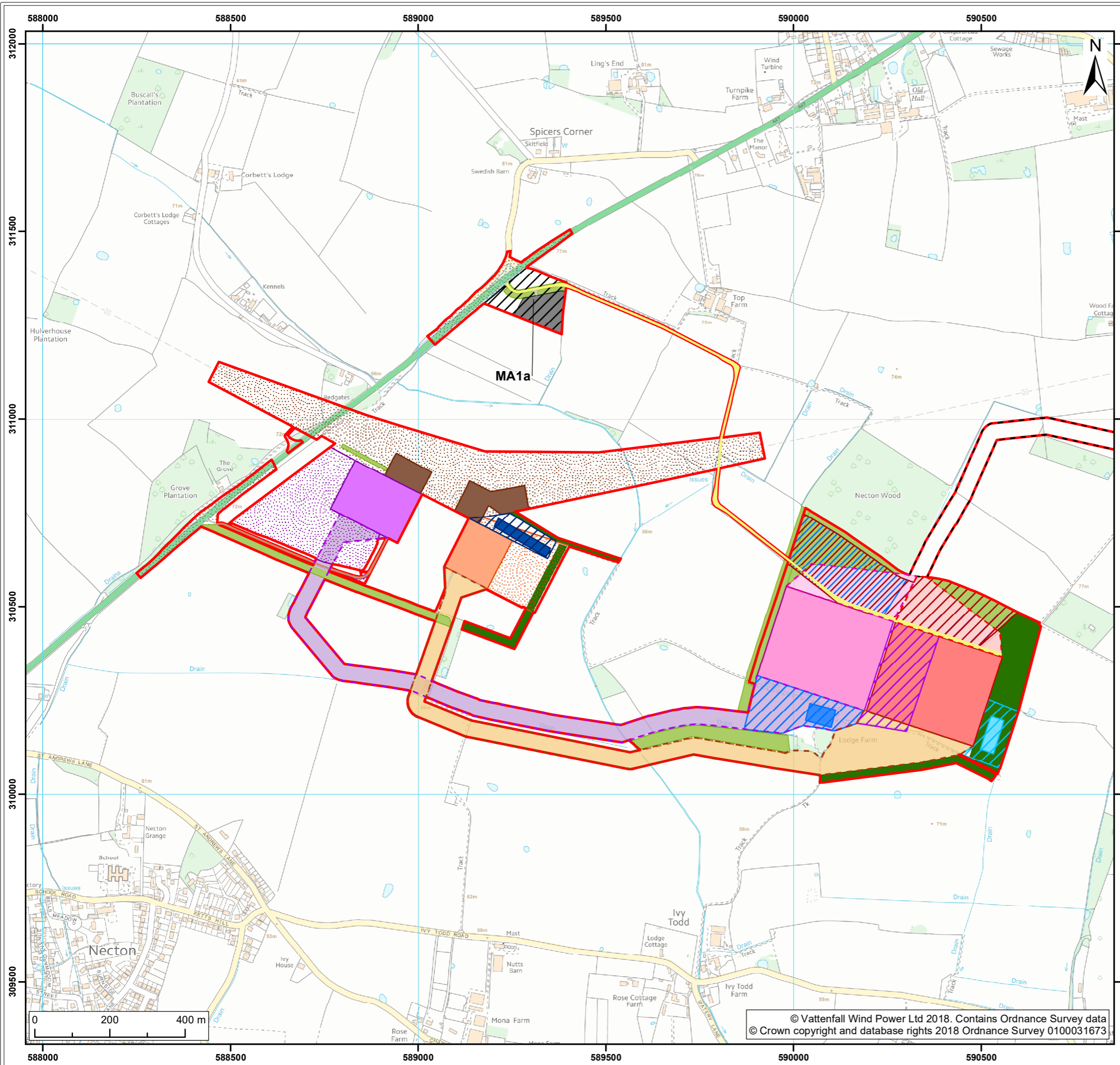
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 Overlay of Norfolk Boreas and Norfolk Vanguard Order limits at the Onshore Project Substation and for the National Grid extension and overhead line works

Figure: 2	Drawing No: PB5640-007-006-001				
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Co-ordinate system: British National Grid EPSG: 27700



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Legend:

Norfolk Boreas Order Limits	National Grid substation extension (east)
Shared Norfolk Boreas and Norfolk Vanguard Infrastructure and Temporary Works Areas	National Grid temporary works
Onshore cable route	Attenuation pond zone
Shared permanent access route	Indicative attenuation pond
Construction access	Indicative mitigation planting
Operational access	Norfolk Vanguard Infrastructure
Onshore project substation temporary construction compound zone	Norfolk Vanguard Onshore project substation
Mobilisation zone	Onshore project substation temporary construction compound zone
Indicative mobilisation area compound	Cable route entry to substation
National Grid temporary works	Onshore 400kV cable route
National Grid attenuation pond location search area	National Grid substation extension (west)
Indicative National Grid attenuation pond	National Grid new/replacement overhead line tower search area
Norfolk Boreas Infrastructure	Overhead line temporary works
Norfolk Boreas onshore project substation	Attenuation pond zone
Cable route entry to substation	Indicative attenuation pond
Onshore 400kV cable route	Indicative mitigation planting
	Highways temporary works area

Project:	Report:
Norfolk Boreas	Inter-relationship Report

Title:
 Overlay of Norfolk Boreas (Scenario 1) and Norfolk Vanguard infrastructure at the Onshore Project Substation and for the National Grid extension and overhead line works

Figure:	3	Drawing No:	PB5640-007-006-002			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:	
04	23/05/2019	JT	CD	A3	1:10,000	
03	22/05/2019	LB	CD	A3	1:10,000	

Co-ordinate system: British National Grid EPSG: 27700

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