The Great Grid Upgrade

Sea Link

Sea Link

Volume 6: Environmental Statement

Document Number 6.1

Environmental Statement Non-Technical Summary

Planning Inspectorate Reference: EN020026

Version: ~~A~~B
~~March~~ May 2025

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

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Version History

Date	Issue	Status	Description/ Changes
March 2025	A	Final	For DCO submission
May 2025	B	Final	Update to reflect minor errors identified in the Section 51 Letter

1. Introduction

1.1 Overview

1.1.1 The Sea Link Project (hereafter referred to as the 'Proposed Project') is a proposal by National Grid Electricity Transmission plc (hereafter referred to as 'National Grid') to reinforce the transmission network in the South East and East Anglia. The Proposed Project is required to accommodate additional power flows generated from renewable and low carbon generation, as well as accommodating additional new interconnection with mainland Europe.

1.1.2 This Non-Technical Summary (NTS) presents a summary of the Environment Impact Assessment (EIA) undertaken for the Proposed Project.

1.1.3 EIA is a tool used to assess the likely significant effects of a project on the environment. The findings of the EIA are reported in an Environmental Statement (ES). This NTS provides a description of the EIA process and its findings in a manner that is easily understood and in non-technical language. This NTS has been produced to support the Proposed Project's application for development consent and the accompanying ES under the Planning Act 2008.

1.2 Purpose and structure of this Non-Technical Summary

1.2.1 The purpose of the NTS is to enable local communities and other stakeholders to understand the likely significant environment effects arising from the Proposed Project, as reported in the ES, in a concise manner which is easily understood and accessible by all.

1.2.2 Effects are assessed in terms of how 'significant' they would be, and the EIA is primarily concerned with 'likely significant effects' as these are likely to be material to the decision of whether to grant development consent for the Proposed Project. The ES also sets out measures to mitigate potential significant adverse effects of the Proposed Project.

1.2.3 Full details of all likely significant effects identified are presented in the ES, along with information on the mitigation proposals, which are secured in the Register of Environmental Actions and Commitments (**Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**).

1.2.4 This NTS includes a description of the Proposed Project, a summary of the consultation process and the EIA findings. Table 1.1 sets out a summary of each of the chapters of this NTS.

Table 1.1 Structure of this NTS

Chapter	Content
Chapter 1 Introduction	Provides an overview of the NTS, introduces National Grid, and explains what the Proposed Project is, where it is located, and why it is needed.
Chapter 2 Main Alternatives Considered	Explains the main alternatives considered and provides a summary of how the design has evolved and developed.
Chapter 3 Proposed Project Description	Provides a general description of the Proposed Project including permanent elements and details of construction, operation, maintenance and decommissioning phases.
Chapter 4 EIA Approach and Methodology	Explains the general EIA process, how the assessment has been undertaken and how it has been informed by consultation and stakeholder engagement.
Chapter 5 Suffolk Onshore Scheme	Provides a summary of the likely significant environmental effects associated with the Suffolk Onshore Scheme. For each of the environmental topics considered, the chapter provides an overview of how the environmental effects have been assessed, a description of the existing environment, a summary of likely significant effects and the measures proposed to mitigate adverse impacts where possible and any residual significant effects identified.
Chapter 6 Kent Onshore Scheme	Provides a summary of the likely significant environmental effects associated with the Kent Onshore Scheme. The structure and scope of this chapter is as described above for Chapter 5.
Chapter 7 Offshore Scheme	Provides a summary of the likely significant environmental effects associated with the Offshore Scheme. The structure and scope of this chapter is as described above for Chapter 5.
Chapter 8 Project-Wide Effects	Provides a summary of the project-wide assessments undertaken for the Proposed Project, which are a climate change assessment and an assessment of combined effects of onshore and offshore elements.
Chapter 9 Next Steps	Explains the next steps in the Development Consent Order (DCO) application process.

1.3 What is Sea Link?

1.3.1 National Grid is proposing to reinforce the electricity network between Suffolk and Kent via a new 2 GW high voltage direct current (HVDC) link between a proposed substation near Friston in Suffolk and the existing Richborough to Canterbury 400 kV overhead line close to Richborough in Kent. This reinforcement would be approximately 138 km long, comprising of a principally offshore HVDC link. Additional onshore infrastructure required to deliver the Proposed Project, including converter stations, substations and new underground and overhead electricity lines, will also be installed.

1.3.2 The Proposed Project has been designed to increase the capability of the network to carry low carbon and renewable energy from where it is generated to homes and businesses across the country.

1.4 Who is National Grid?

1.4.1 National Grid owns, builds and maintains the electricity transmission network in England and Wales. Under the Electricity Act 1989, National Grid holds a transmission licence under which it is required to develop and maintain an efficient, coordinated, and economic electricity transmission system.

1.5 Why is Sea Link Needed?

1.5.1 The existing transmission network in and between East Anglia and the south-east of England needs reinforcing for four main reasons:

- the network was not designed to transport electricity from where it is increasingly being generated (largely offshore);
- the growth in offshore wind, interconnectors and nuclear power means that more electricity will be generated in the years ahead than the current network is able to securely and reliably transport;
- as a country, electricity demand is forecasted to at least double by 2050, increasing the amount of energy we need to transport to homes and businesses; and
- upgrading the existing network as it is today (such as through replacing cables to carry more power) will not be enough to carry the increasing need for electricity whilst operating to required standards.

1.5.2 The Proposed Project is just one of several electricity network reinforcements that are needed to ensure the electricity transmission network is fit for the future.

1.6 Where is Sea Link?

1.6.1 All onshore parts of the Proposed Project would be located within England and offshore parts of the Proposed Project would be located within the English Territorial Waters. The Proposed Project is divided into three distinct geographical parts: the Suffolk Onshore Scheme; the Kent Onshore Scheme; and the Offshore Scheme.

1.6.2 The Suffolk Onshore Scheme is located within the administrative boundary of Suffolk County Council (SCC) and East Suffolk Council (ESC) in an area that is predominantly rural in nature. The settlements of Aldeburgh, Thorpeness, Knodishall Common, Friston, Sternfield and Saxmundham are located in close proximity to the Suffolk Onshore Scheme. The Sizewell Nuclear Site is located approximately 2.5 km to the north east and there are two existing 400 kV overhead lines that cross the Suffolk Onshore Scheme and connect the existing Sizewell substation to Bramford substation.

1.6.3 The Kent Onshore Scheme is located within the administrative boundary of Kent County Council (KCC), Thanet District Council (TDC) and Dover District Council (DDC), in an area which is mostly semi-rural, with golf courses and areas of nature conservation closer to the coast.

1.6.4 The Kent Onshore Scheme is in close proximity to the settlements of Cliffs End and Minster. Richborough Energy Park and a wastewater treatment works are also located in the vicinity, to the south east. The existing Richborough to Canterbury 400 kV overhead line crosses through the far western extent of the Kent Onshore Scheme.

1.6.5 The Offshore Scheme is located wholly within English Territorial Waters, and it lies within the East Inshore and South East Inshore Marine Plan Areas. The Offshore Scheme is located to the west of London Array Offshore Wind Farm and to the east of Thanet, Greater Gabbard and Galloper Offshore Wind Farms. Parts of the Outer Thames Estuary and Thanet Coast and Sandwich Bay Ramsar and Special Protection Area (SPA), the Southern North Sea and the Sandwich Bay Special Area of Conservation (SAC) and Leiston Aldeburgh and Sandwich Bay to Hacklinge Marshes Site of Special Scientific Interest (SSSI) are located within the Offshore Scheme.

1.6.6 An overview of the location of the Proposed Project and the existing environment is provided in Plate 1.1 Suffolk Environmental Constraints~~Plate 1.1 Suffolk Environmental Constraints~~, Plate 1.2 Kent Environmental Constraints~~Plate 1.2 Kent Environmental Constraints~~ and Plate 1.3 Offshore Environmental Constraints~~Plate 1.3 Offshore Environmental Constraints~~.

1.7 Net Gain Commitments

1.7.1 National Grid has made a commitment to deliver 10% net gain in environmental value including as a minimum 10% Biodiversity Net Gain (BNG) across all its construction projects. These commitments ensure that National Grid can deliver long term environmental improvements as part of their works. The commitments align and make a positive contribution to regional and national strategies and facilitate collaboration and partnerships with local communities and stakeholders.

1.7.2 Further information on this is presented in **Application Document 6.12 Biodiversity Net Gain Feasibility Report.**

1.8 The Consenting Process for Sea Link

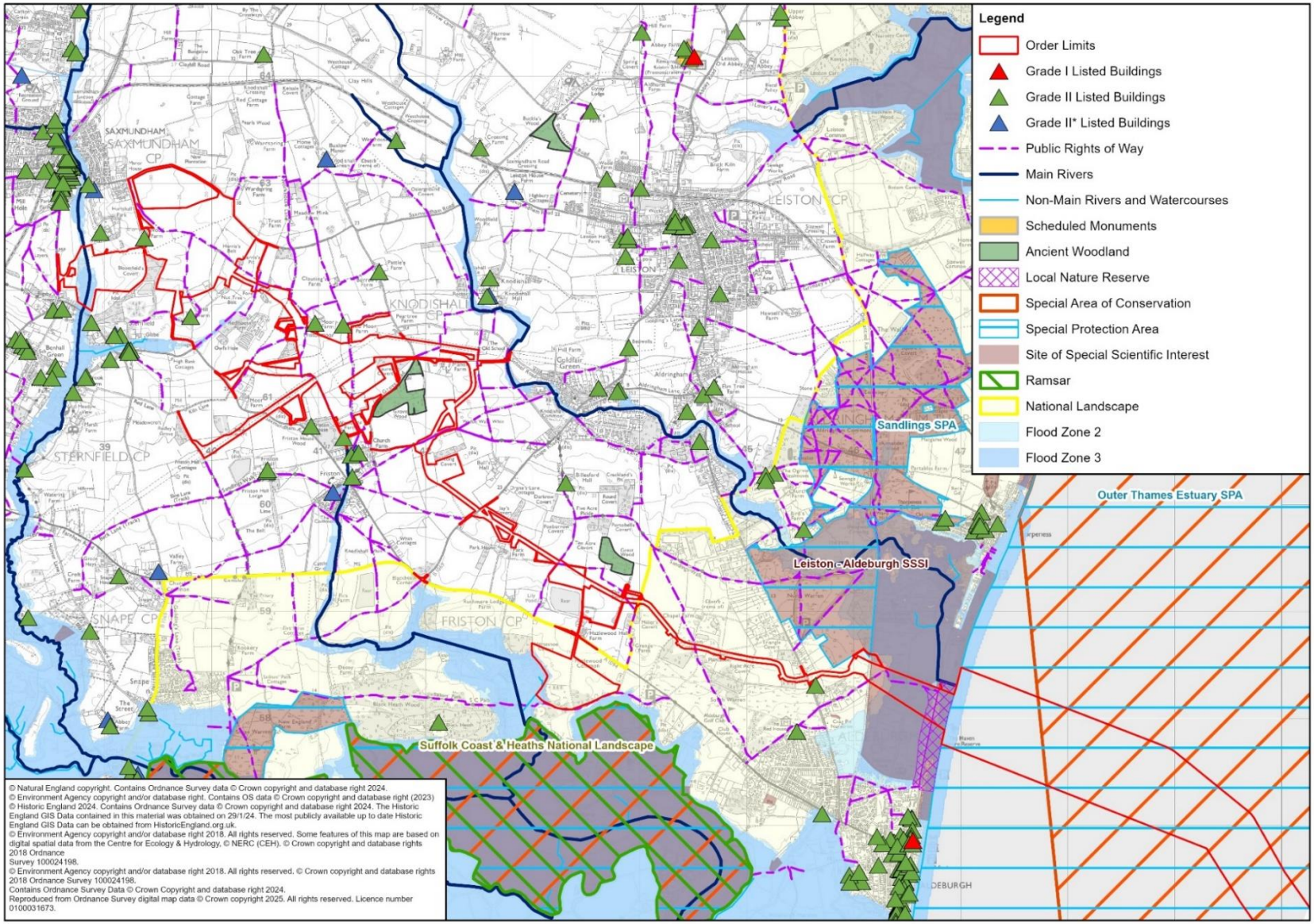
1.8.1 National Grid is submitting an application for a DCO for the Proposed Project under the Planning Act 2008.

1.8.2 The application for development consent defines Order Limits which encompass the land required to build and operate the Proposed Project, including land which is only required temporarily for construction purposes.

1.8.3 The Order Limits include Limits of Deviation (LoD), which represent the maximum locational flexibility for permanent infrastructure, such as converter stations, substations, overhead lines and underground cables. This allows for adjustment to the final positioning of project features to avoid localised, unknown or unforeseeable constraints that may arise.

1.8.4 The assessment presented within the ES takes account of the flexibility within the Order Limits and LoD. It also includes reasonable worst-case assumptions about the design and construction methods that may be used to construct and operate the Proposed Project.

1.8.5 The application for development consent, including the ES, will be examined by the Planning Inspectorate and the final decisions will be taken by the Department for Energy Security and Net Zero (DESNZ).


Legend
Order Limits
Grade I Listed Buildings
Grade II Listed Buildings
Grade II* Listed Buildings
Public Rights of Way
Main Rivers
Non-Main Rivers and Watercourses
Scheduled Monuments
Ancient Woodland
Local Nature Reserve
Special Area of Conservation
Special Protection Area
Site of Special Scientific Interest
Ramsar
National Landscape
Flood Zone 2
Flood Zone 3
Sandlings SPA
Outer Thames Estuary SPA
Leiston - Aldeburgh SSSI
Suffolk Coast & Heaths National Landscape
SAXMUNDHAM CP
LEISTON CP
KNODISHALL CP
STERNFIELD CP
SNAPE CP
FRISTON CP
DEBURGH
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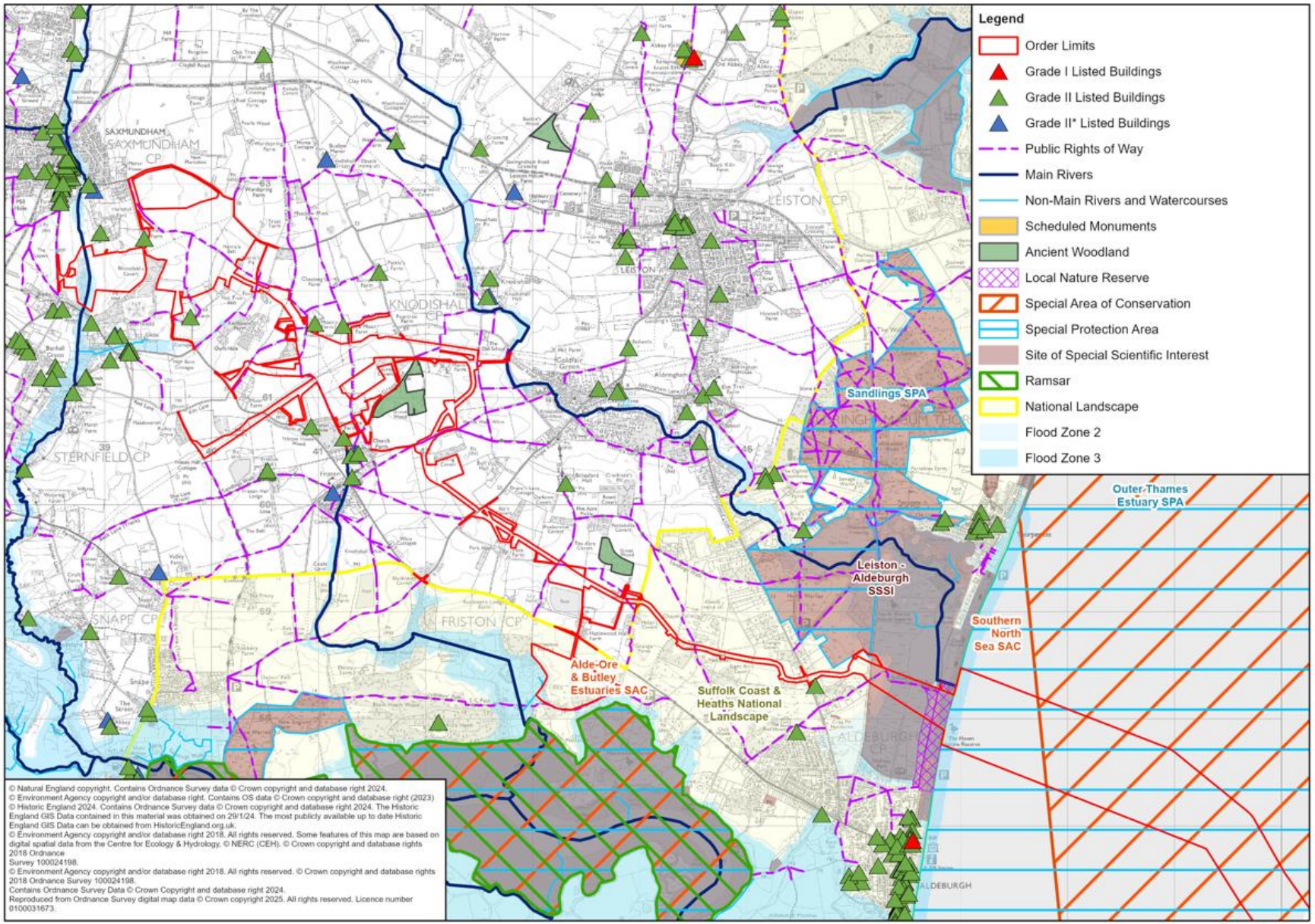
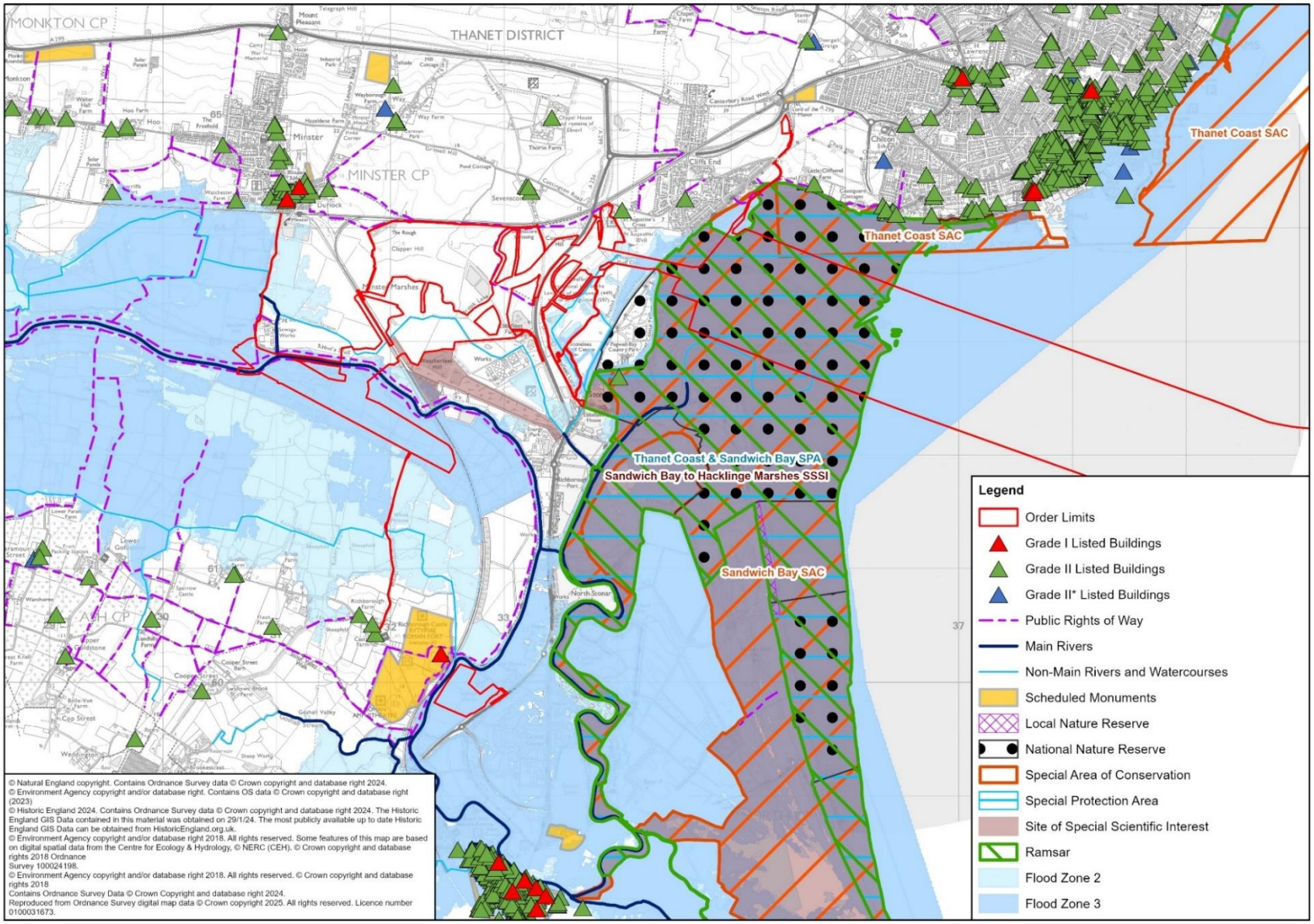


