FIVE ESTUARIES OFFSHORE WIND FARM

CABLE STATEMENT

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CONTENTS

DEFINITION OF ACRONYMS

Term	Definition
APFP	Application: Prescribed Forms and Procedures
AIS	Air Insulated Substation
GIS	Gas Insulated Substation
DCO	Development Consent Order
dML	Deemed Marine Licence
CBRA	Cable Risk Burial Assessment
CPS	Cable Protection Systems
EACN	East Anglia Connection Node
EIA	Environmental Impact Assessment
ECC	Export Cable Corridor
ES	Environmental Statement
HDD	Horizontal Directional Drilling
MDS	Maximum Design Scenario
MHWS	Mean Highwater Springs
HVAC	High Voltage Alternating Current
NGET	National Grid Electricity Transmission
HDD	Horizontal Directional Drill
HDPE	High Density Polyethylene
MW	Megawatts
NF	North Falls Offshore Wind Farm
NSIP	Nationally Significant Infrastructure Project
OnSS	Onshore Substation
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
OFTO	Offshore Transmission Owner (OFTO)
TJBs	Transition Joint Bays
TCC	Temporary Construction Compound
The Applicant	Five Estuaries Offshore Wind Farm Ltd
VE	Five Estuaries Offshore Wind Farm

Term	Definition
PLGR	Pre-lay Grapnel Run
UXO	Unexploded Ordnance
UTROV	Utility Remotely Operated Vehicle
WTGs	Wind Turbine Generators

GLOSSARY OF TERMS

Term	Definition
Development Consent Order	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP) from the Secretary of State (SoS) for the Department for Energy Security and Net Zero (DESNZ).
Export Cable Corridor (ECC)	The area(s) where the export cables will be located. The ECC is the wider cable corridor within which the preferred cable route is located.
TJB	Transition Joint Bay is an underground concrete unit where the offshore cable is jointed to the onshore cable.
MDS	The maximum design parameters of the combined project assets that result in the greatest potential for change in relation to each impact assessed.
OnSS	Where the power supplied from the wind farm is adjusted (including voltage, power quality and power factor as required) to meet the UK System-Operator Transmission-Owner Code for supply to the National Grid substation.
Order Limits	The extent of development including all works, access routes, TCCs, visibility splays and discharge points.
Jointing Pit	An underground structure where sections of onshore cable are joined within cable ducts.
Landfall	The landfall denotes the location where the offshore export cables are brought ashore and jointed to the onshore cable circuits in TJBs.
Outline plan	An early version of a management plan produced to secure principles, which the final approved management plan will adhere to.
Temporary Construction Compounds (TCCs)	Temporary Construction Compounds (TCC) associated with onshore cable works
The Applicant	The company Five Estuaries Offshore Wind Farm Ltd.

Route Section	A defined section of the onshore project.
Grid Connection Point	The point at which the Onshore ECC connects to the National Grid.
ES	Environmental Statement (the documents that collate the processes and results of the EIA).

1 INTRODUCTION

1.1 THE PROJECT

1.1.1 Five Estuaries Offshore Wind Farm Limited (the Applicant) has submitted an application to the Planning Inspectorate on behalf of the Secretary of State, for a Development Consent Order for the Five Estuaries Offshore Wind Farm (herein referred to as VE) under section 37 of the Planning Act 2008.

1.1.2 VE is the proposed extension to the operational Galloper Offshore Wind Farm. The project includes provision for the construction, operation, maintenance and decommissioning of an offshore wind farm located approximately 37 kilometres off the coast of Suffolk at its closest point in the southern North Sea; including up to 79 wind turbine generators and associated infrastructure making landfall at Sandy Point between Frinton-on-Sea and Holland-on-Sea, the installation of underground cables, and the construction of an electrical substation and associated infrastructure near to the existing Lawford Substation to the west of Little Bromley in order to connect the development to National Grid's proposed East Anglia Connection Node (EACN) substation, which would be located nearby. All onshore connection infrastructure would be located in the administrative area of Tendring District Council, within Essex County Council. VE will have an overall capacity of greater than 100 Megawatts (MW) and therefore constitutes a Nationally Significant Infrastructure Project (NSIP) under the Section 15 (3) of the Planning Act 2008.

1.2 INTRODUCTION

1.2.1 This Cable Statement has been prepared in accordance with Regulation 6(1)(b)(i) of the Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009 (the APFP Regulations) which requires the applicant for a DCO for the construction of an offshore generating station to provide a statement regarding the route and method of installation of any cable connecting the generating station to the onshore electricity transmission network.

1.3 CO-ORDINATION AND WORKING WITH NORTH FALLS OFFSHORE WIND FARM

1.3.1 The onshore export cable corridor and substation arrangement have been designed in co-ordination with the adjacent North Falls Offshore Wind Farm (North Fals) project, and the onshore cable routes of the two projects will run immediately adjacent, within the same corridor. Moreover, the substations have been co-located in the same location to the west of Little Bromley. Due to electrical requirements separate circuits and transformers are required for each project. Therefore, while the projects have considered physical sharing of assets it is not considered to yield significant benefits. The chosen approach does allow for opportunities to minimise environmental and community disruption through co-ordinated delivery.

1.3.2 Three scenarios for onshore delivery with North Falls are foreseen:

- Scenario 1 – VE proceeds to construction and undertakes the additional onshore cable trenching and ducting works for North Falls as part of a single civils campaign (ducting for four electrical circuits). VE would undertake the cable installation and OnSS build for its project only (two electrical circuits). The two projects would share accesses from the public highway for cable installation and substation construction. The projects would utilize and share the same Temporary Construction Compounds (TCCs) for the cable installation works.

- Scenario 2 – Both VE and North Falls projects proceed to construction on different but overlapping timescales (between 1 and 3 years apart), with civil works undertaken independently but opportunities for reuse of enabling infrastructure e.g. haul roads / site accesses etc. with the other project reinstating.
- Scenario 3 – North Falls does not proceed to construction; or both VE and North Falls projects proceed to construction on significantly different programmes (over 3 years apart). In the latter case the significantly different programmes would mean that haul roads and TCC's are reinstated prior to the second project proceeding. In such case cumulative impacts are for a potential construction period of 6 years+. No reduction in overall impacts for the schemes from sharing of infrastructure.

1.3.3 Scenario 1 is assumed to be the Maximum Design Scenario (MDS) for the Environmental Statement assessment of the Project. Further information on the assessment approach, including the approach to Cumulative Effects Assessment is included within Environmental Impact Assessment (EIA) Methodology (Volume 6, Part 1, Chapter 3). Further detail on the scenarios and proposed construction activities is provided in the Delivery Scenarios Document (Volume 9, Report 30).

2 CABLE COMPONENTS OF VE

2.1.1 The cable components of the VE project are;

- 200m of inter-array cables connecting up to 79 wind turbine generators (WTGs) and associated foundations to each other and up to 2 offshore substations platforms (OSPs);
- 2 high voltage alternating current (HVAC) offshore export cables connecting from the offshore substation to connect to the onshore export cable circuits at the landfall transition joint bay (TJB);
- Up to two onshore cable circuits connecting from landfall TJB to the proposed OnSS and into the proposed East Anglia Connection Node Substation (EACN), which is part of National Grid's the Norwich to Tilbury Reinforcement Project; and
- In addition, in Scenario 1 the onshore cable works include the construction of ducts for an additional two circuits which would run parallel to the VE circuits.

3 DESCRIPTION OF OFFSHORE CABLES AND CABLE ROUTE

3.1.1 The offshore cable description below provides summarised detail of the cable route and installation method proposed for VE. For full description of the Maximum Design Scenarios associated with the project see Volume 6, Part 2, Chapter 1: Offshore Project Description

3.2 ARRAY CABLES

3.2.1 Power generated by the WTGs will be collected and transferred by the array cables to the OSP. The cables connect the WTGs together into strings, with the number of WTGs connected together depending on factors such as the generation capacity of each WTG on the relevant cable network, distance between WTGs and the cable sizes available. The strings of WTGs would then in turn be connected to the OSPs.

3.2.2 The array cables will be up to 132kv and the total maximum length of array cables is expected to be 200km[1] which will consist of a number of conductor cores, usually made from copper or aluminium. These will be surrounded by layers of insulating material as well as material to armour the cable from external damage and to keep the cable watertight.

3.2.3 Preparatory works will be carried out prior to cable installation (see Section 3.7). The cables will be buried below the seabed wherever possible, with a target burial depth to be defined post-consent in a Cable Burial Risk Assessment (CBRA) (see Volume 9, Report 9: Outline CBRA) taking account of the ground conditions and other factors.