Plate 1.1 Suffolk Environmental Constraints


MONKTON CP
THANET DISTRICT
MINSTER CP
ASH CP
Minster
Thanet Coast SAC
Thanet Coast SAC
Thanet Coast & Sandwich Bay SPA
Sandwich Bay to Hacklinge Marshes SSSI
Sandwich Bay SAC
Legend
Order Limits
Grade I Listed Buildings
Grade II Listed Buildings
Grade II* Listed Buildings
Public Rights of Way
Main Rivers
Non-Main Rivers and Watercourses
Scheduled Monuments
Local Nature Reserve
National Nature Reserve
Special Area of Conservation
Special Protection Area
Site of Special Scientific Interest
Ramsar
Flood Zone 2
Flood Zone 3
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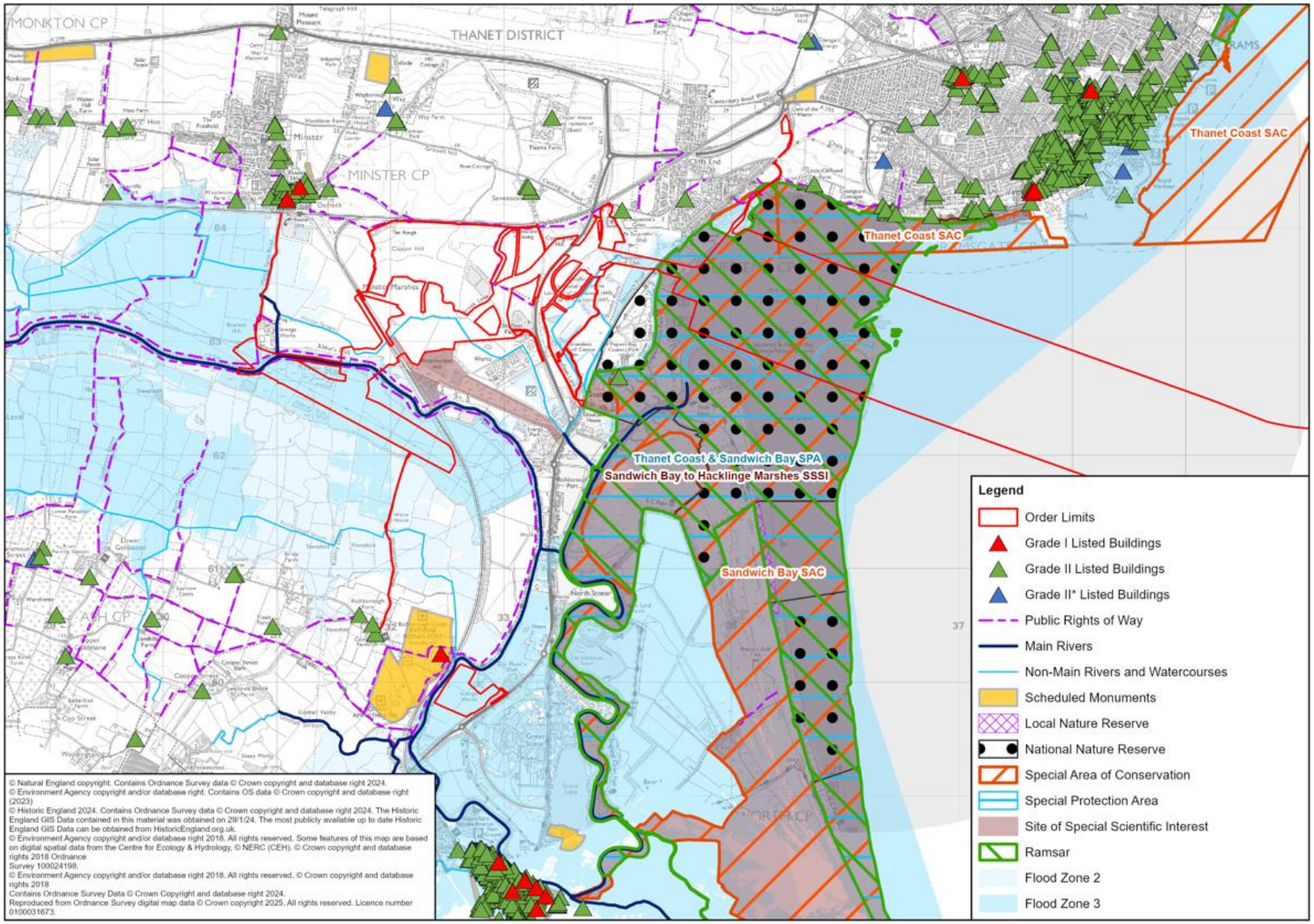


Plate 1.2 Kent Environmental Constraints

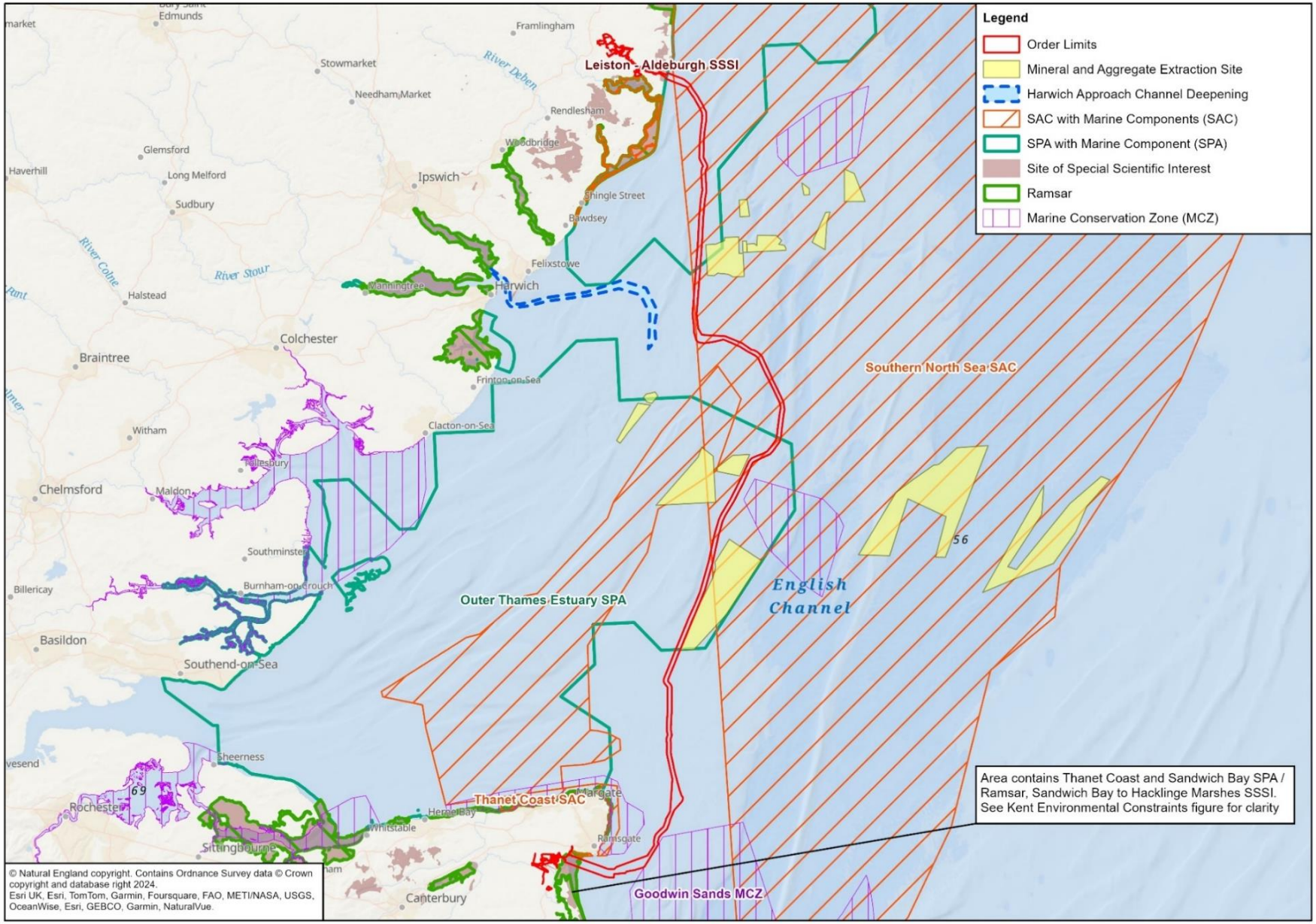


Plate 1.3 Offshore Environmental Constraints

2. Main Alternatives Considered

2.1 Introduction

2.1.1 National Grid undertakes options appraisals during the first stage of project development for all new projects. These often identify a number of different approaches the project could take to achieve its stated purpose, also known as its 'Needs Case', and may include different locations, technologies or designs.

2.1.2 Options appraisal is a robust and transparent process that is used to compare options and to assess the positive and negative effects. Options are appraised across a wide range of criteria including environmental, socio-economic, technical and cost factors, as set out in National Grid's approach to options appraisal. The aim is to find a balanced outcome, bearing in mind the range of National Grid's statutory duties. The assessment is documented to provide, in a transparent manner, information upon which decisions are based.

2.1.3 At each stage of the options appraisal process for the Proposed Project, a clearly defined methodology has been used to inform the decision making process. This has included technical inputs from engineers and environmental consultants to inform the decisions and design. Decision making has also taken into account the feedback from prescribed bodies, the local community and through an extensive programme of engagement and consultation.

2.1.4 Plate 2.1 shows where the options appraisal sits within National Grid's approach to project development and delivery.

2.1.5 The Proposed Project design is the result of an iterative process that commenced at project inception in 2019, when the initial need to reinforce the network in the South East of England was identified. Environmental, engineering and economic considerations have influenced the optioneering and design evolution process. There have also been extensive discussions with the relevant statutory and non-statutory stakeholders during the development of the Proposed Project, as well as rounds of public non-statutory and statutory consultation.

Plate 2.1 National Grid's Approach to Project Development and Delivery

2.2 Alternatives Considered at the Strategic Proposal Stage

2.2.1 A range of strategic options that might address network needs were identified and appraised at a strategic level. These appraisals considered the likely environmental and socio-economic effects, technical issues, and costs that would be associated with each strategic option.

2.2.2 Following the identification of the need for the Proposed Project, four alternative strategic options were appraised. These are listed below and illustrated on Plate 2.2.

- SL1 - Sizewell area and Sellindge area offshore.
- SL2 - Sizewell area and Richborough area offshore.
- SL3 - Sizewell area and Canterbury area offshore.
- LL1 - Sizewell area and Canterbury substation onshore.

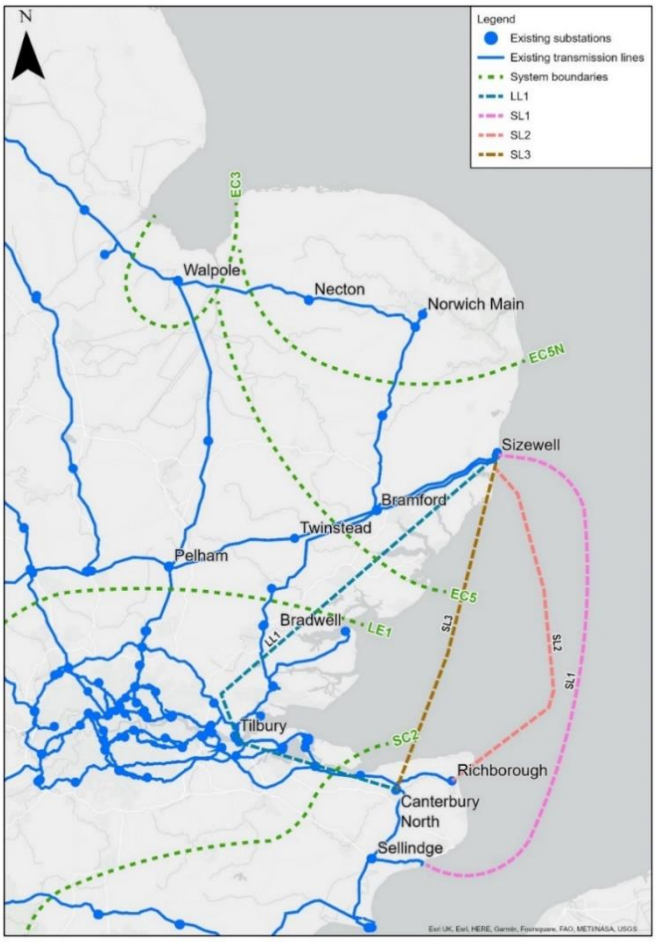


Plate 2.2 Schematic of Strategic Options Considered for the Proposed Project

2.2.3 As part of the assessment of these four strategic options, National Grid considered:

- the environmental and socio-economic constraints;
- the technology options available and the associated technical considerations; and
- the capital and lifetime costs of each option.

2.2.4 SL2 was identified as the preferred strategic option for the Proposed Project.

2.3 Alternatives Considered at the Options Identification and Selection Stage

2.3.1 Routeing and siting work was undertaken between 2021 and 2022. The outputs of this process are reported within **Application Document 8.1Corridor Preliminary Routeing and Substation Siting Study (October 2022)** (CPRSS).

2.3.2 A staged approach was adopted to identify corridors and preliminary routeing and siting options for the Proposed Project, considering environmental and socio-economic factors as well as technical and engineering design considerations, and cost.

2.3.3 Each of the options identified for the converter site option Areas, onshore and offshore cable route corridors and landfall areas of search were appraised in accordance with National Grid's approach to options appraisal. The steps undertaken for the Proposed Project in this staged approach are listed below.

- **Step 1** Identification of the Routeing and Siting Study Area.
- **Step 2** Data Gathering.
- **Step 3** Identification of Landfall Areas of Search.
- **Step 4** Identification of Route Corridors and Site Areas.
- **Step 5** Appraisal of Route Corridors and Site Areas.
- **Step 6** Identification of the Preferred end-to-end solution.

2.3.4 In Suffolk, three network connection points, five landfall areas of search, five broad cable route corridors and 12 converter station site areas were appraised.

2.3.5 In Kent two network connection points, six landfall areas of search, seven broad cable route corridors and two converter station site areas were appraised.

2.3.6 Offshore six alignments to the five landfall areas of search in Suffolk, 12 alignments to the six land landfall areas of search in Kent and seven central alignments were appraised.

2.3.7 In Autumn 2022, a Non-Statutory public consultation was held for a period of eight weeks, between 24 October 2022 and 18 December 2022. This consultation introduced the Proposed Project, explained how National Grid had developed its proposals, and sought the views of the public and stakeholders. Copies of the CPRSS were made available during the 2022 non-statutory consultation.

2.3.8 At statutory consultation, National Grid consulted on five corridor options in Suffolk. These were:

- Suffolk Site 1 Emerging Preference;
- Suffolk Site 3 Emerging Preference;
- Suffolk Site 1 Alternative;
- Suffolk Site 3 Alternative (option 1); and
- Suffolk Site 3 Alternative (option 2).

2.3.9 National Grid consulted on two corridor options for the marine cable. These were:

- Marine Corridor Emerging Preference; and
- Marine Corridor Alternative.

2.3.10 National Grid consulted on one corridor in Kent, this was the Kent Emerging Preference corridor.

2.3.11 National Grid also consulted on the technology choice in Kent for the High Voltage Alternating Current (HVAC) connection being made by either overhead line or underground cables.

2.3.12 Within the corridors and site areas National Grid showed a graduated swathe. The darker areas of the swathe indicated, based information available at the time, a more likely location for the infrastructure within the corridors and site areas. This was

indicative and subject to further assessment work, and the consultation feedback National Grid received.

2.4 Alternatives Considered at the Defined Proposal and Statutory Consultation Stage

2.4.1 The feedback received during the 2022 non-statutory consultation was carefully reviewed and considered, alongside ongoing environmental and engineering studies. National Grid also backchecked and reviewed its previous studies to ensure the reasons for the decisions taken had not changed following a review of the Non-Statutory Consultation feedback.

2.4.2 In Suffolk, Site 3 Emerging Preference was selected as the preferred option. In marine waters, the Marine Corridor Emerging Preference was selected as the preferred option. In Kent, an overhead line was selected as the choice of technology for the HVAC connection. This is documented in **Application Document 8.2 Options Selection and Design Evolution Report (October 2023)**.

2.4.3 The corridors and site option were refined to the draft Order Limits that were consulted on during Statutory Consultation that took place over an eight-week period from 24 October 2023 to 18 December 2023.

2.4.4 As part of the defined proposal, a number of alternatives were consulted on. In Suffolk three operational access (western, northern and from Sternfield) and two construction accesses (western and northern) to the proposed Saxmundham Converter Station Site were presented. In Kent two alternative types of pylon were also presented for making the HVAC connection.

2.4.5 These alternatives were appraised, taking into account feedback received from Statutory Consultation. The selection of the western access to the proposed Saxmundham Converter Station Site and full height lattice pylons in Kent were presented at a Targeted Consultation that took place between 8 July to 11 August 2024.

2.5 Alternatives Considered at the Assessment and Land Rights Stage

2.5.1 In response to consultation feedback, stakeholder engagement and ongoing environmental assessment work and site surveys, access options to the proposed Saxmundham Converter Station were revisited. Five options were appraised including both the western and north options presented at Statutory Consultation as well as alternative options from the south and east as well as one option which would utilise the proposed Sizewell Relief Road. There were no major influencing factors for any of the options from a land rights perspective. This appraisal concluded that the western access remained the preferred option for accessing the proposed Saxmundham Converter Station both during construction and operationally.

3. Proposed Project Description

3.1 The Proposed Project

3.1.1 The Proposed Project involves the reinforcement of the electricity transmission network between Suffolk and Kent, predominantly via an offshore HVDC link, but with additional onshore elements to connect into the transmission network. The Proposed Project is split into three distinctive elements, as follows.

The Suffolk Onshore Scheme

- A connection from the existing transmission network via Friston Substation, including the substation itself. Friston Substation already has development consent as part of other third-party projects. If Friston Substation has already been constructed under another consent, only a connection into the substation would be constructed as part of the Proposed Project.
- A HVAC underground cable of approximately 1.9 km in length between the proposed Friston Substation and a proposed converter station (below).
- A 2 GW HVDC converter station (including permanent access from the B1121 and a new bridge over the River Fromus) up to 26 m high plus external equipment (such as lightning protection, safety rails for maintenance works, ventilation equipment, aerials, similar small scale operational plant, or other roof treatment) near Saxmundham.
- A HVDC underground cable connection of approximately 10 km in length between the proposed converter station near Saxmundham, and a transition joint bay (TJB) approximately 900 m inshore from a landfall point (below) where the cable transitions from onshore to offshore technology.
- A landfall on the Suffolk coast (between Aldeburgh and Thorpeness).

Offshore Scheme

- Approximately 122 km of subsea HVDC cable, running between the Suffolk landfall location (between Aldeburgh and Thorpeness), and the Kent landfall location at Pegwell Bay.