3.3 OFFSHORE EXPORT CABLES

3.3.1 2 offshore export cables will connect the OSP to the landfall to connect to the onshore export cables. These are expected to be at a maximum of 275kv. The export cables are typically larger in diameter than the array cables as they contain larger cores to transmit greater power. Like the array cables, the offshore export cables will consist of a number of cores, usually made from copper or aluminium, surrounded by layers of insulation material and armour to protect the cable from external damage.

3.3.2 The offshore export cables will typically be spaced 50 to 200 m apart but locally both smaller spacing and larger spacing may be adopted to avoid archaeology exclusion zones or seabed obstructions.

3.3.3 The maximum cable burial depth will be dependent on numerous factors and will vary along the offshore Export Cable Corridor (ECC). The cables will be buried below the seabed wherever possible, with a target burial depth to be defined post-consent in a CBRA (see Volume 9, Report 9: Outline CBRA) taking account of the ground conditions and other factors.

[1] When combined with the maximum length of export cable considered. As described in Volume 6, Part 2, Chapter 1: Offshore Project Description a longer total length of array cable is possible for certain offshore substation scenarios, but the combination of export and array cable lengths will fall within the MDS considered.

3.4 INTERCONNECTOR CORRIDOR

3.4.1 Depending on the final arrangement of OSPs the interconnector corridor between the array areas, may have export or array cables installed within it. The export and array cables required to be installed in the interconnector corridor, and the length of export and array cables within the array areas varies according to the different design scenarios defined below:

- Two offshore substations platforms, with one located in the northern array and one in the southern array. Export cables would run to shore from each platform and an interconnector cable(s) might be connected between the two offshore substation platforms.
- A single offshore substation platform located most likely in the southern array.
- A potential scenario where no offshore substation platform is installed and the export cables run directly from specific WTGs towards shore.

3.5 OFFSHORE CABLE ROUTE

3.5.1 There are currently no defined routes for any of the offshore cables as the application is based around a Rochdale envelope. However VE has proposed Order Limits for the Export Cable Corridor (ECC) within which the cable routing will be designed within shown in Figure 8.1.