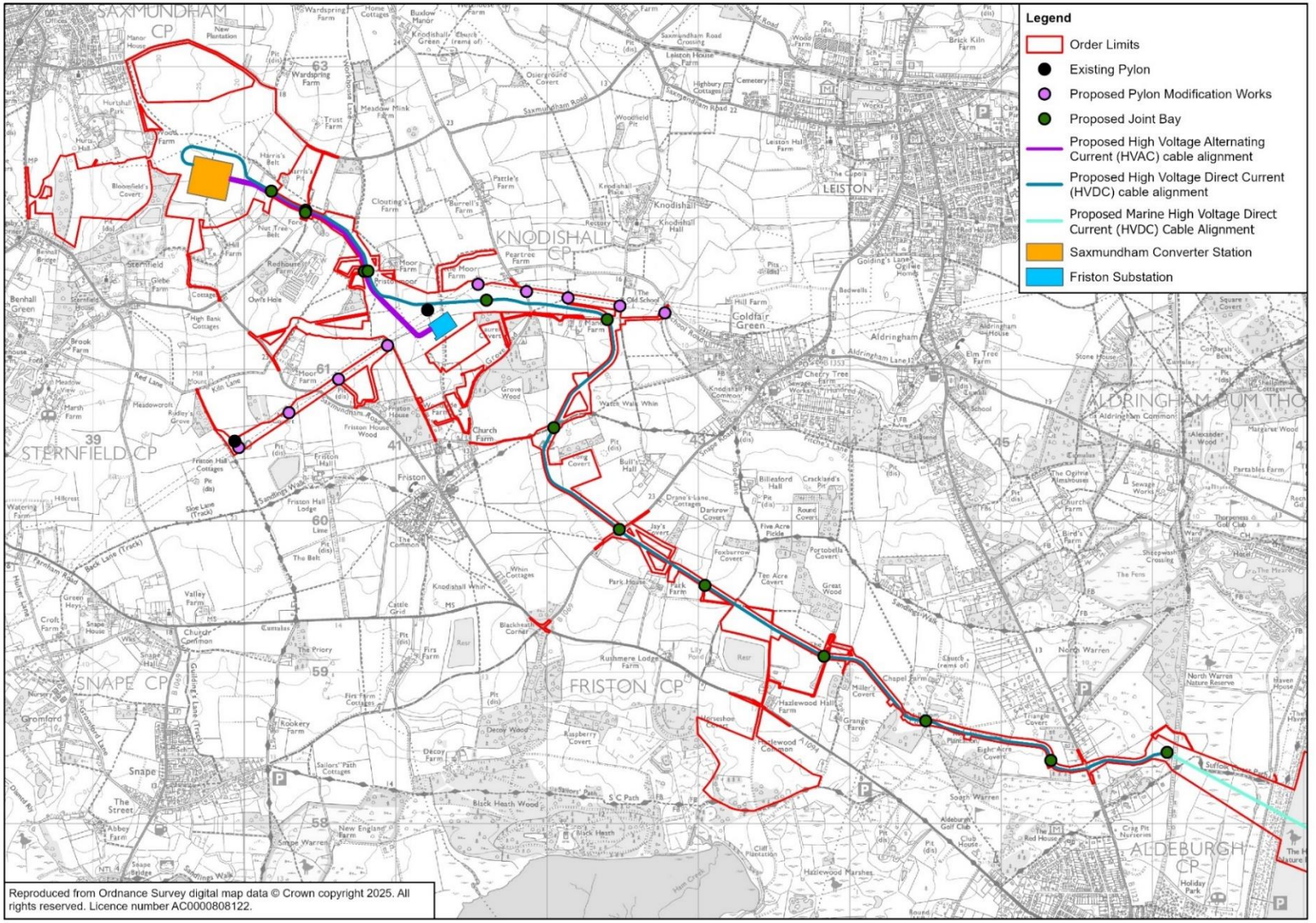
Kent Onshore Scheme

- A landfall point on the Kent coast at Pegwell Bay.
- A TJB approximately 800 m inshore to transition from offshore HVDC cable to onshore HVDC cable, before continuing underground for approximately 1.7 km to a new converter station (below).

- A 2 GW HVDC converter station (including a new permanent access from the A256) up to 28 m high plus external equipment (such as lightning protection, safety rails for maintenance works, ventilation equipment, aerials, and similar small scale operational plant), near Minster. A new substation would be located immediately adjacent.
- Removal of approximately 2.2 km of existing HVAC overhead line, and installation of two sections of new HVAC overhead line, together totalling approximately 3.5 km. each connecting from the substation near Minster and the existing Richborough to Canterbury overhead line.

3.1.2 The Proposed Project also includes modifications to sections of existing overhead lines in Suffolk (only if Friston Substation is not built pursuant to another consent) and Kent, diversions of third-party assets, and land drainage from the construction and operational footprint. It also includes opportunities for environmental mitigation and compensation. The construction phase will involve various temporary construction activities including overhead line diversions, use of temporary towers or masts, working areas for construction equipment and machinery, site offices, parking spaces, storage, accesses, bellmouths, and haul roads, as well as watercourse crossings and the diversion of public rights of way (PRoWs) and other ancillary operations.

3.1.3 Plate 3.1 to Plate 3.3 show the Order Limits and the main components of the Proposed Project.


Legend
Order Limits
Existing Pylon
Proposed Pylon Modification Works
Proposed Joint Bay
Proposed High Voltage Alternating Current (HVAC) cable alignment
Proposed High Voltage Direct Current (HVDC) cable alignment
Proposed Marine High Voltage Direct Current (HVDC) Cable Alignment
Saxmundham Converter Station
Friston Substation
SAXMUNDHAM CP
KNODISHALL CP
LEISTON
STERNFIELD CP
FRISTON CP
SNAPE CP
ALDEBURGH CP
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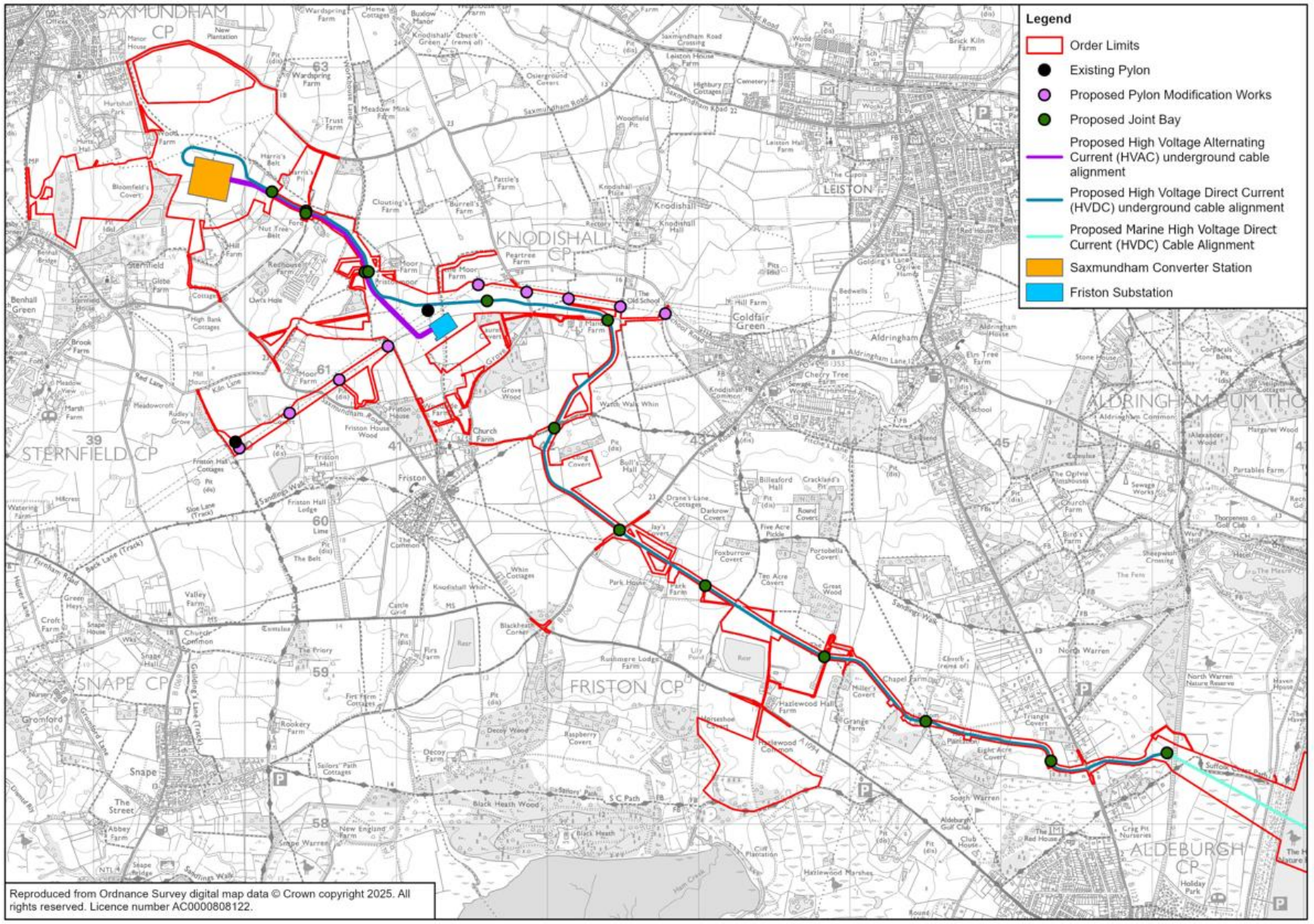
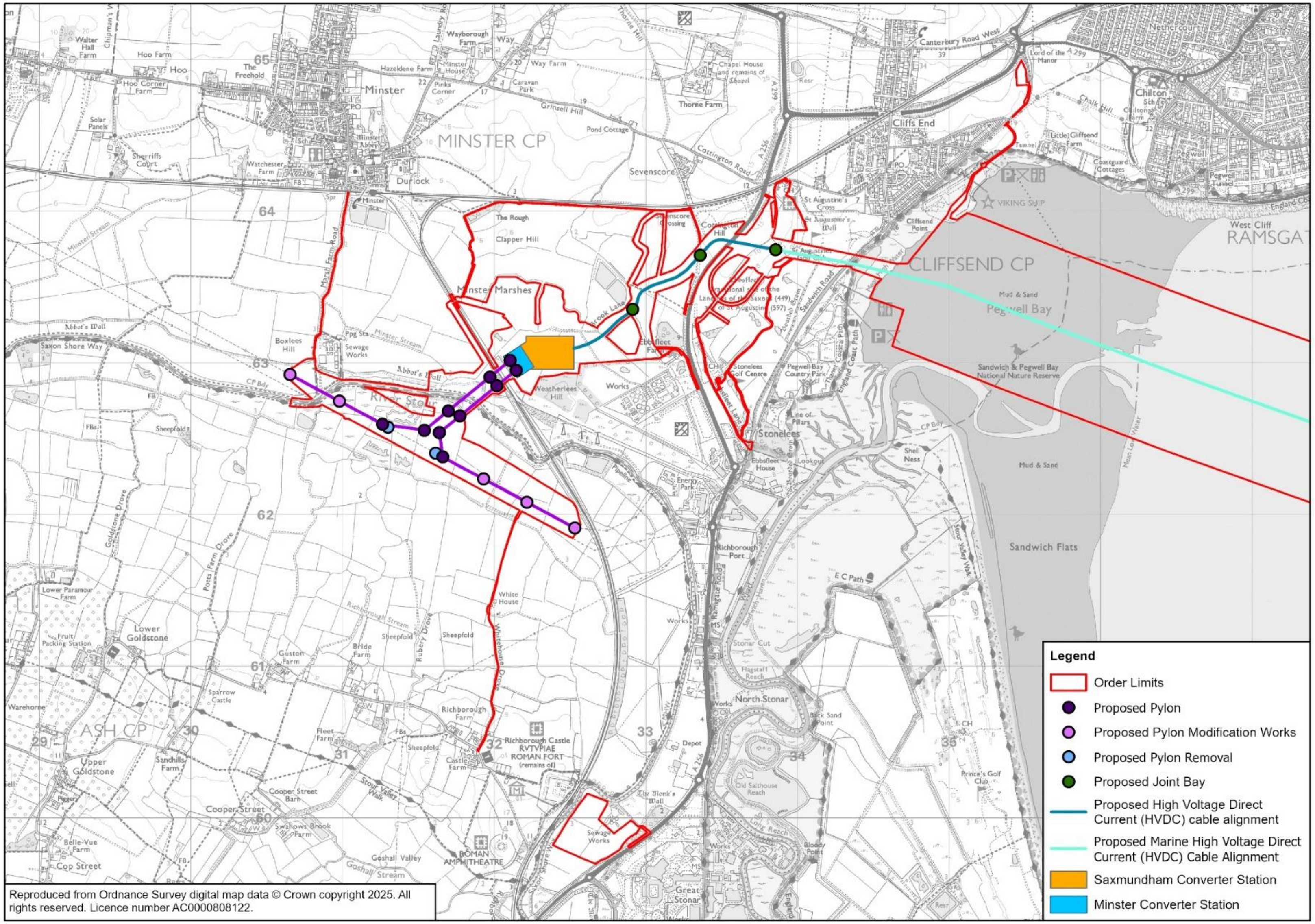


Plate 3.1 Suffolk Onshore Scheme Order Limits


Legend
Order Limits
Proposed Pylon
Proposed Pylon Modification Works
Proposed Pylon Removal
Proposed Joint Bay
Proposed High Voltage Direct Current (HVDC) cable alignment
Proposed Marine High Voltage Direct Current (HVDC) Cable Alignment
Saxmundham Converter Station
Minster Converter Station
MINSTER CP
CLIFFSEND CP
ASH CP
RAMSGATE
Minster
Cliffs End
Pegwell Bay
Sandwich Flats
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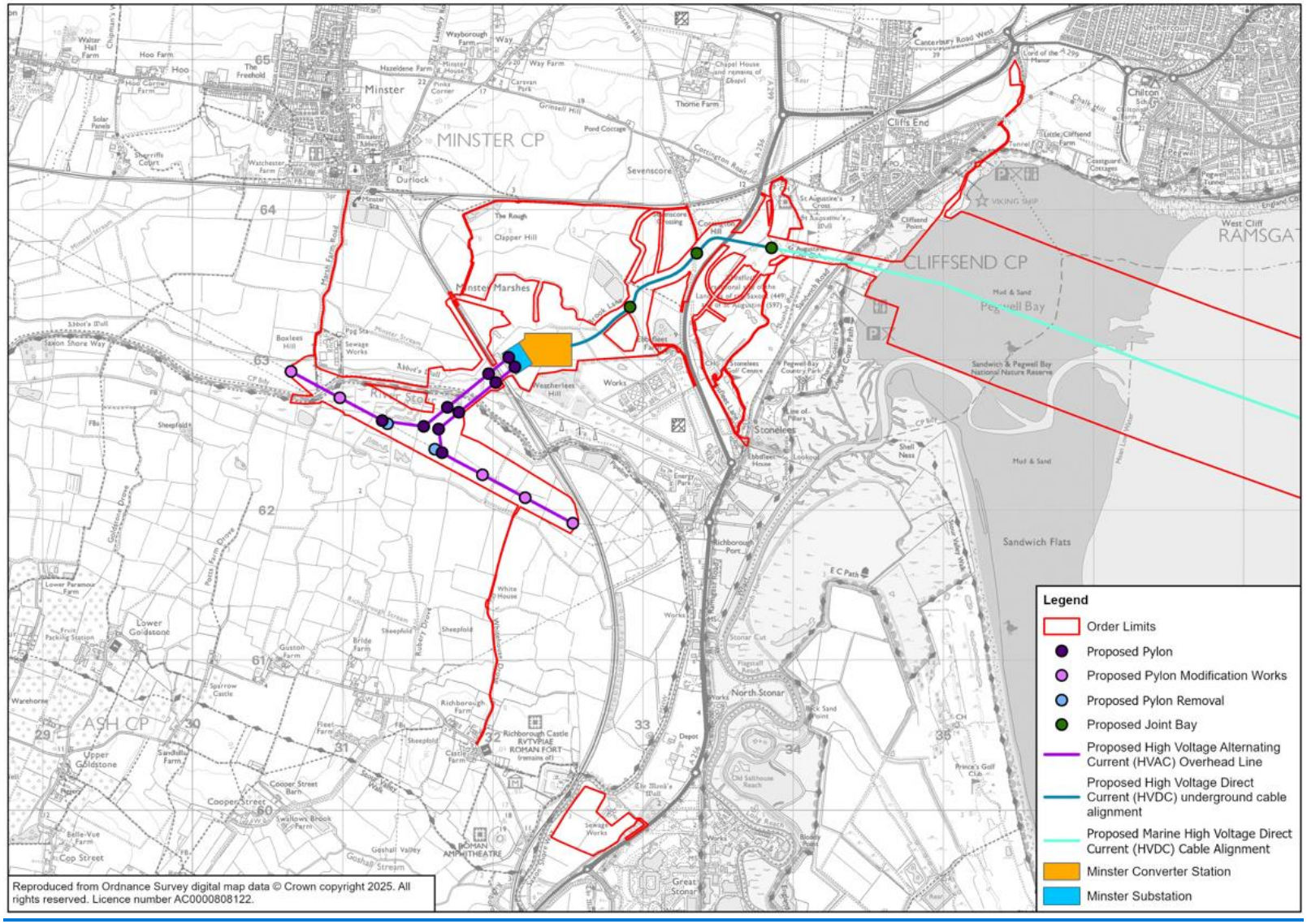


Plate 3.2 Kent Onshore Scheme Order Limits

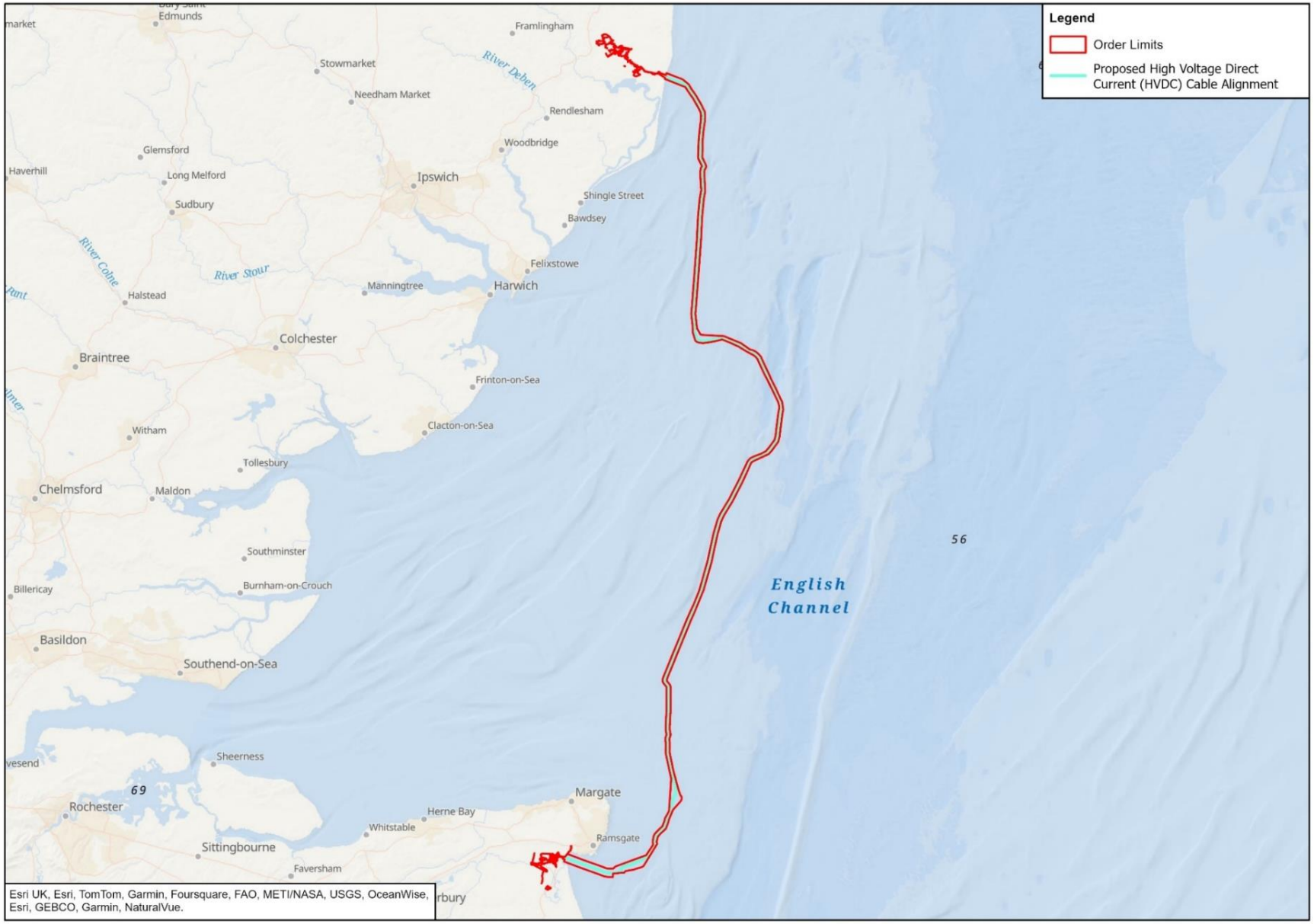


Plate 3.3 Offshore Scheme Order Limits

3.2 Construction Programme

3.2.1 Subject to gaining development consent, construction is planned to start in 2026 and be mostly completed by the end of 2031, with reinstatement potentially continuing into 2032. Some works, such as archaeological trial trenching or protected species mitigation, may be completed before the main construction works begin.

3.2.2 Although the phasing of the Proposed Project is not confirmed yet, Table 3.1 provides a general idea of how the Proposed Project may be delivered.