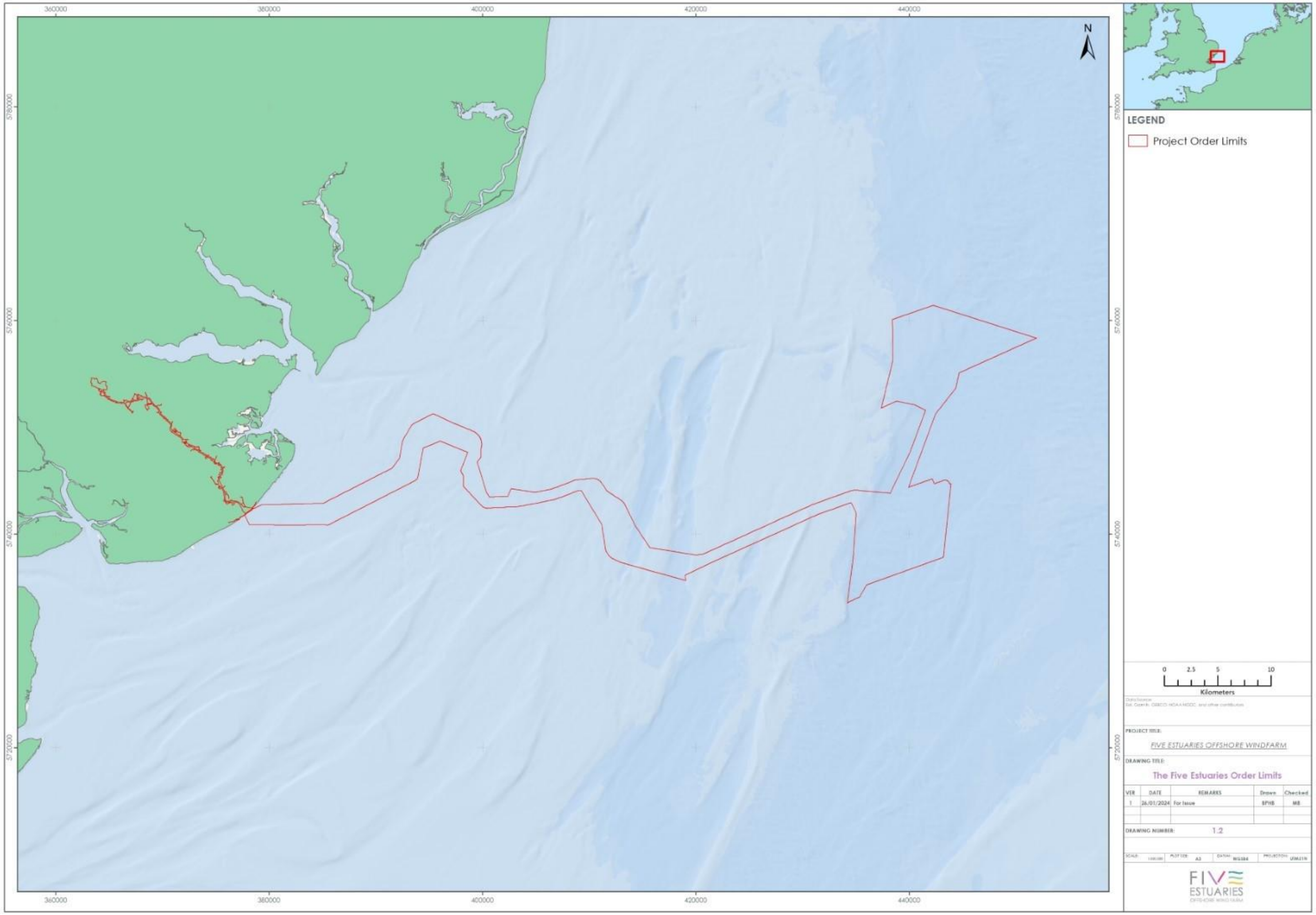

Figure 8.1 : Offshore ECC

3.6 OFFSHORE SEABED PREPARATION

3.6.1 Following the completion of all preconstruction activities, including satisfying pre-construction statutory consent conditions, engineering, design and procurement and detailed site surveys, seabed preparation is one of the first elements of the offshore construction process for the offshore cables.

3.6.2 Geophysical and geotechnical surveys would be carried out before works commence and the information from those surveys will provide further detail and clarify the presence of boulders, unexploded ordnance (UXO) and other obstructions on the seabed. Requirements for seabed preparation will vary according to the specific ground conditions and the type of infrastructure being installed.

UXO CLEARANCE

3.6.3 If UXO are found, a risk assessment will be undertaken and items of UXO are either avoided, removed or detonated in situ. The methods of UXO clearance considered for VE may include:

- High-order detonation;
- Low-order detonation (deflagration); and
- Removal/ relocation.

BOULDER CLEARANCE

3.6.4 As described in section 3.5.2, geophysical surveys will be undertaken post-consent to inform the need for boulder clearance requirements. Where large volumes of boulders are present, micrositing of cables around these may not be possible. If left in situ, boulders would present the following risks to VE:

- Exposure of cables and/ or not achieving target burial depth for cables;
- Obstruction risk to the cable installation equipment leading to damage and/or delays; and
- Risk of damage to the cable assets themselves.

3.6.5 Boulders may be cleared using a number of methods, depending on the density of boulders encountered. Where boulders are present in high density, a boulder clearance tool, for example, SCAR plough or similar may be employed. In areas of low density, it may be more efficient to use a grab to target and re-locate individual boulders. Typical grab tools may be used such as the Utility Remotely Operated Vehicle (UTROV) tine grab or a clamshell grab. There is the potential that boulders may be removed by the use of a boulder clearance tool and/ or a grab tool at any location in the offshore Order Limits.

PRE-LAY GRAPNEL RUN

3.6.6 Following the pre-construction route survey and boulder clearance works, a Pre-Lay Grapnel Run (PLGR) may be undertaken prior to cable installation. A vessel will be mobilised with a series of grapnels, chains, recovery winch and suitable survey spread.

3.6.7 These works will take place within the PLGR clearance corridor with up to 11.87 km^2 of seabed disturbed - the actual disturbed area is expected to be much smaller as the grapnels used for PLGR operations are typically only 1-2m wide. For the majority of the route a single pass with the PLGR grapnels would be expected to be performed but for certain sections multiple passes may be required.

3.7 OFFSHORE CABLE INSTALLATION

ARRAY CABLE INSTALLATION

3.7.1 The array cables will be buried below the seabed wherever possible, with a target burial depth to be defined post-consent in a CBRA taking account of the ground conditions and other factors. The installation method and target burial depth will be defined post-consent based on cable burial risk assessments considering ground conditions as well as the potential for impacts upon cables such as trawling and vessel anchors.