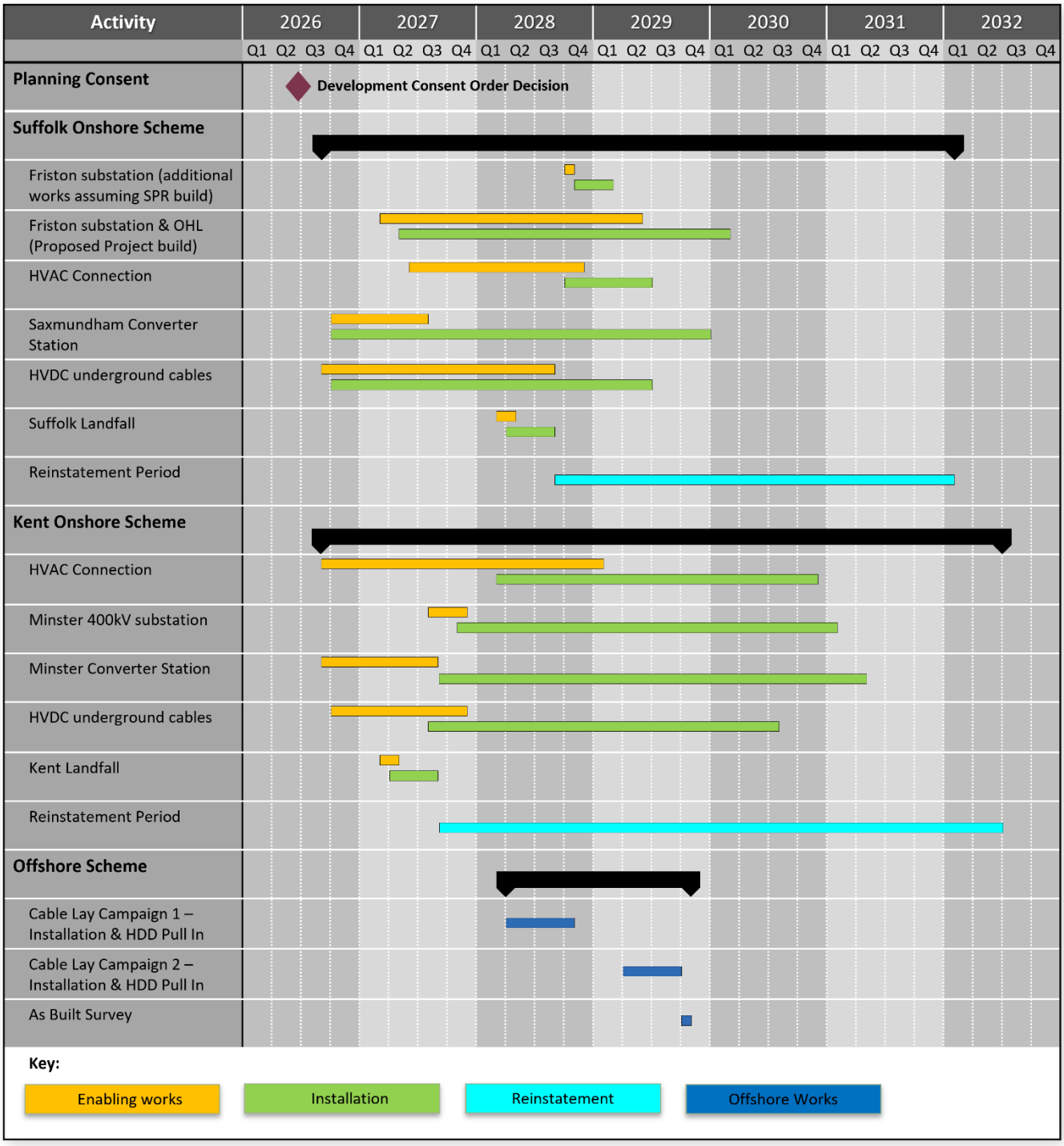
3.3 Construction Working Hours

3.3.1 The core construction working hours would be as follows:

- 07:00 to 19:00 Mondays to Fridays; and
- 07:00 to 17:00 on Saturdays, Sundays and Bank Holidays.

3.3.2 This excludes start up and close down activities, which can take place for up to one hour either side of the core working hours. There are operations that may take place outside of the core working hours including operations commencing during the core working hours which cannot safely be stopped; surveys or monitoring; and operations requested by a third party, for example highway works to avoid disruption to the local road network at peak times.

Table 3.1 Indicative Construction Programme



3.4 Terrestrial Enabling Works, Access and Site Preparation

3.4.1 The enabling works for construction would comprise the following key activities:

- set up of construction compounds, such as at the converter stations and substations sites as well as along the underground and overhead line cable routes, removing topsoil and setting up temporary facilities like offices and storage areas;
- construction of the temporary entrances, access roads and haul roads to allow construction vehicles to enter the site;

- after setting up the site, the ground is levelled and prepared for construction, including creating platforms and drainage systems;
- temporary construction areas will be set up at key sites to support construction activities. These areas will store materials and equipment, and provide space for offices, parking, and facilities for workers;
- diversion of utility lines, like power and telecom cables, to avoid interference with construction works and connection of the construction areas to the local power grid, both temporarily during construction and permanently once operational;
- diversions (temporary or permanent) of PRoWs; and
- construction of haul roads, bellmouths, culverts and bridges as well as construction of drainage works and connection to water, foul, communications and power.

3.5 Proposed Project Components

3.5.1 This section describes the works associated with the main components of the Proposed Project.

Proposed Converter Stations

3.5.2 A typical construction sequence for the construction of a converter station following the enabling works would include:

- survey and ground investigations;
- installation of bellmouths and creation of visibility splays where required;
- access road construction;
- site establishment;
- ground improvement and earthworks including levelling or raising the site;
- civil engineering works including drainage;
- building works;
- cable installation;
- provision/installation of permanent services;
- mechanical and electrical works;
- commissioning; and
- site reinstatement and landscape works.

3.5.3 The construction of the proposed converter stations would take approximately four years from first site access to reinstatement, excluding ongoing landscaping monitoring or maintenance and any advanced planting that may be proposed

3.5.4 The converter stations would include a DC hall, converter transformers, valve hall, reactor hall, AC switchyard, control building, strategic spare parts building, low voltage (LV) electricity supply, fire deluge pump house, car parking, a permanent access road and landscaping.

Suffolk

3.5.5 In Suffolk, a converter station is proposed to the east of Saxmundham and south of the B1119. The Saxmundham Converter Station would be up to 6.5 ha in area (excluding landscaping, drainage and access areas) and the valve halls could be up to 26 m in height excluding lighting protection, aerials, walkways, safety equipment and potential architectural treatments.

3.5.6 Permanent access to the Saxmundham Converter Station would be taken from B1121. As part of these access works a new bridge over the River Fromus is required which currently has two proposed height options of either 6 m or 4 m above ground level. No lighting is proposed on the new bridge or the approach to the bridge. For further detail on the dimensions of the River Fromus bridge options, please refer to **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project** and **Application Document 2.13.1 Design Drawings – Suffolk**.

3.5.7 An indicative 3D view of the proposed Saxmundham Converter Station is shown in Plate 3.1.

Plate 3.4 Indicative 3D view of the Proposed Saxmundham Converter Station

Kent

3.5.8 In Kent, the Minster Converter Station is proposed to the north of Richborough Energy Park and west of the A256. The converter station is to be sited adjacent to Minster 400 kV substation, with the total combined area of both being approximately 9 ha. The Converter Station will be up to 28 m above existing ground level and the substation will be up to 20 m above existing ground level. Permanent access to the converter and substation would be via a new access off the A256, north of Jutes Lane.

3.5.9 An indicative 3D view of the proposed Minster Converter Station and Substation is shown in Plate 3.2.

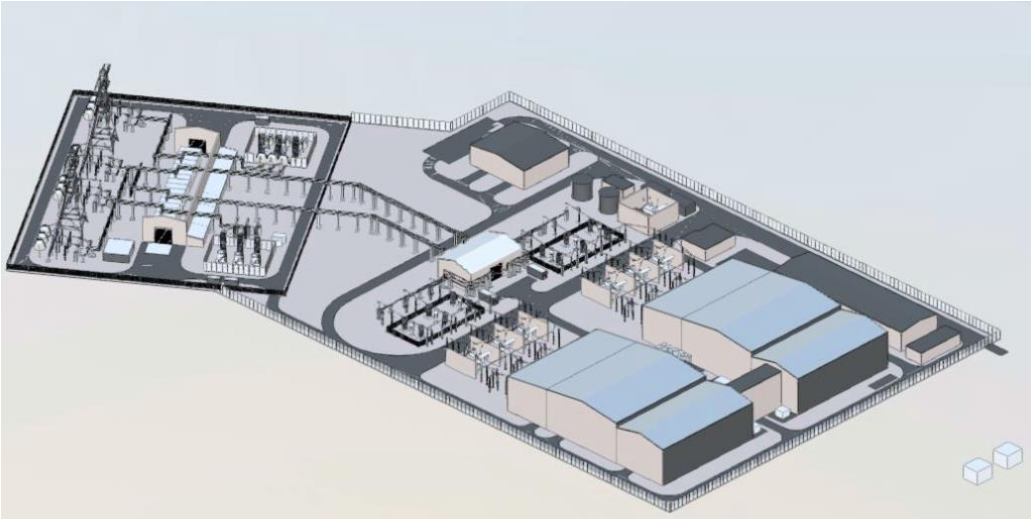


Plate 3.5 Indicative 3D view of the Proposed Minster Converter Station and Substation

Proposed Substations

3.5.10 The typical construction sequence for the construction of a substation would involve:

- survey and ground investigations;
- set up of site establishment and temporary facilities;
- temporary access to the substation;
- earthworks;
- civil engineering works including cable works and drainage;
- building works;
- mechanical and electrical installation works;
- outage works to disconnect the overhead line including temporary towers/masts where required;
- construction of new towers;
- outage to reconnect overhead line via new towers to substation;
- commissioning/energisation; and
- reinstatement.

3.5.11 For the purposes of the ES, it has been assumed that the construction of the proposed substations would take approximately three years, which is typical for a substation.

Suffolk

3.5.12 In Suffolk a substation is proposed to the north of the village of Friston. The proposed Friston Substation already has development consent as part of other third-party projects. If Friston Substation is built as part of the Proposed Project it would be constructed using gas insulated technology and would have a footprint of up to

16,800m^2. The construction of the substation would also require modification works to the adjacent existing 400 kV overhead line.

3.5.13 If Friston Substation has already been constructed under another consent, only a connection into the substation would be constructed as part of the Proposed Project. If this is the case, the works required would be limited to the installation of new gas insulated switchgear (GIS) bays and additional switch gear, cable sealing ends (CSE) and associated outdoor structures, cable connections and busbars, all within the boundary of the substation, and the routing of the HVAC cables to the substation.

Kent

3.5.14 In Kent, Minster 400 kV Substation would be located next to Minster Converter Station and will occupy approximately 9 ha.

3.5.15 The proposed substation would comprise a 400 kV substation, a GIS building, various primary plant and secondary equipment including, but is not limited to, circuit breakers, disconnectors, earth switches, busbars, and cable interface.

Proposed Underground Cables

3.5.16 There would be approximately 10 km of HVDC underground cable and 1.9 km of HVAC cable installed as part of the Suffolk Onshore Scheme, with a further 2 km of HVDC cable installed for the Kent Onshore Scheme.

3.5.17 In Suffolk, the HVDC cable would run from the proposed Saxmundham Converter Station to the landfall. The HVAC cable would follow the same route than the HVDC cable between the proposed Friston Substation and the proposed Saxmundahm Converter Station. The construction width for the combined section of HVDC/HVAC cables would be up to approximately 78 m.

3.5.18 In Kent, the HVDC cable would run from the proposed Minster Converter Station to the landfall. The working width for the installation of the HVDC cable would be approximately 40 m.

3.5.19 For the Proposed Project, an open cut ducted installation method is proposed for all terrestrial sections of the route, except the crossing of the A256 in Kent and both landfalls where trenchless installation is required. Open cut ducted installation is typically utilised in open countryside and involves the excavation of a trench into which the ducts are installed, and the trench backfilled. This allows the excavations to only be open for a short duration and over a more limited length which reduces health and safety risks and improves runoff management.

Proposed Overhead HVAC Connection

3.5.20 To facilitate the Proposed Project, the existing 400 kV~~v~~ power line in Kent needs to be modified to connect to the proposed Minster 400 k~~K~~V~~v~~ Substation. This involves constructing 3.5 km of new overhead line, replacing 2.2 km of the existing overhead line. The new line will run northeast from the existing overhead line, crossing the River Stour and a railway, and will connect to the proposed Minster Substation.

3.5.21 The construction of a section of 400 kV overhead line would generally follow these stages:

- pre-construction (surveys, preparation of site facilities and vegetation clearance);

- access installation and preparation of construction lay down areas;
- topsoil stripping/excavation, temporary drainage installation and installation of pylon foundations;
- erection of overhead line structures (towers)
- overhead line tower dismantling;
- stringing of conductors; and
- re-instatement (removal of construction equipment, compounds and access tracks, reinstatement of ground/soils and trees if applicable).

Landfalls

3.5.22 The cable landfalls form the transition between the underground HVDC cables and the marine HVDC cables. The terrestrial and marine sections of cable are joined together at the transition joint bay. The Suffolk and Kent landfall would be installed by trenchless solutions such as horizontal directional drilling (HDD) to reduce the impact to designated sites along the coast. This involves drilling beneath the ground before the cable is pulled through, avoiding the need to dig trenches.

Proposed Marine Cables

3.5.23 Approximately 122 km of HVDC cable will be installed between the transitional joint bay at the Suffolk landfall located at Aldeburgh and the transitional joint bay at the Kent landfall located in Pegwell Bay. Installation of the HVDC marine cable includes the following activities:

- ground preparation as required, and cable laying activities at the landfall sites;
- pre-lay seabed preparation activities along the route below mean low water springs (MLWS) (including route clearance, removal of Out of Service cables, pre-grapnel run and any pre-sweeping);
- construction of cable crossings;
- installation and burial of the subsea cables; and
- placement of external cable protection (as required).

3.6 Reinstatement Works

3.6.1 Reinstatement activities mitigate for the intrusive works that have occurred during the project. This occurs once construction works are complete and includes the removal of the temporary access routes, temporary compounds and working areas.

3.6.2 Typically, during excavation of cable trenches all topsoil would be retained and used during reinstatement to backfill the cable trenches. Topsoil would be reinstated to original levels and re-seeded where required or released to the landowner for cultivation. Additional environmental enhancement works may also be carried out with agreement with landowners where necessary.

3.6.3 As the cable installation would typically take up approximately half the volume of the subsoil excavated, there would be excess subsoil following reinstatement. Any excess

subsoil would either be retained for use on site, such as for landscaping or removed from site.

3.6.4 Vegetation that was temporarily managed or removed as part of the enabling works would be replanted or allowed to regrow where operational safety planting restrictions are not in place. Replanting would take place as soon as practicable, taking into account suitable planting seasons. Tree and hedgerow replanting would take place as described in the Outline Landscape and Ecological Management Plans (OLEMPs) for Suffolk and Kent (**Application Document 7.5.7.1** and **Application Document 7.5.7.2**).

3.7 Operation and Maintenance

3.7.1 The majority of elements of the Proposed Project (overhead line, underground cables and converter stations and substation) have a lifespan of approximately 40 years (with the exception of pylons which have a typical lifespan of up to 80 years).

Proposed Friston and Minster 400 kV Substations

3.7.2 The proposed substations would be operated by a small team but would not be staffed continuously. The substations would be monitored remotely by National Grid with monthly inspections. No material is consumed or machinery required during operation.

3.7.3 Maintenance would be undertaken on an ongoing bases within equipment subject to a three-year maintenance cycle. Maintenance activities could include visual and physical inspections as well as tests, repairs and replacement of equipment.

Proposed Converter Stations

3.7.4 The proposed converter stations would operate continuously and a minimum of two operators would be present at all times. No material is consumed or machinery required during operation.

3.7.5 During maintenance (planned and unplanned) the number of staff on site would increase proportionally with the works being carried out.

Proposed Overhead HVAC Connection

3.7.6 The overhead line in Kent would transmit electricity from the proposed Minster 400 kV substation to the existing network in the South East of England. This would not require daily attendance from operators and no material would consumed or machinery required during operation.

3.7.7 The overhead line would be subject to an annual inspection from the ground or by helicopter/drone to identify any faults, signs of wear, tree growth or other developments. Minor repairs or modifications may be required from time to time, this will be programmed locally by a maintenance team.

Proposed Underground HVAC and HVDC Cables

3.7.8 The underground cables would transmit electricity from the proposed Friston Substation in Suffolk to the existing network in Kent and vice versa, depending on supply and demand. This would not require daily attendance from operators and no material would be consumed or machinery required during operation.

3.7.9 Maintenance activities along the proposed cable routes would generally be limited to inspections and cable repairs. Cable repairs would only be required in the unlikely event of a cable fault, which would require the section of cable to be replaced.

Proposed Marine Cable

3.7.10 The main operational requirement for the marine cable is for regular monitoring surveys along the cable route. The marine cable is designed so that a regular maintenance regime is not required. However, the monitoring surveys may indicate any localised lengths of cable that may require maintenance. This may involve the removal of excess sand depth, additional rock berms/ protection and additional trenching.

3.7.11 Cable repairs may be required at any time, although this is usually mitigated by good design and installation. Repairs which occur after commissioning are rare and are usually caused by cable technical failure, marine traffic damage or third party works.

3.8 Decommissioning

3.8.1 There are no plans to decommission the Proposed Project. The design life of the project elements is likely to be significantly extended given the probable increase in electricity demand in the future and the typical life of some components being longer than 40 years (for example a pylon would typically last 80 years before requiring a full refurbishment). The design life of the project could, therefore, be extended with regular maintenance and refurbishment of each component.

3.8.2 If decommissioning was required, this would be done in accordance with a decommissioning plan. This is expected to include but not limited to:

- dismantling and removal of equipment (larger substation or pylon materials may be dismantled by crane);
- removal of cabling;
- removal of any building services equipment;
- demolition of buildings and removal of fences; and
- landscaping and reinstatement of the site.

3.8.3 Much of the material would be taken for recycling. Where this is not possible, removed equipment would be disposed of in accordance with the relevant waste disposal regulations at the time of decommissioning. It would be evaluated whether buried cables and permanent access roads could be used for another purpose, otherwise they would be removed and recycled as necessary. Foundations would be removed to approximately 1 m deep to allow for agricultural use unless full removal is deemed necessary. The marine cable would be either removed or left *in-situ* in accordance with an initial decommissioning plan.

4. EIA Approach and Methodology

4.1 Overview of the EIA Process

4.1.1 EIA is the process of compiling, evaluating and presenting information about the likely significant effects, both adverse and beneficial, of a project and identifying appropriate mitigation to reduce residual effects, where practicable, to a non-significant level. The EIA process informs the project design and provides decision makers with the environmental information they require to determine whether a proposal should be granted consent. It also allows other parties to make informed representations about the proposed project.

4.1.2 To enable the EIA process to be proportionate and focus on those impacts likely to be significant, a Scoping Report was submitted to the Planning Inspectorate in October 2022 (**Application Document 6.14 Environmental Scoping Report 2022**). This report sets out what should be assessed in the EIA to help define how to approach the assessment and what information may be needed to identify the likely significant effects from the Proposed Project. A Scoping Opinion was provided by the Planning Inspectorate on behalf of the Secretary of State in December 2022 (**Application Document 6.15 Scoping Opinion 2022**) that advised on what information should be included within the ES. The Scoping Opinion and the statutory consultee responses have subsequently informed the assessment work and further design development undertaken for the Proposed Project.

4.1.3 Following the scoping stage, a Preliminary Environmental Information Report (PEIR) was published by National Grid in October 2023 as part of the statutory pre-application consultation process. Additional preliminary environmental information was published in July 2024 in support of the Targeted Consultation exercise that took place in the Summer 2024 following further technical and environmental assessments.

4.1.4 The ES presents the results of the EIA process undertaken and covers the construction, operation and maintenance, and decommissioning phases of the Proposed Project. The ES is based on desk studies, consultation and site-specific surveys which have informed an understanding of the existing environment and how this may change in the future with the Proposed Project.

4.1.5 Extensive engagement and consultation have been undertaken with the local planning authorities (LPAs), regulatory authorities, people with an interest in the land and affected communities. In addition to the formal scoping process, National Grid has undertaken ongoing stakeholder engagement throughout the development of the Proposed Project. This has included regular liaison with statutory and non-statutory stakeholders through strategic and topic specific meetings to discuss technical issues and respond to questions. Engagement and consultation have helped to identify issues and concerns regarding the Proposed Project, its design, and the EIA process.