3.7.2 Possible installation methods for array cables include:

- Jet trenching;
- Pre-cut and /or post-lay ploughing;
- Simultaneous lay and plough (such as a burial sledge);
- Mechanical trenching;
- Dredging (typically Trailer suction hopper dredger or water injection dredger);
- Mass flow excavation; and/ or
- Rock cutting.

EXPORT CABLE INSTALLATION

3.7.3 Up to 2 export cable circuits will be buried below the seabed where possible to a defined target burial depth that will be be defined post-consent in a CBRA (see Volume 9, Report 9: Outline CBRA) taking account of the ground conditions and other factors.

3.7.4 The possible installation methods for export cables include:

- Jet trenching;
- Pre-cut and/ or post-lay ploughing;
- Mechanical trenching;
  - Dredging (Trailer suction hopper dredger, water injection dredger, cutter suction dredger or backhoe dredger);
- Mass flow excavation;
- Vertical injector; and
- Rock cutting.

CABLE CROSSINGS

3.7.5 It is necessary to cross existing cables in the offshore area to achieve the offshore connection from the array to the landfall and then onwards to the National Grid connection point. Offshore cable crossings will be subject to crossing agreements pre or post-consent with the owners of those existing assets, and are necessary to provide protection to both assets, and to ensure a minimum separation so that cables do not overheat.

3.7.6 Cable crossings usually consist of a layer of protection over the existing asset (the separation layer) over which the VE cables would be installed. A secondary layer would then be installed over the VE cable for protection. Cable crossings may utilise rock protection or concrete mattresses or bridging typically of steel or concrete construction. The total number of cable crossings required is up to 56.

3.8 CABLE PROTECTION

3.8.1 In some cases, where burial cannot be applied, or where the minimum cable burial depth cannot be achieved, it is necessary to use alternative methods such as rock placement, concrete mattresses or other solutions such as Cable Protection Systems (CPS) or protective aprons to protect the cable from external damage. It should be stressed that cable burial is the preferred method of installation, and additional cable protection will only be used as a contingency where cable burial is not appropriate or achievable.

3.8.2 Cable protection may consist of one or more of the following methods:

- Rock placement;
- Concrete mattresses;
- Flow dissipation devices;
- Protective aprons, coverings, cladding or pipes; and/ or
- Rock bags.

3.9 LANDFALL

3.9.1 The landfall denotes the location where the offshore export cables are brought ashore and jointed to the onshore export cables in TJBs (located onshore). The transition jointing pit, where the offshore cables join the onshore cables, would be located at the landfall at Sandy Point between Frinton-on-Sea and Holland-on-Sea (see Figure 8.1). To enable the export cables from VE to be brought through to the transition jointing pits, horizontal directional drillings (HDD) would be made and ducts would be installed to pull through and accommodate the cables.

3.9.2 The works at the landfall include:

- Construction of the landfall compound;
- Horizontal Directional Drilling (HDD) works (or other suitable alternative trenchless techniques such as micro-boring) including temporary construction of HDD exit pits in the intertidal or shallow subtidal;
- Intertidal trenching (this will only be required if the exit pits are located in the intertidal zone);
- Construction of TJBs;
- Installation of offshore export cables (cable pulling);
- Installation of and jointing to onshore export cables;
- Backfilling and re-instatement works.

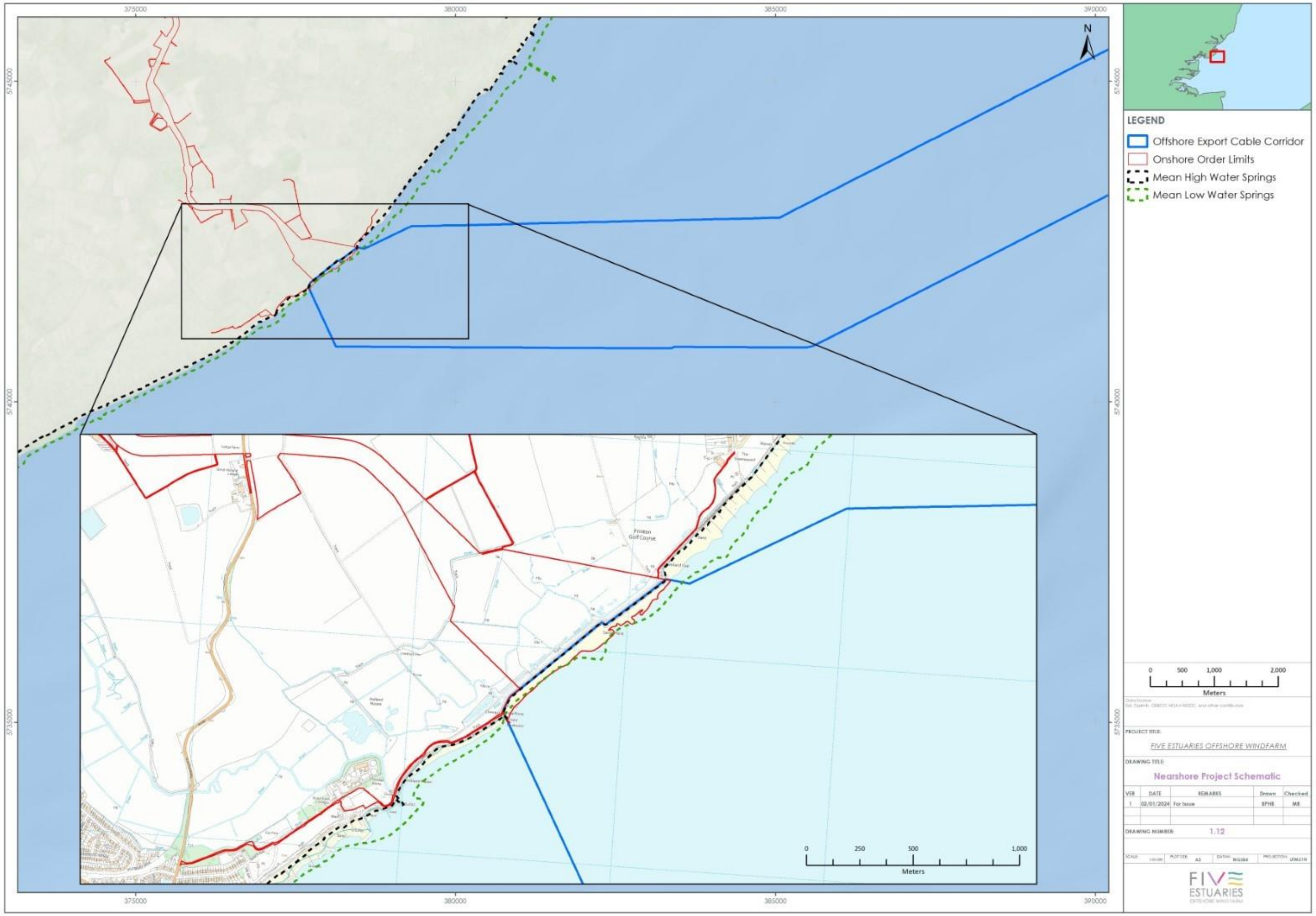

Figure 8.2: Landfall Location

4 DESCRIPTION OF ONSHORE CABLES AND CABLE CORRIDOR

4.1.1 The onshore cable description below provides summarised detail of the cable route and installation method proposed for VE.

4.1.2 The onshore aspects of the project include:

- Landfall: the area above Mean Low Water Springs to where the offshore export cables are connected to the onshore cable circuits within TJBs.
- Onshore ECC: where permanent infrastructure connects the cables at Landfall to the proposed OnSS;
- Onshore substation (OnSS) where the power supplied from the wind farm is adjusted (including voltage, power quality and power factor as required) to meet the UK System-Operator Transmission-Owner Code for supply to the EACN Substation; and
- Connection to the National Grid will include 400kV underground circuit(s) running from the proposed VE OnSS to the new National Grid EACN Substation

4.1.3 For full description of the Maximum Design Scenarios associated with the project see Volume 6, Part 3, Chapter 1: Onshore Project Description.

4.2 ONSHORE CABLES

4.2.1 The export cable configuration will include up to two 400kv[2] cable circuits connecting the offshore substation to the proposed OnSS and into the proposed National Grid EACN. The exact location for this is still being considered by National Grid Electricity Transmission (NGET) at this stage and is subject to a separate consent process. In addition, in scenario 1 the onshore cable works include the construction of ducts for an additional two circuits which would run parallel to the VE circuits.