4.1.6 The EIA process is summarised in Plate 4.1.

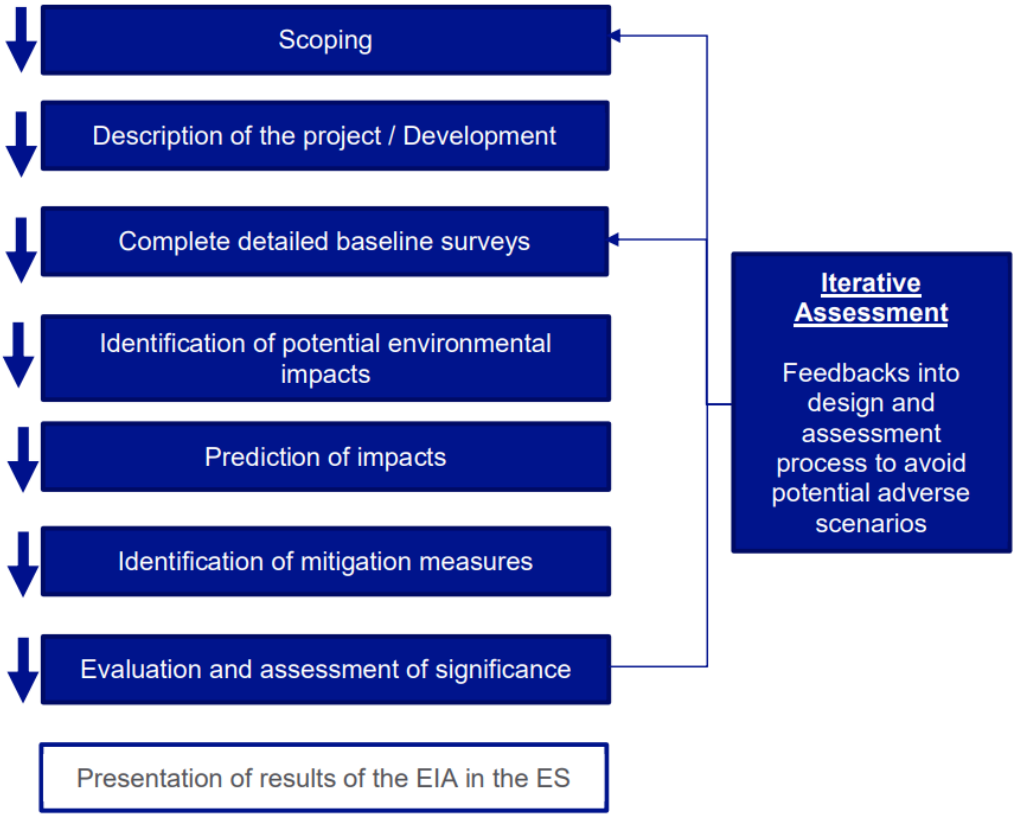


Plate 4.1 The EIA Process

4.2 EIA Methodology

4.2.1 EIA is a process for identifying the likely significant environmental effects (positive and negative) of a proposed development to inform the decision-making process for development consent to be granted.

4.2.2 The EIA considers all relevant aspects of the environment that may be impacted by the Proposed Project, including human health, the natural and physical environments and material assets. The topics to be included in the EIA were agreed with the Planning Inspectorate and other stakeholders through the Scoping process described above.

4.2.3 A description of the existing environment (also known as 'baseline') has been produced for the Proposed Project and where appropriate the area around the boundary, through a combination of desk-based studies, consultation and site-specific surveys. The size of the study area depends on the topic that is being assessed and is reported in each technical ES chapter along with a rationale for its selection.

4.2.4 All 'potential effects' arising from the construction, operation and maintenance, and decommissioning of the Proposed Project are identified as part of the EIA, for example loss of habitat or change in noise levels. The assessment considers the significance of each effect on each 'receptor' (the receiving environment such as water, air, land, or specific species). The assessment is undertaken by EIA specialists such as ecologists and archaeologists. The general approach to determining 'significance' of an effect is to consider the sensitivity of a receptor alongside the nature and severity of the change.

4.2.5 The method for assessing the significance of effects is reported in full in **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology**. More specific methods for each technical topic, based on relevant standards or guidelines, are presented within each technical ES chapter. Any deviation from the methodology presented in Chapter 5 is explained in each respective chapter.

4.2.6 All potential effects are considered as part of the EIA process. However, 'likely significant effects' are the key issues that are identified when considering the type of effect and the sensitivity of the environmental receptor.

4.2.7 After the identification of the potential effects, consideration has been given to how those potential effects could be avoided, minimized or reduced, or offset. This is referred to as mitigation. Mitigation measures include those that are intrinsic to and built into the design of the Proposed Project (also known as 'embedded measures'); good practice control and management measures included within a Code of Construction Practice (CoCP), and other measures that are added to the design purely to mitigate an effect (e.g. habitat creation).

4.2.8 An Outline Offshore Construction Environmental Management Plan (CEMP) (**Application Document 7.5.2**) and an Outline Onshore CEMP (**Application Document 7.5.3**) have been prepared which set out the overarching principles and detailed measures to minimise, as far as reasonably practicable, and mitigate the effects of the construction activities associated with the Proposed Project. Outline Onshore CEMP Appendix A Outline Code of Construction Practice (CoCP) (**Application Document 7.5.3.1**) sets out the standard good practice measures that will be undertaken during construction of the Proposed Project. Onshore CEMP Appendix B Register of Environmental Actions and Commitments (REAC) (**Application Document 7.5.3.2**) provides a record of all environmental commitments and measures assumed within the ES, including embedded and additional mitigation measures.

4.2.9 The parameters of the assessment have been developed so as to assess the reasonable worst case including, for example, assuming that the permanent or temporary infrastructure could be located anywhere within the LoD or Order Limits respectively. As such the final design of the Proposed Project would be within the set design parameters and the effects would not be worse than those reported in this ES.

4.2.10 Within Suffolk, a number of alternative design options and assessment scenarios have been considered. This has included an assessment of two design options for the proposed bridge over the River Fromus, as well as consideration of the proposed Friston Substation being installed under a current consent or being built as part of the Proposed Project.

4.2.11 The EIA has also considered potential cumulative and interrelated effects as follows:

- intra-project cumulative effects are those that arise from multiple impacts and activities from the construction, operation and decommissioning on the same receptor, or group of receptors; and
- inter-project cumulative effects consider the effect of the Proposed Project combined with effects from a number of different projects, on the same single environmental receptor/resource are considered.

4.2.12 For further detail, please refer to **Application Document 6.2.1.5 Part 1 Chapter 5 EIA Approach and Methodology**.

4.3 Structure of the Environmental Statement

4.3.1 The ES is part of Volume 6 within the DCO and is comprised of the following sections:

- Non-Technical Summary (this report);
- Part 1: Introduction;
- Part 2: Suffolk Onshore Scheme;
- Part 3: Kent Onshore Scheme;
- Part 4: Offshore Scheme;
- Part 5: Project Wide Effects;
- Appendices; and
- Figures.

4.3.2 This structure is detailed further in **Application Document 6.2.1.1 Part 1 Chapter 1 Introduction**.

4.3.3 Each of the technical chapters within Volume 6 Parts 1 – 4 are structured as follows:

- Introduction;
- Regulatory and Planning Context;
- Scoping Opinion and Consultation;
- Approach and Methodology;
- Basis of Assessment;
- Study Area;
- Baseline Conditions;
- Proposed Project Design and Embedded Mitigation;
- Assessment of Impacts and Likely Significant Effects;
- Additional Mitigation and Enhancement Measures;
- Residual Effects and Conclusion;
- Sensitivity Testing; and
- References.

5. Suffolk Onshore Scheme

5.1 Landscape and Visual

Approach to the Assessment

5.1.1 The EIA considers the likely significant effects of the Suffolk Onshore Scheme on landscape and visual receptors. Landscape receptors include landscape designations and the landscape character of the area. Visual receptors include people who could experience difference views, through the removal and/or introduction of man-made and natural features.

5.1.2 Examples of landscape and visual receptors considered within the EIA include:

- Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB);
- Suffolk Heritage Coast;
- Landscape Character Areas (LCAs);
- people living and moving around the area (communities); and
- recreational receptors (for example PRoW).

5.1.3 The study area for the landscape and visual assessment of the Suffolk Onshore Scheme comprises an area of 3 km from the Order Limits surrounding the proposed Saxmundham Converter Station and Friston Substation, and 1 km from the Order Limits around the proposed landfall and HVDC and HVAC cable corridors. Existing conditions were established through a desk study, which was supplemented by site surveys.

5.1.4 Computer modelling has generated a Zone of Theoretical Visibility (ZTV) which illustrates theoretical visibility of the project during the operational phase. This was used as part of the process to select potential viewpoints for the assessment which were then checked and refined with a field survey to inform the assessment. Stakeholder engagement was also key in the process of selecting viewpoints.

5.1.5 The assessment was undertaken for three phases:

- during construction (including decommissioning);
- for the first year of operation (year 1) and maintenance after all construction works have been completed and reinstatement has commenced; and
- at year 15 (15 years from completion of building the Proposed Project) of operation and maintenance, to determine the effects following maturation of the replacement planting.

5.1.6 The assessment was undertaken with various assumptions, including that there would be advanced planting before the construction phase begins.

5.1.7 The assessment was also undertaken considering various scenarios:

- Friston Substation: A scenario in which Friston Substation would be built under the consent granted to Scottish Power Renewables and Sea Link would tie in and a

scenario in which a substation at Friston to facilitate the Proposed Project would be built as part of the Suffolk Onshore Scheme.

- River Fromus bridge: An option with a bridge height of approximately 4 metres with 42 metre long approach ramps and an option with a bridge height of approximately 6 metres with 62 metre long approach ramps.

Existing Environment

5.1.8 The landscape varies considerably within the study area. It includes parts of the low-lying and gently undulating coastline comprising marshland and heathland, within the Suffolk Coast and Heaths AONB. Further inland, medium to large-scale agricultural fields dominate across relatively higher, undulating land. The landscape of the study area is settled, with a variety of towns, including Leiston and Aldeburgh, smaller villages, including Friston and Knodishall, small clusters of dwellings and scattered properties.

5.1.9 The land use within the eastern and southern parts of the study area is largely associated with ecological conservation and comprises large areas of fenland and marshland alongside the coastline and River Alde. The land use within the remainder of the study area is predominantly agricultural and in particular arable crops.

5.1.10 The vegetation within the eastern part of the study area typically comprises heathland and scrubland, with large areas of mature woodland vegetation. The vegetation within the southern part of the study area largely consists of low-level scrub associated with the floodplain of the River Alde. The field boundaries comprise of a mixture of non-vegetated, hedgerow, hedgerow trees and individual trees.

Assessment of Impacts and Likely Significant Effects

5.1.11 Embedded mitigation measures have been integral in reducing, and where possible avoiding, landscape and visual effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routeing and siting of infrastructure and temporary works;
- the design of the Saxmundham Converter Station, in terms of the building form and the external materials, which is reflected in the Design Principles presented in **Application Document 7.12.1 Design Principles – Suffolk** and reflected in **Application Document 7.11.1 Design Approach Document – Suffolk Table 3.1**
- the design of Friston Substation (under Friston Scenario 2), which is reflected in the Design Principles presented in in **Application Document 7.12.1 Design Principles – Suffolk** and reflected in **Application Document 7.12.1 Design Principles - Suffolk Table 4.1**;
- the design approach to the River Fromus crossing, which has been developed and recorded in **Application Document 7.11.1 Design Approach Document – Suffolk** (as it falls outside of Work No. 3B the mitigation commitment to be complied with is located in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments);** and
- an outline landscape strategy which has been prepared for the converter station and substation site and provides a collaborative approach to delivering landscape and ecological mitigation (refer to **Application Document 7.5.7.1 Outline Landscape and Ecological Management Plan – Suffolk**) (this includes strengthening the

existing landscape framework of the site and to establish native woodland planting within the areas previously planted with willow plantation).

5.1.12 For further detail on the commitments made, refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments** and **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**.

Construction (including decommissioning)

5.1.13 During construction (including decommissioning), two landscape receptors (Heveningham and Knodishall Estate Claylands LCA and Fromus Valley LCA) would experience a significant adverse effect. These LCAs would respectively be subject to the direct construction of the Saxmundham Converter Station and bridge over the River Fromus. The Heveningham and Knodishall Estate Claylands LCA would experience this significant adverse effect due to impact on its rural character. The Fromus Valley LCA would experience significant adverse effects due to effects on the distinctive valley landform, vegetation network and the scenic southern approach to Saxmundham.

5.1.14 During construction (including decommissioning), for Friston Scenario 1, nine out of the 23 representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from construction of the Suffolk Onshore Scheme. Due to the proximity of the receptors, there would be views of the construction activity and plant associated with the Suffolk Onshore Scheme, including the Saxmundham Converter Station and River Fromus bridge crossing, often occupying a large proportion of the horizontal extent of the view. For Friston Scenario 2, an additional four representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from the proximity of construction activity associated with the Friston Substation, sometimes with direct views due to a lack of intervening vegetation.

Operation and maintenance (year 1)

5.1.15 During operation and maintenance (year 1), it is anticipated that the same landscape receptors would experience significantly adverse effects as reported at construction phase. The operational infrastructure would adversely affect the same key characteristics of the LCAs as stated above.

5.1.16 During operation and maintenance (year 1), for Friston Scenario 1, nine out of the 23 representative viewpoints within the landscape and visual study area would continue to experience significant adverse effects arising from the operational Suffolk Onshore Scheme. The operational Saxmundham Converter Station would introduce a large-scale uncharacteristic feature within views and the River Fromus bridge crossing, would result in an incongruent addition into the view with the permanent loss of a section of mature vegetation along the eastern edge of the River Fromus. For Friston Scenario 2, an additional three representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from the Suffolk Onshore Scheme due to proximity to the Friston Substation.

Operation and maintenance (year 15)

5.1.17 During operation and maintenance (year 15), it is anticipated that the Heveningham and Knodishall Estate Claylands LCA would experience a significant adverse effect. The Saxmundham Converter Station would be permanently located within a large-scale

agricultural field enclosure near to the edge of the LCA. By year 15, the proposed landscape mitigation planting around the Suffolk Onshore Scheme would provide partial screening and landscape integration. However, the scale and nature of the Suffolk Onshore Scheme in proximity would continue to affect the rural character of the LCA.

5.1.18 During operation and maintenance (year 15), for Friston Scenario 1, nine out of the 23 representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from the operational Suffolk Onshore Scheme. By year 15, the proposed landscape mitigation planting around the Suffolk Onshore Scheme, including the Saxmundham Converter Station and River Fromus bridge would provide partial screening and landscape integration within the immediate landscape context. For Friston Scenario 2, an additional three representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from the Suffolk Onshore Scheme due to proximity to the Friston Substation. By year 15, the proposed landscape planting around the Friston Substation would contribute to the softening of views.

Additional Mitigation

5.1.19 Landscape proposals have responded to the design of the Proposed Project throughout its development and embedded mitigation measures have been incorporated within the design wherever possible. Therefore, no additional mitigation measures have been identified in addition to the embedded measures. Although residual significant effects have been identified, it is not possible to mitigate these through landscape mitigation measures, predominantly due to the scale of the construction and operational works.

Residual Effects and Conclusions

5.1.20 The assessment has identified residual significant effects on the landscape and views resulting from the Proposed Project. A project of this scale and nature can be reasonably predicted to have some residual landscape and visual effects, as is acknowledged in National Policy Statement EN-1. Since no additional mitigation is possible, the residual landscape and visual effects of the Proposed Project are as described above.

5.2 Ecology and Biodiversity

Approach to the Assessment

5.2.1 The EIA considers the likely significant effects of the Suffolk Onshore Scheme on ecology and biodiversity receptors. Ecology and biodiversity receptors include statutory designated sites, non-statutory designated sites and wildlife including protected species such as bats and birds. Impacts considered include habitat loss, disturbance, disruption of movements across the landscape, and pollution.

5.2.2 Existing environmental conditions were established through a desk study, which was based on different buffers zones around the Order Limits based on the potential impact pathways to an effect on biodiversity receptors. The desk study was supported by a suite of ecological field surveys undertaken by qualified ecologists and using methodology defined in good practice guidelines. The site surveys included:

- habitat and botanical surveys;

- hedgerow surveys;
- aquatic and terrestrial invertebrates;
- invasive non-native species;
- intertidal, wintering and breeding bird surveys; and
- protected species surveys of badger, bats, dormouse, fish, otter, water vole and reptiles.

5.2.3 National Grid has also produced **Application Document 6.6 Habitat Regulations Assessment (HRA) Report** which presents the assessment undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if the Proposed Project will adversely affect the qualifying features of a European designated site.

5.2.4 This presents the HRA undertaken for the Proposed Project, which comprises Stage 1: Screening and Stage 2: Appropriate Assessment. The report concludes that, with the implementation of mitigation, there will be no adverse effects on the integrity of any European sites either alone or in combination with other plans or projects.

Existing Environment

5.2.5 The majority of the Suffolk Onshore Scheme, west of Aldeburgh golf course, consists of arable crops. Crops recorded present included barley, corn, and salad crops. Fields of amenity grassland grown for turf were also present within and adjacent to the proposed Suffolk Onshore Scheme. There are multiple small woodland blocks (particularly plantations) across the survey area, the majority of which are outside of the Suffolk Onshore Scheme Order Limits. Numerous scattered mature broadleaved and coniferous trees are present within the survey area including within the proposed Suffolk Onshore Scheme, including field maple, dog rose, oak, lime, turkey oak, sycamore, beech, cherry and Corsican pine. There are areas of neutral grassland across the survey area particularly forming field boundaries, and large areas of semi-improved acid grassland in the east of the proposed Suffolk Onshore Scheme north and east of the golf course.

5.2.6 The Sandlings SPA, Leiston-Aldeburgh SSSI and RSPB North Warren Reserve are located adjacent to the Suffolk landfall in the eastern part of the scheme. The habitat around this area is notably different from the majority of the Order Limits being a mixture of heathland, acid grassland and complex wetlands. Birds within and around the Order Limits of the Suffolk Onshore Scheme include non-breeding wigeon and teal, as well as shelduck, black-tailed godwit, herring gull, gadwall, and shoveler. The RSPB Reserve is particularly notable for breeding and wintering birds including large numbers of waterfowl and waders and marsh harrier. Breeding birds include lapwing and common snipe, alongside those typical of lowland farmland, with expected species such as skylark and yellowhammer. Atypical species included several pairs of woodlarks located on rough pasture/abandoned paddocks bordered on arable fields and holding territory on field edges where sandy soils predominated, as well as pairs of hobby and barn owl. No dormice have been recorded in surveys, but there are records of badger across the Order Limits and common reptile species have been recorded in the aforementioned areas of acid grassland, which is also supports some uncommon invertebrates.

5.2.7 Embedded mitigation measures have been applied to reduce, and where possible avoid, ecology and biodiversity effects of the Proposed Project. Extensive measures have been incorporated for the Proposed Project, including:

- sensitive routing and siting of infrastructure and temporary works;
- creation of woodland, grassland and pondg habitat around the converter station and substation;
- using trenchless techniques for cable installation at the landfall to avoid impacts to designated sites Sandlings SPA and Leiston-Aldeburgh SSSIThanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC;
- noise fencing around works areas to avoid significant disturbance; and
- seasonal restrictions on some works.

5.2.8 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for ecology and biodiversity have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

5.2.9 During construction there is potential for the works to result in both adverse as well as positive significant effects on wildlife.

5.2.10 Without additional mitigation, disturbance from construction noise is predicted at Sandlings SPA as well as to birds outside of designated sites. Temporary loss of acid grassland, damage to orchids and temporary loss of important hedgerows is predicted to result in habitat loss effects. In the long term, this effect will turn to a positive significant effect due to acid grassland and other habitat creation at Saxmundham Converter Station and Friston Substation and elsewhere (e.g. along the Fromus and south of the golf course). Wetland habitat creation as part of the Converter Station and Substation works will also result in a positive significant effect on water vole habitat. Construction lighting is predicted to result in adverse effects through bat and fish disturbance in the absence of additional mitigation. Bat habitat will also be adversely affected in the absence of additional mitigation due to gaps in hedgerows during construction.

Operation

5.2.11 Once the project is built and operational, there is the potential for significant negative and positive effects on wildlife, without additional mitigation.

5.2.12 In addition to the adverse effects predicted for construction, permanent loss of arable land would result in an adverse effect for ground nesting birds, such as skylark, through habitat loss. This therefore requires additional mitigation which would be achieved through long term changes to the management of a 12 ha area of farmland that would benefit breeding skylarks.