4.2.2 Figure 8.3 shows the proposed onshore Order Limits for VE, which include the onshore ECC, OnSS and the landfall location.

4.3 ONSHORE CABLE CORRIDOR

4.3.1 The onshore cable corridor would run between the onshore transition joint bays and the proposed OnSS, which will be located near to the existing Lawford Substation to the west of Little Bromley. The corridor will be approximately 22 km from the landfall compound to National Grids proposed EACN substation, but cables will be installed in lengths of around 500 to 800m typically. A MDS length of 24.5 km per circuit of onshore cabling has been included to allow for micrositing within the Onshore ECC (Figure 8.3).

4.3.2 The onshore cable corridor would be approximately 60m or 90m wide depending on the ducting installation technique used in delivery scenario 1 (as detailed in Section 1.3). It will contain the HVAC onshore export cables and associated fibre optic cables buried underground within ducts for VE. The onshore export cables will require trenches to be excavated, within which ducts will be installed to house the cable circuits. Major crossings, such as major roads, river and rail crossings will be undertaken using trenchless crossings techniques such as HDD.

[2] For the onshore cables between landfall and the proposed OnSS the expected voltage is upto 275kV. For the onshore cables between the OnSS and the EACN substation 400kV cables are anticipated.

Figure 8.3: Onshore Order Limits

4.4 ONSHORE CABLE INSTALLATION

4.4.1 Site enabling works will be required before starting the main construction within each Route Section of the onshore ECC. These works are likely to include:

- Temporary fencing;
- Upgrade of existing, or installation of new, access from the public highways, only where required;
- Archaeological and ecological survey / mitigation works as necessary;
- Utility diversions and installation of temporary site drainage where required;
- Vegetation clearance; and
- Establishment of TCC site compounds, which could include site offices, welfare facilities, security, wheel washing facilities, lighting and signage.

4.4.2 Main Construction activities for each section of the onshore ECC are likely to include:

- Topsoil removal (to edge of working area);
- Temporary haul road installation along all sections of the route;
- Trenchless duct installation beneath obstacles (such as major roads, railways, rivers and ecological features);
- Installation of header or interceptor drains at cable corridor boundaries;
- Trench excavation (typically up to four trenches for scenario 1; or upto 2 trenches for scenario 2 and 3);
- Duct and tile installation (this may be by hand or using a specialist ducting trailer / machine);
- Trench backfilling;
- Existing field drainage repairs (where disruption occurs); and
- Jointing pit installation (including French drains to prevent water pooling above jointing pit).

4.4.3 Once the ducts are installed cable installation will commence for the two VE circuits which includes:

- Cable installation (pulled through ducts from each joint pit);
- Cable jointing; and
- Cable testing and commissioning.

4.4.4 The main cable installation method will be through the use of open-cut trenching with High Density Polyethylene (HDPE) ducts installed, the trench backfilled and cables pulled through the pre-laid ducts.

4.4.5 For open trenching the cable circuits will be installed within an onshore ECC generally up to 60 m wide (38 m for scenario 2 and 3) during the construction phase.

4.5 JOINT PITS

4.5.1 Joint pits will be required along the cable route to allow cable pulling and jointing of two sections of cable. One joint pit will be required approximately every 500 m to 800m of cable (to be determined by detailed design). The joint pits will be of a similar design and installed in a similar approach to the TJBs and will have a maximum footprint of 60 m^2 (indicatively up to 15 m long by 4 m wide by 1 m deep). While crossing agricultural land the highest point in the pit – including the cable circuit and associated protection – will be at a minimum depth of 900 mm below the top of the subsoil layer. In some areas the joint pits could be deeper, for example where there is extensive field drainage.

4.6 CABLE CROSSINGS

4.6.1 HDD (or other trenchless crossing techniques) will be used at a number of locations as an alternative methodology to open-cut trenching to cross significant environmental and physical features such as main rivers, major drains, roads, and railways. When using a trenchless technique the ducts require greater spacing, a width of up to 90m for the corridor is sufficient where standard trenchless techniques are required. A wider corridor of up to 140m has been allowed for at more complex crossing points (e.g., the railway crossing and Swan Road / Thorpe Road junction).

4.6.2 The HDD process involves drilling under the feature being avoided. Typically a drilling head is used to drill a pilot hole along a predetermined alignment, before this pilot hole is widened using larger drilling heads to the required bore size. Bentonite pumped to the drilling head is used to stabilize the hole and ensure it doesn't collapse.

4.6.3 Alternative trenchless crossing methodologies that may be considered where appropriate include pipe jacking, direct pipe or auger boring. For assessment purposes, it is considered the plant and equipment identified for HDD would be representative of that required for other techniques, in terms of maximum numbers of equipment on site and the potential environmental impacts.

4.6.4 A number of minor obstacles are identified in the Obstacle Crossing Register as being crossed by trenchless techniques as they are adjacent to a major feature, such as a small ditch next to a main road and as a result will be crossed together as a group of obstacles. In addition, trenchless crossings are selected for some minor roads, as a result of sensitive hedgerow habitats either side, and the fact that trenchless crossing techniques, such as HDD minimises the impact on these (although haul road crossing / access is typically still needed).

4.6.5 Drilling compounds or launch and receptor pits (dependent on the technique chosen) will be set up within the cable corridor at suitable locations adjacent to each obstacle, or group of obstacles, to be crossed. The distance that each compound will be from the obstacles will be determined during the construction stage of the project and will depend on factors such as the length of the crossing, the height differential of the land either side of the obstacles, depth of the obstacle to be cleared, and the local ground conditions.

4.6.6 As the length of each crossing will not be finalised and known until the construction phase, the duration for each trenchless duct installation is not currently known.

4.7 ONSHORE PROJECT SUBSTATION

4.7.1 One OnSS will be required for VE which will be sited north of the A120 to the west of Little Bromley, this area has been chosen to facilitate connection to the National Grid EACN substation (subject to a separate DCO application).

4.7.2 The substation will convert the exported power from HVAC, to 400kV (grid voltage). The substation also contains equipment to help maintain stable grid voltage. Connection to the National Grid EACN Substation will also include 400kV underground circuit(s) running from the proposed VE OnSS to the new National Grid EACN Substation, and associated electrical infrastructure within the EACN Substation, such as switchgear bays.

4.7.3 The total land requirement for the OnSS (assuming Air Insulated Substation (AIS) layout) to the perimeter fence is 58,800 m^2, as well as additional land required for the TCC, roads, drainage and cut/fill. The largest structure within the OnSS will be the OnSS building, with a maximum height of 15 m above existing ground level (assuming a Gas Insulted Substation (GIS) design). All other equipment (e.g., transformers, switchgear) is designed not to exceed a height of 15 m above existing ground level with the exception of slender lightning masts which would be up to 18 m in height. While there would be lighting associated with the OnSS during the operational phase, this would be limited in extent and usage.. The worst-case parameters have been assessed and included in the draft DCO within Volume 6, Part 3, Chapter 1: Onshore Project Description.

4.7.4 The OnSS is adjacent to the proposed North Falls project substation and the proposed National Grid's EACN substation area, both of which are currently underway with their consenting programme. This has the potential for an increase in localised effects, but also provide greater opportunities for co-ordination on items such as site access and mitigation planting. The OnSS will use either AIS or GIS. The choice of switchgear affects both the total land area required and the size and type of buildings which will be needed. The choice of AIS or GIS will be part of the detailed design process and a decision will be made post-consent prior to construction commencing. Construction of the OnSS will include a number of key stages, including earthworks, foundations, superstructure and equipment installation see further detail in Volume 6, Part 3, Chapter 1: Onshore Project Description.

5 DESCRIPTION OF GENERATING EQUIPMENT

5.1.1 The WTGs consist of three primary components; the tower, the nacelle and the rotor. The rotor is the device which, through circular motion, extracts the energy from the wind. The nacelle houses the equipment that can turn rotational motion into electrical energy. The tower supports the nacelle and gives the rotor the necessary height.

5.1.2 The capacity of the Project will depend on the number of WTGs that are installed and their individual rating. VE would consist of up to 79 wind turbines.

5.1.3 In the UK, offshore wind farm developers such as the Applicant can either construct the offshore transmission assets themselves or opt for an Offshore Transmission Owner (OFTO) to do so. OFTO assets generally consist of the onshore infrastructure required to connect to the national electricity transmission system, the offshore export cables and offshore electrical stations.

5.1.4 If the Applicant constructs the transmission assets itself, then it must transfer those assets to an OFTO post-construction and pre-operation. OFTOs are selected on a competitive basis through a tender process. It is anticipated that the Applicant will opt for the generator build option which means that the offshore transmission assets will be transferred to an OFTO post construction and pre-operation.

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