5.2.13 As a result of habitat creation at Saxmundham Converter Station and Friston Substation, additional likely positive significant effects are predicted for dormouse, badger, bats, reptiles, terrestrial invertebrates.

Decommissioning

5.2.14 Any decommissioning phase impacts would be materially less than the construction phase impacts. While there would be temporary habitat losses for any decommissioning compounds, the decommissioning would result in a net gain in habitat and there would be no impacts on designated sites.

Additional Mitigation

5.2.15 Additional mitigation measures that have been applied to mitigate or offset any likely significant effects for ecology and biodiversity are included in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

5.2.16 Extensive additional mitigation measures have been incorporated, including enhancement of acid grassland, seasonal restrictions on compound set-up, minimum setbacks from potential habitat, and enhancement of arable land.

Residual Effects and Conclusions

5.2.17 Due to the time required for proposed planting to mature, residual adverse effects have been identified in the short to medium term for breeding and wintering birds and for habitats of up to regional importance. The assessment has concluded that there are no likely significant adverse residual effects on ecology and biodiversity as a result of the construction or operation of the Proposed Project once compensatory habitat has been established.

5.2.18 The Proposed Project will result in significant positive residual effects in the long-term on bats, water voles and birds as a result of the proposed habitat creation.

5.3 Cultural Heritage

Approach to the Assessment

5.3.1 The EIA considers the likely significant effects of the Suffolk Onshore Scheme on cultural heritage. This includes archaeological remains, built heritage assets and historic landscape assets. Some of these are designated, such as scheduled monuments and listed buildings, however many are also undesignated.

5.3.2 To inform the baseline study, a Study Area of 500 m from the Order Limits was applied for designated and non-designated heritage assets. A further Study Area of 2 km was applied from the main permanent above ground infrastructure (converter stations, substations and River Fromus Crossing) for assessing change to the setting of heritage assets. This was in line with guidelines for cultural heritage assessment and was used to conduct a desk study.

5.3.3 The desk study is supported by archive research, review of historical maps, site walkover surveys, geophysical surveys, aerial photographic and LiDAR review, and archaeological evaluation trenching to obtain further evidence to inform the assessment. The geophysical surveys and evaluation trenching focused on areas of the Suffolk

Onshore Scheme that may result in ground disturbance, as this risks disturbing buried archaeological remains.

Existing Environment

5.3.4 There are no designated heritage assets within the Order Limits.

5.3.5 There are 33 designated assets within the wider 2 km Study Area, all consisting of listed buildings, and including four Grade II* listed buildings and 29 Grade II listed buildings. Most of the Grade II listed buildings are located within the settlements which surround the Suffolk Onshore Scheme, with concentrations in Leiston, Aldeburgh, Thorpeness, Aldringham, Friston, Sternfield and Saxmundham. Aldeburgh, Thorpeness, Leiston, and Saxmundham are also conservation areas.

5.3.6 A review of non-designated assets, acquired from Suffolk County Council Historic Environment Record, revealed a large number of heritage assets within the 500 m Study Area with 97 being located within the Order Limits, ranging in date from the early prehistoric period through to the modern period.

Assessment of Impacts and Likely Significant Effects

5.3.7 The results of archaeological geophysical survey and evaluation trenching have made an important contribution to the design of the Suffolk Onshore Scheme. Embedded mitigation measures have been applied to reduce, and where possible avoid, cultural heritage effects of the Proposed Project. For example, the geophysical survey identified potential important buried archaeological remains, which resulted in the Order Limits being altered to avoid and preserve them. Other measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works to avoid physical impacts to heritage assets, and impacts arising from changes to heritage setting. Where impacts to known archaeological remains cannot be avoided, the archaeology will be excavated and recorded by professional archaeologists prior to construction starting. The archaeological investigations have been agreed with the Archaeology Advisor for Suffolk County Council and are detailed in **Application Document 7.5.4.1 Suffolk Outline Onshore Overarching Written Scheme of Investigation.**

5.3.8 Site visits have identified where heritage assets may be affected by the physical presence of the Suffolk Onshore Scheme, for example where it would be visible from the asset or in views towards the asset. Working with the Landscape and Visual team, heritage viewpoints have been created that show the level of visual change from the Suffolk Onshore Scheme. This has helped identify potential significant effects to heritage assets and helped inform a landscape planting strategy to minimise impacts. which has helped inform

5.3.9 For further detail on the commitments made with regard to avoiding cultural heritage impacts, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction to cultural heritage receptors have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

5.3.10 A large multi-period site has been identified at Gorse Hill dating from the Neolithic period has been recorded through aerial photography, geophysical survey and trial trenching. The multi-period complex falls within the Order Limits and a small part of it will be potentially impacted by the installation of the cable, excavation pits and access works. This would result in a pre-mitigation likely significant adverse effect.

5.3.11 A possible enclosure dating to the Roman period was identified from the geophysical surveys and evaluation trenching. The remains fall within the Order Limits and will be potentially impacted by the underground cable installation and access track works. The potential loss of most of the features would result in a pre-mitigation likely significant adverse effect.

5.3.12 A complex of enclosures, trackways and possible structures dating to the medieval period was identified during the geophysical survey and evaluation trenching. Most of this complex falls outside the Order Limits, however physical impacts may occur from construction of the temporary access track works and drainage associated with the Saxmundham Converter Station. A worst-case scenario would result in a pre-mitigation likely significant adverse effect.

5.3.13 The evaluation trenching undertaken as part of the assessment identified a barrow ring-ditch containing sherds of Bronze Age pottery. This ring-ditch is within the Order Limits and within the footprint of drainage works required for the Saxmundham Converter Station. Construction would fully remove the asset and result in a pre-mitigation likely significant adverse effect.

Operation

5.3.14 The Grade II Listed Wood Farm is located adjacent to the Order Limits. The proximity of the Saxmundham Converter Station would affect the functional setting of the farmhouse. This would result in a pre-mitigation likely significant adverse effect.

5.3.15 The approach to the Saxmundham Conservation Area from the south would experience a change in views due to the operational above ground components of the Proposed Project. This includes the Saxmundham Converter Station and the River Fromus Crossing. This would result in a slight change to the setting of the Conversation Area, resulting in a pre-mitigation likely significant adverse effect.

5.3.16 Saxmundham Converter Station is also likely to be perceptible in views of the Grade II listing Hurts Hall within its associated parkland. This would affect the appreciation of the listed building and change its setting, resulting in a pre-mitigation likely significant adverse effect.

Decommissioning

5.3.17 During decommissioning of the Suffolk Onshore Scheme, it is considered that all elements would be removed in accordance with relevant statutory process and no additional permanent effects on below ground archaeology would occur. Therefore, during decommissioning no likely significant effects to cultural heritage assets are predicted to occur.

Additional Mitigation

5.3.18 Additional mitigation measures that have been applied to mitigate or offset likely significant effects to buried archaeological remains are detailed in **Application Document 7.5.4.1 Suffolk Outline Onshore Overarching Written Scheme of Investigation** which will be secured by Requirement 14 in Schedule 3 of the DCO.

5.3.19 The mitigation measures detailed in **Application Document 7.5.4.1 Suffolk Outline Onshore Overarching Written Scheme of Investigation** include:

- signposting/fencing off location of known archaeological interest/value during construction works to protect and preserve them;
- archaeological investigation to excavate and record archaeological remains in advance of construction;
- measures for reporting and protecting unexpected archaeological remains that may be found during construction; and
- measures to ensure that the results of all archaeological investigations are published.

5.3.20 Further mitigation measures, comprising landscape planting proposals to reduce the visual change to the experience and setting of heritage assets, are detailed in **Application Document 7.5.7.1 Outline Landscape and Ecological Management Plan – Suffolk**, which is secured by Requirement 6 of Schedule 3 of the draft DCO. These proposals aim to minimise the visual effects of the Suffolk Onshore Scheme by introducing new, or enhancing existing, tree planting and native hedgerows

Residual Effects and Conclusions

5.3.21 The EIA has concluded that with the proposed additional mitigation in place as outlined above, there are no residual significant adverse effects on cultural heritage.

5.4 Water Environment

Approach to the Assessment

5.4.1 The EIA, which has been informed by a Flood Risk Assessment (FRA) (**Application Document 6.8**) and Water Framework Directive (WFD) Assessment (**Application Document 6.9**), considered the likely significant effects of the Suffolk Onshore Scheme on the Water Environment. This includes potential effects to surface water features including rivers and minor watercourses, surface water resources and flood risk from a range of sources, such as rivers, rainfall runoff and groundwater.

5.4.2 To inform the assessment, a Study Area of 500 m from the Order Limits has been applied. This is justified through technical knowledge and has been agreed with key water environment stakeholders. The FRA and WFD assessments are based on a wider study area to consider the potential for effects on a local catchment scale, and at the WFD waterbody scale, respectively.

5.4.3 A desk study has been undertaken to inform the assessments. This has been supported by information gathered during ecology surveys, and flood modelling of the River Fromus and the Proposed Project's proposed crossing of this river.

Existing Environment

5.4.4 The Suffolk Onshore Scheme is situated in the catchments of the Hundred River and the neighbouring River Fromus, which is a tributary of the River Alde. The Hundred River and River Alde support several abstractions for local irrigation water supplies. The Hundred River also receives two sewage discharges. The main sources of flood risk within the Study Area are from the Hundred River, the River Fromus and the River Alde. Flood risk from surface water runoff varies across the Study Area, with most areas at very low risk from this source. Groundwater flood risk is also low.

Assessment of Impacts and Likely Significant Effects

5.4.5 Embedded mitigation measures have been applied to reduce, and where possible avoid, water environment effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works to avoid locating construction compounds, cable joint transitional bays and the Friston Substation and Converter in areas at high risk of flooding;
- a commitment to make landfall using a trenchless crossing technique beneath the Hundred River marshes, areas of coastal floodplain and other watercourses that drain to the Hundred River, avoiding any disturbance to these features;
- converter station, substation and compounds to be served by sustainable drainage systems that will capture rainfall runoff and ensure no increase in rainfall runoff into the surrounding environment; and
- water conservation measures during construction.

5.4.6 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for water environment have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

5.4.7 The construction of the Suffolk Onshore Scheme has the potential to impact watercourses, drainage and flood risk. These impacts would be temporary and are associated with the following activities:

- construction of watercourse crossings;
- soil stripping, excavation and movement;
- setting up and using construction compounds;
- adding areas of tarmac/hard stand; and
- changes or blocking existing land drainage routes and ditches/pipes.

5.4.8 A range of good construction practices would be put in place, to prevent or manage/control the impacts of these activities. These are described in **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice.**

5.4.9 These good practices would reduce effects and no likely significant effects have been identified in relation to water environment receptors, land drainage or flood risk during construction.

Operation

5.4.10 Once constructed, the Proposed Project would pose a low risk of pollution to watercourses within the Study Area. This is because temporary watercourse crossings would be removed and watercourse channels will be reinstated and the Substation and Converter Station would be drained using Sustainable Drainage Systems. These drainage systems would treat runoff and decrease flow rates before the drainage reaches the surrounding water environment.

5.4.11 The permanent bridge crossing of the River Fromus is designed to avoid changing the size/dimensions of the river channel and to allow flood flows to pass without being obstructed.

5.4.12 As result, no likely significant effects on water environment receptors, land drainage or flood risk are anticipated during operation.

Decommissioning

5.4.13 Decommissioning activities such as temporary compounds, dismantling and demolition would be expected to take place in accordance with the relevant permits, good practice and mitigation measures. No likely significant effects associated with decommissioning of the Suffolk Onshore Scheme are therefore anticipated.

Additional Mitigation

5.4.14 The assessment has concluded that there are no likely significant effects in relation to the water environment during construction once the good practice measures outlined in the CoCP are in place. The assessment has also concluded that there are no likely significant effects on the water environment during operation. Therefore, no additional mitigation measures are required.

Residual Effects and Conclusions

5.4.15 As no additional mitigation measures are required, the residual effects on the water environment will remain as those described above and would be not significant.

5.5 Geology and Hydrogeology

Approach to the Assessment

5.5.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme on geology and hydrogeology, including potential effects on hydrogeological receptors (such as aquifers and groundwater abstractions), mineral resources and receptors that could be impacted or exposed to potentially contaminated land (such as site workers and groundwater)

5.5.2 To inform the assessment, a Study Area of the Order Limits plus a 250 m buffer for geology and contaminated land, and a Study Area of the Order Limits plus a buffer of 500 m for hydrogeology have been applied.

5.5.3 A desk study has been undertaken to establish the existing baseline. This has been supported by a programme of ground investigation across parts of the Order Limits to obtain further information in relation to geological strata and groundwater levels likely to be encountered by the Proposed Project.

5.5.4 The chapter is informed by a preliminary contamination risk assessment (see **Application Document 6.3.2.5.A Appendix 2.5.A Preliminary Contamination Risk Assessment)**, which identifies locations where there is the potential for a source of existing contamination to be present and assesses whether the existing contamination presents a risk to identified receptors. The chapter is also informed by a groundwater risk assessment (see **Application Document 6.3.2.5.B Appendix 2.5.B Qualitative Groundwater Risk Assessment)** which assesses the potential risks to groundwater quality, quantity and levels; and a preliminary minerals resource assessment (see **Application Document 6.3.2.5.C Appendix 2.5.C Preliminary Minerals Resource Assessment),** which assesses the potential impacts on minerals resources and mineral infrastructure.

Existing Environment

5.5.5 The geology within the Suffolk Onshore Scheme Study Area is variable. Superficial deposits within the area are heavily influenced by the river network and predominantly comprise variable deposits of the Lowestoft Formation described as chalky deposits, with varying quantities of sands, gravels, silts and clays. The bedrock geology, underlying the superficial deposits, comprise the Crag Formation, with some outcrops of the Chillesford Church Sand Member within the Order Limits.

5.5.6 There are no statutory designated sites of geological importance within the Study Area, therefore there are no geological designated receptors that could be affected by the Proposed Project

5.5.7 The Study Area is partly located within a Mineral Consultation Area identified within the Suffolk County Council Minerals and Waste Local Plan. However, no minerals infrastructure has been identified within the Study Area.

5.5.8 The superficial geology is classified by the Environment Agency as either a Secondary A aquifer, Secondary B aquifer, Secondary Undifferentiated aquifer or Unproductive Strata (depending on the geology). The bedrock geology is generally classified as a Principal Aquifer, with some parts classified as a Secondary A aquifer.

5.5.9 The Environment Agency data set also indicates that the majority of the Order Limits are located in a groundwater Source Protection Zone (SPZ) 3, associated with groundwater abstractions in Leiston, Knodishall and Saxmundham, however the abstraction locations are outside of the Study Area. Information has been obtained from the Environment Agency regarding groundwater abstractions and deregulated abstraction, which has identified that there are no groundwater abstractions indicated within the Order Limits. Information has been obtained from the Local Planning Authority regarding private water supplies, which has identified there are no private water supplies indicated within the Study Area. A number of groundwater abstractions and private water supplies have been identified within the Study Area, which are presented in **Application Document 6.3.2.5.B Appendix 2.5.B Qualitative Groundwater Risk Assessment.**

5.5.10 Historical mapping indicates that the majority of the Study Area comprises undeveloped agricultural land with a very low risk of a significant source of potential existing contamination being present. However, there are discrete areas within the Study Area

where either the historical or current land use has been identified as potentially contaminative. The assessment presented within **Application Document 6.3.2.5.A Appendix 2.5.A Preliminary Contamination Risk Assessment** describes that there are no sites that were assessed to have a moderate or above potential for generating contamination and therefore that significant effects in relation to contamination are unlikely. Further assessment and laboratory analysis of soil and groundwater samples were taken as part of the ground investigation for the Proposed Project which identified the risk to human health receptors from existing contamination was generally assessed to be low to very low in soils and low to moderate in groundwater.

Assessment of Impacts and Likely Significant Effects

5.5.11 Embedded mitigation measures have been applied to reduce, and where possible avoid, geological and hydrogeological effects of the Proposed Project. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works by avoiding, where practicable, known sources of contamination (e.g. landfills) and sensitive hydrogeological features (such as SPZ1) and by consideration of the specific ground conditions through ground investigation and assessment. This has informed the engineering design of the Proposed Project meaning risks, such as ground instability and soil contamination in the ground, are considered and mitigated.

5.5.12 A range of control and management measures and commitments to further reduce potential impacts relating to geology and hydrogeology have also been incorporated into the Proposed Project. Examples of these measures include the following:

- piled foundations (if required) and trenchless crossings to be designed and constructed by techniques that minimise the risk of introducing contamination into aquifers. This will be achieved by the completion of a Foundation Works Risk Assessment, informed by ground investigation data as part of the detailed design of the Proposed Project;
- use of appropriate occupational health and safety measures, appropriate training of construction and maintenance workers and best practice for storage, handling and use of fuels and other chemicals;
- any dewatering activities to be undertaken in accordance with Environment Agency guidance and if required, the relevant licences and permits; and
- a protocol for dealing with any unexpected contamination and the provision of a drilling fluid breakout plan.

5.5.13 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for geology and hydrogeology are presented in **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**.

Construction

5.5.14 The construction of the Suffolk Onshore Scheme has the potential to impact geology and hydrogeology. These impacts are assessed as no change from the baseline, negligible or minor, and therefore not significant. The impacts are associated with:

- exposure to existing potential contamination through ground disturbance;
- mobilisation of existing contamination;

- ingress and accumulation of ground gases;
- mixing of aquifer bodies at trenchless crossings; and
- changes to groundwater levels, quality and groundwater flow direction caused by dewatering during construction (negligible).

5.5.15 No designated geological sites have been identified within the Study Area, therefore there will be no effects upon these sites during construction. Sterilisation of minerals is assessed during the operation phase to avoid any duplication, in addition no minerals infrastructure have been identified within the Study Area therefore there will be no change from the baseline.

Operation

5.5.16 The operation of the Suffolk Onshore Scheme has the potential to impact geology and hydrogeology. These impacts are deemed negligible, and therefore not significant. The impacts are associated with:

- sterlilisation of mineral resources;
- ingress and accumulation of ground gases; and
- changes to groundwater levels and/recharge rates from new impermeable surfaces.

Decommissioning

5.5.17 The decommissioning effects are considered to be the same as those discussed within the construction phase as the activities required to complete the decommissioning are of a similar nature to the construction phase.

Additional Mitigation

5.5.18 The assessment has concluded that there are no likely significant effects in relation to geology and hydrogeology receptors during construction, with the implementation of the good practice measures outlined in the CoCP. The assessment has also concluded that there are no likely significant effects on geology and hydrogeology receptors during operation. Therefore, no additional mitigation measures are required.

Residual Effects and Conclusions

5.5.19 As no additional mitigation measures are required, the residual effects on geology and hydrogeology remain as those described above.

5.6 Agriculture and Soils

Approach to the Assessment

5.6.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme on agriculture and soils. This includes effects on land quality, including best and most versatile (BMV) land, loss of land for agricultural use and impacts on the operation of land holdings. It also considers the effects on soil and soil resources in terms of damage and loss and how construction and operation may impact on soil quality and associated ecosystem services.

5.6.2 To inform the assessment, a Study Area comprising the land which would be directly affected within the Order Limits for the Suffolk Onshore Scheme (through disturbance or temporary covering) has been applied. This is justified through professional judgment, knowledge of similar schemes and relevant standards.

5.6.3 Existing conditions were established through a desk study to inform the assessment. This was supplemented through the use of Predictive Modelling to produce an assessment of likely Agricultural Land Classification (ALC) grades and BMV presence across the Study Area as physical surveys were unable to be completed due to a high risk from unexploded ordnance (UXO) across the Study Area

5.6.4 The development of the Predictive Modelling was an approach discussed with Natural England and has been used successfully on other large infrastructure projects. Best available data was gathered from key sources to collate a model to predict ALC grades based upon soil and land characteristics (e.g. soil texture, geological bedrock, climatic data, topography etc.). Soil and ALC surveys will be completed prior to construction once the UXO risk has been addressed.

Existing Environment

5.6.5 The solid geology underlying the majority of the Order Limits is described as bedrock of the Crag Formation, comprising sands, gravels, silts, and clays. The gravels in the lower part of the group are almost entirely composed of flint. The soils present within the Study Area are considered to be of very high, high and medium, sensitivity.

5.6.6 The initial desk study showed that the Study Area is comprised of land Provisionally mapped as ALC Grades 2, 3 and 4. The provisional ALC information available indicates that a large portion of the Study Area may comprise BMV land (BMV land comprises Grades 1, 2 and 3a). This information was then updated through the use of the Predictive Modelling. The modelling data predicts that 67.75% of the Study Area comprises land classified as BMV, with the majority of this classified as Grade 3a. NoGrade 1 land has been predicted within the Study Area.

5.6.7 The model calculates approximately 269 ha of agricultural land within the Study area, and detailed aerial photography and OS Mapping shows that the land use appears to be principally arable. Additional land within the Study Area comprises of urban development at Leiston, Saxmundham, and Thorpeness.

Assessment of Impacts and Likely Significant Effects

5.6.8 Embedded mitigation measures have been applied to reduce, and where possible avoid, agriculture and soil effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routeing and siting of infrastructure and temporary works;
- rationalisation of the design to minimise permanent land take requirements; and
- temporary construction activities and restoration of land, including over the cable route, which is likely to result in the avoidance of long-term impacts on agricultural and soil receptors.

5.6.9 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for agriculture and soils have also been applied. Please refer to **Application Document**

7.5.3.1 CEMP Appendix A Outline Code of Construction Practice for detail on these measures.

Construction

5.6.10 Construction activities can impact soil through excavation and storage, and through risks of compaction and pollution. These activities can impact the quality of the soils and therefore impact soil functions and the ecosystem services these drive.

5.6.11 For the Suffolk Onshore Scheme, there would be disturbance to soils from construction of the temporary access and haul roads, temporary construction compounds and construction laydown areas, soil stripping of working areas for underground cabling, and soil stripping for the permanent infrastructure.

5.6.12 Likely significant adverse effects are anticipated from the temporary impacts to soil function and disruption to soil ecosystem services as well as temporary and permanent loss of BMV agricultural land. The impacts on soils have the potential to occur across the land within the Order Limits, adversely affecting the ecosystem services the soils provide. The implementation of the embedded mitigation and control measures would reduce the detrimental effects on soil function and reinstated soils would provide their ecosystem services after reinstatement.

5.6.13 Likely significant effects from the temporary and permanent loss of BMV land are anticipated. This is from the construction of the temporary access and haul roads, temporary construction compounds and construction laydown areas, soil stripping of working areas for underground cabling, and soil stripping for the permanent infrastructure.

5.6.14 Good practice measures have been identified in the CoCP (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**), with specific handling and management measures detailed in the outline Soil Management Plan (oSMP) (**Application Document 7.5.10.1 Outline Soil Management Plan – Suffolk**). These measures would protect soil quality and structure during construction and as the majority of land would be reinstated at the end of the construction phase, this would reduce detrimental effects on soil functions and BMV land.

Operation

5.6.15 After the implantation of embedded mitigation and control measures, no likely significant effects have been identified for agriculture and soil during operation and maintenance.

Decommissioning

5.6.16 During decommissioning there would be disturbance to soils, from construction of the temporary access and haul roads, temporary compounds and laydown areas. There would also be removal of infrastructure and the subsequent reinstatement of the land. The decommissioning works would result in a likely significant adverse effect to soils. The implementation of the good practice measures as detailed in the CoCP (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) and oSMP (**Application Document 7.5.10.1 Outline Soil Management Plan – Suffolk**) would reduce the detrimental effects on soil function and BMV land.

5.6.17 A likely significant effect is also anticipated due to temporary loss of BMV land. However, the permanent reinstatement of BMV land after decommissioning would result in a likely significant beneficial effect.

Additional Mitigation

5.6.18 There are no additional mitigation measures which can be incorporated to further reduce likely significant effects on agriculture and soils. The primary embedded mitigation measures are detailed in the CoCP (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) and oSMP (**Application Document 7.5.10.1 Outline Soil Management Plan – Suffolk**) would reduce the detrimental effects on soil function and BMV land.

Residual Effects and Conclusions

5.6.19 As there were no additional mitigation measures identified, the residual effects on agriculture and soils of the Proposed Project are as described above.

5.7 Traffic and Transport

Approach to the Assessment

5.7.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme for traffic and transport. This includes potential effects on the road, walking and cycling networks including PRoW and its users including road users, walkers, cyclists and horse riders. A Transport Assessment Note has also been prepared to inform the traffic and transport chapter of the ES.

5.7.2 The assessment focuses on construction impact, where the Proposed Project would require staff (commuting journeys), deliveries of materials/equipment to the site by Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) and the removal of debris from the site by HGVs. The Proposed Project would also include abnormal indivisible loads for the delivery of cable drums and transformers. The Proposed Project could cause disruption to local roads as a result of construction traffic and PRoW as a result of closures/diversions, and various measures are therefore proposed to mitigate these potential impacts during construction.

5.7.3 There would be very limited traffic movements during the operational and maintenance phase, as the Suffolk Onshore Scheme will be manned by two operatives across the site (associated with the operation of the proposed Saxmundham Converter Station and Friston Substation). There will also be additional infrequent trips associated with monthly or annual maintenance/inspections or repairs when required. Therefore, due to the low level of trips likely to be generated, operational effects have been scoped out of the traffic and transport assessment.

5.7.4 If the Proposed Project is decommissioned, there are expected to be fewer HGV, LGV and worker arrivals and departures associated with the decommissioning phase of the Suffolk Onshore Scheme than during the construction phase. The impacts of the decommissioning phase are therefore expected to be the same as, and not greater than, the construction phase.

Existing Environment

5.7.5 The Study Area for the assessment has been defined as the area where there could potentially be transport impacts resulting from the construction of the Suffolk Onshore Scheme. This includes routes along which HGVs will travel during construction, as well as the most likely routes that will be used by construction workers. Traffic surveys were

carried out in January and February 2024 to identify baseline traffic flows for the surrounding highway network.

5.7.6 The Study Area includes key areas of the surrounding highway network. The most prominent are the A12, the B1121 Main Road to the south of Saxmundham, the A1094 to the west of Aldeburgh, and the B1069 Snape Road. Other local routes within the Study Area include the B1119, B1121 Aldeburgh Road, B1353 and B1122, but these are not expected to be frequently utilised by construction vehicles. Public transport is not expected to be a key travel method for construction workers, however potential services which could be used include rail services from Saxmundham railway station and bus services such as bus route 521 on the B1121 Main Road. There are also many PRoW and walking/cycling routes which pass through or within close proximity to the Order Limits which are included within the Study Area.

Assessment of Impacts and Likely Significant Effects

5.7.7 Embedded mitigation measures have been applied to reduce, and where possible avoid, traffic and transport effects from the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works including to minimise the requirement to close/divert PRoW;
- using trenchless methods at landfall to minimise potential impacts on the highway and walking/cycling routes; and
- potential carriageway widening works, vegetation clearance and street furniture removal to accommodate construction vehicles.

5.7.8 Further to the above, **Application Document 7.5.1.1 Outline Construction Traffic Management and Travel Plan – Suffolk** includes construction traffic management measures that will be implemented in support of the Proposed Project, to avoid any adverse impacts on the surrounding networks during the construction phase. **Application Document 7.5.9.1 Outline Public Rights of Way Management Plan – Suffolk** includes measures that will be implemented in support of the Proposed Project, to avoid any adverse impacts on the surrounding PRoW network during all phases of the Proposed Project.

5.7.9 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

5.7.10 An assessment of severance of communities, pedestrian delay, non-motorised user amenity, fear and intimidation, driver delay, road safety, hazardous/large loads and PRoW diversions and closures has been undertaken for the Study Area. The impacts caused by the Suffolk Onshore Scheme are classified as minor or negligible in nature. Therefore, no likely significant effects are anticipated for traffic and transport during construction.

Operation

5.7.11 Due to the low level of trips likely to be generated, it has been agreed to scope out operational phase transport effects from the EIA. Therefore, no likely significant effects are anticipated for traffic and transport during operation and maintenance.

Decommissioning

5.7.12 There are expected to be fewer HGV, LGV and worker arrivals and departures associated with the decommissioning phase of the Suffolk Onshore Scheme than during the construction phase. It is therefore considered reasonable to assume that the impacts of the decommissioning phase will be the same as, or not greater than, the construction phase.

Additional Mitigation

5.7.13 No further mitigation measures are considered to be necessary for traffic and transport receptors in addition to the embedded mitigation and control and management measures already identified.

Residual Effects and Conclusions

5.7.14 As no additional mitigation measures are required, the residual effects for traffic and transport during construction, operation and maintenance or decommissioning will remain as those described above and are not expected to be significant.

5.8 Air Quality

Approach to the Assessment

5.8.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme on air quality. This considers emissions from fugitive dust, equipment and generators and traffic and the effects that these would have on people (human receptors) and habitats (ecological receptors) during the construction and decommissioning of the Proposed Project. The assessment also considers emissions from vehicles and back-up generators at the substation and converter station during the operation and maintenance of the Proposed Project.

5.8.2 The Study Area for the assessment varies for different emission sources. A 250 m buffer around the Order Limits for construction dust was used, and a 50 m buffer from the routes used by construction vehicles on the public highway up to 250 m from the access points was used for dust emissions from vehicle movements. For construction traffic, a 200 m buffer was used around the construction traffic routes. For construction generators and other machinery, a 200 m buffer was used around the construction compounds. For the back-up generator emissions, a buffer of 200 m from the converter station and substation was used.

Existing Environment

5.8.3 There are a number of human and ecological receptors surrounding the Proposed Project. This includes Saxmundham, a medium size residential area within close proximity to the Proposed Project Order Limits and co-location construction compounds close to the western boundary of the Order limits. Existing air quality data shows no

exceedances of air quality mean objectives for the past five years based on the East Suffolk Council monitoring records.

Assessment of Impacts and Likely Significant Effects

5.8.4 Embedded mitigation measures have been applied to reduce, and where possible avoid, air quality effects of the Proposed Project. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works.

5.8.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for air quality have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures and the Air Quality Management Plan (AQMP) (**Application Document 7.5.6.1 Air Quality Management Plan - Suffolk**) which outlines the air quality monitoring proposed during construction.

Construction

5.8.6 The construction dust risk assessment identified high sensitivity human receptors within the Study Area, including residential properties in Saxmundham and Alde-Ore Estuary Ramsar ecological site. With the implementation of relevant mitigation, the effect of construction dust emissions is predicted to be not significant.

5.8.7 The primary construction vehicle routes to/from the Proposed Project will be via the A12 to the respective access points including the B1121 Main Road, A1094 and B1069 Snape Road. The effects from construction vehicle emissions from the Proposed Project are predicted to be negligible and therefore not significant.

5.8.8 There are a small number of receptors within 200 m of the construction compounds. ~~, substation and converter station.~~ Due to the temporary nature of construction equipment operation and implementation of control measures, the effect of emissions from construction equipment would not be significant.

Operation

5.8.9 During the operational and maintenance phase, the Suffolk Onshore Scheme will be staffed by a limited number of operatives, with additional and infrequent maintenance trips. As such air quality effects from vehicles during the operation of the Proposed Project are considered to be not significant.

5.8.10 There are no human or ecological receptors within 200 m of the converter station or substation. As a result, the effects of back-up generator emissions are predicted to be not significant.

Decommissioning

5.8.11 There is the potential for emissions from fugitive dust, vehicles and equipment during the decommissioning phase of the Suffolk Onshore Scheme. However, the potential effects on air quality during decommissioning are considered to the same, or less than, the construction phase. The effects on air quality during decommissioning would therefore not be significant.

Additional Mitigation

5.8.12 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

5.8.13 No likely significant effects are anticipated for air quality during construction, operation and maintenance or decommissioning.

5.9 Noise and Vibration

Approach to the Assessment

5.9.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme in terms of noise and vibration. This considers effects from construction activities, construction traffic, the operational phase, and decommissioning phase on nearby noise sensitive receptors.

5.9.2 There would be very limited traffic movements during operation. Therefore, operational effects from vehicles have been scoped out of the noise and vibration assessment. The only operation effect assessed is the operation noise from the proposed converter station and substation. The proposed converter station would include equipment that would generate noise during normal operation, and this has been assessed accordingly. The proposed substation would not contain equipment that would generate noise during normal operation. However, some equipment would operate infrequently and these have been considered accordingly.

5.9.3 The Study Area applied varies for different noise and vibration sources. For construction noise, the Study Area includes sensitive receptors (such as residential properties) located within 300 m of the construction works (excluding construction traffic). For construction vibration, the Study Area includes sensitive receptors located within 100 m of construction activities. For construction traffic the Study Area considers the existing road network, with a further assessment considering sensitive receptors within 50m of construction routes. For operational noise, the Study Area includes sensitive receptors within 1 km of the converter station and substation.

5.9.4 A desk study has been undertaken to identify sensitive receptors within the Study Area. A construction and operational noise assessment were then undertaken which were informed by noise survey data.

Existing Environment

5.9.5 Noise sensitive areas within the Study Area include built up residential areas such as Saxmundham to the west, Friston to the south, Goldfair Green to the south, Aldeburgh to the southeast, Sizewell to the northeast and Leiston to the northeast. The Suffolk Onshore Scheme noise and vibration Study Area includes a mix of predominantly residential and rural environments. The noise climate is therefore relatively quiet away from main transport routes. It is assumed that existing vibration levels are negligible in the Study Area.

5.9.6 Baseline noise surveys have been conducted at locations representative of sensitive receptors around the proposed converter station in order to inform the operational noise assessment. The surveys included daytime, night-time, weekday and weekend periods.

Assessment of Impacts and Likely Significant Effects

5.9.7 Embedded mitigation measures have been applied to reduce, and where possible avoid, noise and vibration effects of the Proposed Project. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works.

5.9.8 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for noise and vibration have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** and **Application Document 7.5.8.1 Outline Construction Noise and Vibration Management Plan - Suffolk** for detail on these measures.

Construction

5.9.9 There are numerous sources of noise and vibration during construction. Anticipated construction works include setup of site compounds and access, construction of underground cables, and horizontal direction drilling for trenchless crossings, pylon construction, substation construction and converter station construction.

5.9.10 For construction noise, the assessment indicated that no significant adverse effects are expected where best practicable means are used to control and manage construction noise. Best practicable means are standard noise mitigation measures and includes consideration of working methods, plant and equipment type, site layout and orientation, screening, enclosures, and consideration of working periods. Although significant effects from construction noise are not expected, the assessment identified construction noise ‘hot spots’ where best practicable means are required to avoid potential significant effects. This includes 29 sensitive receptors during daytime works, four sensitive receptors during potential night-time works, and 29 sensitive receptors during potential weekend works. During daytime and weekend periods, these ‘hot spots’ include the construction of some temporary access routes, and the construction of underground cables in certain areas. During night-time periods, the ‘hot spot’ relates to horizontal direction drilling for trenchless crossings. The contractor will undertake a detailed construction noise assessment prior to commencing works and specific best practicable means to reduce the effects on construction noise will be determined and used during the works.

5.9.11 The assessment of construction vibration considered the effect on people within buildings, and on buildings and structures. Activities that may generate significant effects are ground compaction and piling. No significant effects are expected from either activity, but short duration effects may occur during some ground compaction activities. However, the duration of these activities is not considered significant, and although they may be perceptible to people within buildings, would be below the level at which potential building or structural damage would be expected. As with noise, best practicable means would be employed to reduce potential effects from construction vibration. This would include consideration of working methods, plant and equipment type, and consideration of working periods. Therefore, no significant construction vibration effects are anticipated. The contractor will undertake a detailed construction vibration assessment prior to commencing works and specific best practicable means to

reduce the effects of construction vibration will be determined and used during the works.

5.9.12 The construction traffic noise assessment has considered the additional vehicle traffic on the local road network. This indicated negligible effects on all routes, therefore, no likely significant adverse effects from construction traffic are anticipated.

Operation

5.9.13 After the implementation of mitigation measures, the impact from the proposed converter station and substation on all nearby sensitive receptors are considered to be not significant. Detailed operational noise assessments will be undertaken during the design phase and specific mitigation measures will be incorporated into the design.

5.9.14 Operational maintenance activities are not expected to generate high levels of noise or vibration. Therefore, the impact from operational maintenance activities is not considered to be significant.

Decommissioning

5.9.15 The effects from decommissioning are expected to be similar to those anticipated during the construction phase. The contractor will undertake detailed a noise and vibration assessment to reduce the effects during the decommissioning phase. Noise and vibration effects at decommissioning are not considered to be significant.

Additional Mitigation

5.9.16 The contractor will undertake a detailed construction noise and vibration assessment prior to commencing works and specific best practicable means to reduce the effects of construction vibration will be determined and used during the works.

5.9.17 Detailed operational noise assessments will be undertaken during the design phase and specific noise mitigation measures will be incorporated into the design of the proposed converter station and substation.

Residual Effects and Conclusions

5.9.18 The assessment concluded that noise and vibration levels during the construction, operational, and decommissioning phases can be controlled through standard mitigation measures such that significant adverse effects would be avoided at all noise sensitive receptors. Therefore, no likely significant adverse effects for noise and vibration during construction, operation and maintenance, and decommissioning are anticipated.

5.10 Socio-Economics, Recreation and Tourism

Approach to the Assessment

5.10.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme on socio-economics, recreation and tourism. This considers impacts on receptors including population and deprivation, employment, recreational routes and PRoWs, residential properties, local businesses, visitor attractions, community facilities, open space, development land and accommodation facilities. Potential effects of these impacts may

be the generation of temporary employment opportunities, temporary closure/diversion of PRoW and changes in journey times.

5.10.2 The Study Area varies across the various potential effects. A Study Area of a 60 minutes travel area for employment generation, gross value added (GVA) (effect upon the local economic environment) and accommodation services has been applied. A 500 m Study Area from the Order Limits has been applied for impacts to PRoW and recreational routes, and residential and business properties. Finally, a 1 km Study Area has been applied from the Order Limits for severance of local communities.

Existing Environment

5.10.3 A number of settlements lie within close proximity to the Suffolk Onshore Scheme. Saxmundham borders the Suffolk Onshore Scheme Order Limits to the north west and the southern portion of the village of Knodishall borders the Suffolk Onshore Scheme Order Limits to the north. The north of the village of Friston borders the south of the Suffolk Onshore Scheme whilst the town of Aldeburgh is located approximately 460 m to the south. The villages of Benhall and Sternfield are also located within 500 m of the Suffolk Onshore Scheme Order Limits to the south west.

5.10.4 There are 22 PRoWs and recreational routes which pass within the Suffolk Onshore Scheme Order Limits plus a further 44 PRoW and recreational routes located within 500 m of the Suffolk Onshore Scheme. No residential properties are located within the Suffolk Onshore Scheme Order Limits, whilst 30 business premises and 2 visitor attractions are located within 500 m of the Suffolk Onshore Scheme. There are also numerous community facilities and open spaces within 500 m of the Suffolk Onshore Scheme.

Assessment of Impacts and Likely Significant Effects

5.10.5 Embedded mitigation measures have been integral to reduce, and where possible avoid, socio-economics, tourism and recreation effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works to avoid or reduce impacts on receptors; and
- using trenchless methods at landfall to minimise potential impacts on walking/cycling routes.

5.10.6 **Application Document 7.5.9.1 Outline Public Rights of Way Management Plan - Suffolk** identifies the mitigation measures which will be required to maintain the operation of impacted PRoW. It also details how these mitigation measures will be managed, including who will be responsible for their management.

5.10.7 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for socio-economics, tourism and recreation have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

5.10.8 An assessment of economic impacts on employment generation, GVA, local labour supply, local accommodation capacity and social infrastructure capacity has been undertaken for the construction phase of the Proposed Project. Land use and severance impacts on PRoW and recreational routes, residential properties, local businesses, visitor attractions, community facilities, open space, development land have also been assessed. The impacts caused by the Suffolk Onshore Scheme on these receptors are classified as minor or negligible in nature. Therefore, no likely significant effects are anticipated for socio-economics, recreation and tourism during construction

Operation

5.10.9 There are no further impacts identified for the operational and maintenance phase of the Suffolk Onshore Scheme beyond those identified for construction.

Decommissioning

5.10.10 In the event that the Suffolk Onshore Scheme is decommissioned, the effects on socio-economic, tourism and recreation receptors would be anticipated to be same as, or less than, the construction phase. However, the decommissioning phase assessment of likely significant effects would be reviewed at the time of decommissioning.

Additional Mitigation

5.10.11 After embedded mitigation and control measures, the assessment has concluded that there are no likely significant effects in relation to socio-economics, recreation and tourism during construction, operation and maintenance and decommissioning. Therefore, there are no additional mitigation measures required for socio-economic, recreation and tourism receptors.

Residual Effects and Conclusions

5.10.12 As no additional mitigation measures are required, the residual effects on socio-economics, recreation and tourism will remain as those described above and there will be no likely significant effects.

5.11 Health and Wellbeing

Approach to the Assessment

5.11.1 The EIA has considered the likely significant effects of the Proposed Project on health and wellbeing. This considers impacts such as access to healthcare services, access to open space, air quality, noise and vibration, and employment.

5.11.2 The Study Area for health and wellbeing effects varies dependent on the receptor. For impacts on access to healthcare and social infrastructure, a 1 km radius from the Order Limits is used. For impacts to accessibility to PRoW, recreational routes and open space, a 500 m radius from the Order Limits is used. For beneficial impacts on employment, a 60-minute travel area from the Order Limits is used. For Potential adverse impacts on social cohesion and community identity, a 3 km radius from the Order Limits is used. Finally for air quality and noise and vibration, the Study Areas used in their corresponding chapters have been applied.

Existing Environment

5.11.3 The baseline for this topic includes population, ethnicity, deprivations, health profiles, local health priorities, settlements, healthcare and education facilities, employment, PRoW, existing traffic and transport, air quality, noise and landscape. For detailed information on the baseline considered for health and wellbeing, refer to **Application Document 6.2.2.11 Part 2 Suffolk Chapter 11 Health and Wellbeing**.

Assessment of Impacts and Likely Significant Effects

5.11.4 Embedded mitigation measures have been applied to reduce, and where possible avoid, health and wellbeing effects of the Proposed Project. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works.

5.11.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for health and wellbeing have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

5.11.6 The assessment undertaken for impacts on health and wellbeing during construction determined that no likely significant effects are anticipated for the Suffolk Onshore Scheme. Minor adverse effects were identified for access to open space, leisure and play, air quality (for the more vulnerable sub-population aged over 65), noise and vibration, transport and physical activity, and social cohesion and community identity. A minor beneficial effect was identified for employment and income as a result of job generation.

Operation

5.11.7 The assessment undertaken for impacts on health and wellbeing during operation determined that no likely significant effects are anticipated for the Suffolk Onshore Scheme. Minor adverse effects were identified for access to open space, leisure and play, air quality (for the more vulnerable sub-population aged over 65), noise and vibration, and social cohesion and community identity.

Decommissioning

5.11.8 In the event that the Suffolk Onshore Scheme is decommissioned, the effects on health and wellbeing receptors would be anticipated to be same as, or not greater than, the construction phase. However, the decommissioning phase assessment of likely significant effects would be reviewed at the time of decommissioning.

Additional Mitigation

5.11.9 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

5.11.10 No likely significant effects are anticipated for health and wellbeing during construction, operation and maintenance or decommissioning.

5.12 Suffolk Onshore Scheme Intra-Project Cumulative Effects

Approach to the Assessment

5.12.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme from an intra-cumulative perspective. Intra-project effects specifically occur where a receptor is affected by more than one impact, for example noise and traffic, causing a cumulative effect together on people and communities.

5.12.2 The assessment draws on the existing environmental conditions and reporting presented in the other environmental topic chapters to consider the potential significant cumulative effects that may arise when multiple aspects of a project impact a single receptor. A three-stage approach was undertaken, which consisted of pre-screening, screening and assessment stages. Pre-screening determines whether a receptor is impacted by more than one type of effect, screening determines whether these individual effects are of significant value, if they are, the potential combined effect is assessed on the receptor.

5.12.3 Receptors which could be impacted by more than one type of effect include residential receptors (residents and housing); ecological receptors; designated/non-designated heritage assets (assets and people visiting the heritage sites); designated/ non-designated sites; water resources (existing abstractions); watercourses and waterbodies; soils; recreational resources and communities (recreational users and community groups); Public Rights of Way (the path itself and the people using it); transport receptors (highway network e.g. road links and junctions, railways, drivers, walking and cycling routes and users of); and human health.

Assessment of Intra-project Cumulative Effects

5.12.4 For the scenario where the proposed Friston Substation is built as part of the Proposed Project, there is a potential for a significant combined intra-project effect on some nearby residential receptors, during all project stages because of significant visual amenity effects combined with minor noise effects affecting the same homes.

5.12.5 Transport users are likely to experience combined intra-project effects during all stages of the Proposed Project. This is because the visual impact on people using cycle paths, roads and rail has been assessed as significant, and there will be several temporary and permanent diversions and closures of PRoW. Although noise and vibration and other impacts including severance, pedestrian delay, fear and intimidation, are minor, together they could significantly affect transport users.

5.12.6 For people using some public footpaths (Footpaths 260/017/0, 491/005/0, 491/006/0, and Bridleway 491/010/0), there could be a significant intra-project effect during construction and decommissioning. This is because changes to user experience and local travel patterns have been assessed as significant within the Socio-Economics Recreation and Tourism ES chapter, effects on visual amenity have also been assessed as significant and there might also be minor traffic and transport effects on these paths.

5.12.7 Similarly, for people using Bridleway 354/002/0, there could be a significant intra-project effect during construction and decommissioning as a result of minor effects on visual amenity combined with significant changes to user experience and local travel patterns, and minor traffic and transport effects on this PRoW.

5.13 Suffolk Onshore Scheme Inter-Project Cumulative Effects

Approach to the Assessment

5.13.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme from an inter-project cumulative perspective. Inter-project effects occur where different projects cause effects that add together making a larger effect on a receptor - for example, the combination of the Proposed Project and another nearby proposed development, which together might impact the same residential property.

5.13.2 A four-stage approach has been followed to identify the potential inter-project cumulative effects of the Suffolk Onshore Scheme. Stage one involves setting the zone of influence (ZOI) for the Suffolk Onshore Scheme in order to establish what other developments within that ZOI may potentially affect a common receptor ('long list' of other developments). The ZOI is the overall cumulative assessment ZOI for all topics. In this case a 20 km ZOI extending from the Proposed Project has being used. Stage two then refines the long list of other developments by removing those which do not align with the Proposed Project's timeframes, are of no significant scale and nature, or where there is insufficient documentation available to be able to undertake an assessment. Stage three involves gathering further information on the refined 'short list' of other developments before they are assessed in combination with the Proposed Project as part of Stage four.

5.13.3 The other developments were identified through the Planning Inspectorate's Programme of Projects for nationally significant infrastructure projects (NSIPs) and local planning authorities' planning portals. The assessment of inter-project cumulative effects has drawn on the existing environmental conditions presented in the individual environmental topic chapters and the environmental reporting within the other developments' planning applications and proposals, to identify potential receptors and potential significant cumulative effects.

Assessment of Inter-project Cumulative Effects

5.13.4 During construction, several potential significant adverse inter-project effects have been identified. The Suffolk Coast and Heaths AONB, SCT03 Nearshore Waters, Suffolk Heritage Coast, LCAs L1 and K3 and viewpoints 6, 7, 8 and 22 will experience a likely significant landscape and visual effect due to sequential construction of the Suffolk Onshore Scheme with the East Anglia One North & East AngliaTwo Offshore Windfarms. The Proposed Project is also predicted to have significant cumulative effects with the LionLink Offshore Interconnector on LCA L1, SCT03 Nearshore Waters and visual amenity for viewpoints 1-7, 15-17, and 19-21. LCA B4, L1 and 01 as well as several viewpoints may also experience a likely significant effect from the construction of the Suffolk Onshore Scheme and South Saxmundham Garden Neighbourhood. These effects are also anticipated during decommissioning.

5.13.5 A likely significant effect on BMV land is predicted due to the combined effects of: the Suffolk Onshore Scheme, East Anglia One North & East Anglia Two Windfarms, Croft Farm land and buildings, and South Saxmundham Garden Neighbourhood.

5.13.6 During operation, there is a likely significant effect anticipated for viewpoint 6 from the Suffolk Onshore Scheme with East Anglia One North & East Anglia Two Offshore Windfarms. There would also likely be a significant cumulative effect with LionLink Interconnector on LCA L1 and viewpoints 1-7, 15-17 and 19-21.

Assessment of total cumulative effects

5.13.7 The above section provides a cumulative assessment of each of the other developments taken through to Stage 4, separately alongside the Suffolk Onshore Scheme, for each environmental topic. Due to the large number of other developments assessed and given the proximity of some of these to the Suffolk Onshore Scheme, the overall cumulative effect of the Proposed Project with all other developments combined has also been assessed for each environmental topic.

5.13.8 There is the potential for significant cumulative effects for a short term and temporary period on the Suffolk Coast and Heaths AONB as a result of the potential simultaneous or sequential construction of the Suffolk Onshore Scheme, Sizewell C main development site, East Anglia ONE & TWO Offshore Windfarms and LionLink Offshore Interconnector. The concentration of construction activity associated with the landfalls and HVDC cable corridors within part of the Suffolk Coast and Heaths AONB has the potential to alter the perception of the AONB with construction of major energy projects becoming a temporary characteristic feature of the landscape. These total cumulative effects are unlikely to remain once all projects are operational, particularly once the cable corridors are reinstated and mitigation planting becomes established over time.

5.13.9 Total cumulative effects on LCAs at all project stages have the potential to be significant for LCA L1 (Heveningham and Knodishall Estate Claylands) primarily as a result of East Anglia ONE & TWO Offshore Windfarms and LionLink Offshore Interconnector developments, although the remaining projects may also contribute in a minor way to the total effect. There would also be total cumulative effects for a temporary and limited duration for LCA K3 (Aldringham and Freston Sandlands) and SCT 03 Nearshore Waters during construction (and decommissioning).

5.13.10 Total cumulative effects on representative viewpoints have the potential to be significant as a result of the total combined effects primarily from the Suffolk Onshore Scheme with East Anglia ONE & TWO Offshore Windfarms and LionLink Offshore Interconnector developments for various viewpoints at all project stages.

5.13.11 The total effects of permanent loss of BMV as a result of the Sizewell C related rail improvements and rail extension route, East Anglia ONE North and East Anglia TWO Offshore Windfarms, Croft Farm land and buildings, and South Saxmundham Garden Neighbourhood combined, would be significant.

Sequential Landscape and Visual Assessment

5.13.12 The sequential landscape and visual assessment has identified the following potential significant cumulative effects:

- potential significant cumulative effects from the section of the B1119 between Saxmundham and Leiston due to the combined effects from the Proposed Project, LionLink and Sizewell C and East Anglia One North and East Anglia Two Offshore Windfarms;
- potential significant cumulative effects from the section of the B1121 to the south of Saxmundham due to the combined effect from the Proposed Project, LionLink and

Sizewell C, and East Anglia One North and East Anglia Two Offshore Windfarms; and

- potential significant cumulative effects from the PRoW network in closer proximity to the Suffolk Onshore Scheme as a result of the combined effects from the Proposed Project, LionLink and Sizewell C, and East Anglia One North and East Anglia Two Offshore Windfarms.

6. Kent Onshore Scheme

6.1 Landscape and Visual

Approach to the Assessment

6.1.1 The EIA considers likely significant effects of the Kent Onshore Scheme on landscape and visual receptors. Landscape receptors include landscape designations and the landscape character of the area. Visual receptors include people who could experience different views, through the removal and/or introduction of man-made and natural features.

6.1.2 Examples of landscape and visual receptors considered within the EIA include:

- LCAs;
- people living and moving around the area (communities); and
- recreational receptors (for example PRoWs).

6.1.3 The study area for the landscape and visual assessment of the Kent Onshore Scheme comprises an area of 3 km from the Order Limits, including the Minster Converter Station, Minster Substation, HVAC overhead line (OHL) and from the proposed landfall. The study area also extends 1 km from the HVDC cable route. Existing conditions were established through a desk study, which was supplemented by site surveys.

6.1.4 Computer modelling has generated a ZTV which illustrates theoretical visibility of the project during the operational phase. This was used as part of the process to select potential viewpoints for the assessment which were then checked and refined with a field survey to inform the assessment. Stakeholder engagement was also key in the process of selecting viewpoints for the assessment.

6.1.5 The assessment was undertaken for three phases:

- during construction (including decommissioning);
- for the first year of operation (year 1) and maintenance after all construction works have been completed and reinstatement has commenced; and
- at year 15 (15 years from completion of building the Proposed Project) of operation and maintenance, to determine the effects following maturation of the replacement planting.

6.1.6 The assessment was undertaken with various assumptions, including that there would be areas of advanced planting before the construction phase begins.

Existing Environment

6.1.7 The landscape varies within the study area. It includes low-lying landform within the Ash Levels and Minster Marshes in the southern and central part. This landscape comprises a series of drainage ditches separating small to medium sized field enclosures, within the former Wantsum Channel. The landscape rises towards the settlement of Minster, comprising some comparatively larger scale field enclosures. The landscape also

includes the low-lying coastal areas extending around Pegwell Bay which are characterised by larger intertidal areas of marsh and mudflat along the coastline.

6.1.8 The land use within the study area is largely associated with agriculture, with predominantly pastoral fields particularly adjacent to the various drainage ditches which dissect the lower lying marsh and around the watercourses including the River Stour. There are larger arable fields in the surrounding landscape. Orchards are present across the southwestern part of the study area in the higher areas of the Ash Levels. Other land uses include the Richborough Energy Park in the western part of the study area, a golf course, country park and various solar farms.

6.1.9 The vegetation within the Ash Levels and Minster Marshes in the southern and central part of the study area comprises hedgerows and mature individual and linear tree blocks. Within the northern part of the study area, the landscape includes smaller blocks of woodland such as Minster Woods, along with hedgerow planting. The coastal landscape is comparatively more wooded and treed than the remainder of the study area, notably around Richborough Energy Park.

Assessment of Impacts and Likely Significant Effects

6.1.10 Embedded mitigation measures have been applied to reduce, and where possible avoid, landscape and visual effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works;
- the design of the Minster Converter Station and Minster Substation, in terms of the building form and the external materials are reflected in the Design Principles presented in **Application Document 7.12.2 Design Principles – Kent** and reflected in **Application Document 7.11.2 Design Approach Document – Kent**; and
- an outline landscape strategy has been prepared for the converter station and substation site which provides a collaborative approach to delivering landscape and ecological mitigation (refer to **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent** and **Application Document 7.5.7.2 Figure 1 Minster Converter Station and Substation Outline Landscape Mitigation**). This includes providing connectivity with wider blue and green infrastructure networks and native woodland planting to provide structural screening to the converter station and substation.

6.1.11 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments** and **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**.

Construction (including decommissioning)

6.1.12 During construction (including decommissioning), two landscape receptors (Minster Marshes LCA and Ash Levels LCA) within the landscape and visual study area would experience significant adverse effects arising from the Kent Onshore Scheme. These LCAs would respectively be subject to the direct construction of the Minster Converter Station, Minster Substation and HVAC OHL works. Minster Marshes LCA would experience significantly adverse effects due to effects on the marsh characteristics on the edge of this landscape. The Kent Onshore Scheme would affect the agricultural

setting of the Ash Levels LCA, and these effects would be felt across a large area due to the open and flat nature of the marsh landscape.

6.1.13 During construction (including decommissioning), five out of the 14 representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from the construction of the Kent Onshore Scheme. These comprise receptors which are all located in the local landscape around the Minster Converter Station and Minster Substation and also the HVAC OHL works. The construction works associated with the Minster Converter Station and Minster Substation would introduce large-scale machinery and material into views of typically otherwise arable land. The construction works associated with the HVAC OHL would introduce temporary towers which have the potential to contrast with the existing OHL and could be present at the same time as the new permanent towers.

Operation and maintenance (year 1)

6.1.14 During operation and maintenance (year 1), it is anticipated that one landscape receptor (Minster Marshes LCA) within the landscape and visual study area would experience significant adverse effects arising from the Kent Onshore Scheme. The Minster Converter Station and Minster Substation would be permanently located within the LCA. The operational infrastructure would adversely affect the same key characteristics of the LCA as stated above.

6.1.15 During operation and maintenance (year 1), it is anticipated that four out of the 14 representative viewpoints within the landscape and visual Study Area would experience significant adverse effects. The views would either be direct views of all or part of the operational infrastructure dependent on the positioning of the receptor and the amount of intervening built form, landform or vegetation between the receptor and the Kent Onshore Scheme.

Operation and maintenance (year 15)

6.1.16 During operation and maintenance (year 15), it is anticipated that none of the landscape and seascape receptors within the landscape and visual study area would experience significant adverse effects arising from the Kent Onshore Scheme.

6.1.17 During operation and maintenance (year 15), it is anticipated that four out of the 14 representative viewpoints within the landscape and visual study area would experience significant adverse effects arising from the Kent Onshore Scheme. These comprise receptors from representative viewpoints which are located in close proximity to the north and north west of Minster Converter Station and Minster Substation. The permanent infrastructure of the Kent Onshore Scheme would result in a noticeable change to the composition of the view from these nearby receptors. By year 15, the proposed landscape mitigation planting to the north of the Minster Converter Station and Minster Substation would have matured providing partial screening of the lower parts of the permanent infrastructure.

Additional Mitigation

6.1.18 Landscape proposals have responded to the design of the Proposed Project throughout its development and embedded mitigation measures have been incorporated within the design wherever possible. Therefore, no additional mitigation measures have been identified in addition to the embedded measures. Although residual significant effects

have been identified, it is not possible to mitigate these through landscape mitigation measures, predominantly due to the scale of the construction and operational works.

Residual Effects and Conclusions

6.1.19 The assessment has identified residual significant effects on the views resulting from the Proposed Project. A project of this scale and nature can be reasonably predicted to have some residual landscape and visual effects, as is acknowledged in National Policy Statement EN-1. Since no additional mitigation is possible, the residual landscape and visual effects of the Proposed Project are as described above.

6.2 Ecology and Biodiversity

Approach to the Assessment

6.2.1 The EIA considers the likely significant effects of the Kent Onshore Scheme on ecology and biodiversity receptors. Ecology and biodiversity receptors include statutory designated sites, non-statutory designated sites and wildlife including protected species such as bats and birds. Impacts considered include habitat loss, disturbance, disruption of movements across the landscape, collision risk from the new section of overhead line, and pollution.

6.2.2 Existing environmental conditions were established through a desk study, which was based on various Study Areas around the Order Limits based on the potential impact pathways to an effect on biodiversity receptors. The desk study was supported by a suite of ecological field surveys undertaken by qualified ecologists and using methodology defined in good practice guidelines. The site surveys included:

- habitat and botanical surveys;
- hedgerow surveys;
- aquatic and terrestrial invertebrates;
- invasive non-native species;
- intertidal, wintering and breeding bird surveys; and
- protected species surveys of badger, bats, dormouse, fish, otter, water vole, beaver, and reptiles.

6.2.3 National Grid has also produced **Application Document 6.6 Habitat Regulations Assessment (HRA) Report** which presents the assessment undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if the Proposed Project will adversely affect the qualifying features of a European designated site.

6.2.4 This presents the HRA undertaken for the Proposed Project, which comprises Stage 1: Screening and Stage 2: Appropriate Assessment. The report concludes that, with the implementation of mitigation, there will be no adverse effects on the integrity of any European sites either alone or in combination with other plans or projects.

Existing Environment

6.2.5 The vast majority of the Kent Onshore Scheme consists of arable land in active use. The eastern fields were in use for corn production at the time of survey, the northern fields for salad crops, and the remainder was mixture of different young crops. The woodland within the Kent Onshore Scheme was dominated by English oak with lower amounts of ash and hawthorn with the latter more prevalent in the understory. Ivy, bramble and common nettle dominated the majority of the woodland floor, with a few more notable species such as lords and ladies, and stinking iris also recorded within this habitat. Wet ditches were present throughout the Kent Onshore Scheme delineating the field edges through several land parcels. Beyond St Augustine's golf course, saltmarsh was present within the most eastern part of the Kent Onshore Scheme.

6.2.5

A number of both breeding and non-breeding oOrnithologybird species have been identifiedical features atwithin the Kent Onshore Scheme Survey Area, including but not limited to include Cetti's warbler, fieldfare, kingfisher, marsh harrier, little ringed plover, whimbrel and skylarkredwing.

6.2.6 Abbey Farm Wetlands and the periodically flooded fields in Ash Levels, south of the River Stour, are used by a wide range of non-breeding birds in winter. Some non-breeding birds (notably golden plover) were also noted to forage in the arable fields around the proposed Minster Converter Station. A wide range of other notable bird species have been recorded during the breeding season, many of them likely breeding within the survey area (although not necessarily within the proposed Kent Onshore Scheme). The intertidal zone was of considerable significance for birds, with. Ddunlin, cormorant, oystercatcher and sanderling were recorded in large numbers.

6.2.66.2.7 No dormice have been recorded duringin surveys, but there are records of badger in the eastern part of the Order Limits and common reptile species have also been recorded within the Kent Onshore Schemein the aforementioned areas of acid grassland, which is also supports some uncommon invertebrates. , and rRiparian mammals (particularly water vole) have been recorded in many of the ditches, whilst uncommon invertebrate species have been recorded in grassland south of the River Stour, at the proposed Minster Converter Station and Substation site and along the A256. Records of rare invertebrates have also been identified at the former hoverport site. .

Assessment of Impacts and Likely Significant Effects

6.2.76.2.8 Embedded mitigation measures have been applied to reduce, and where possible avoid, ecology and biodiversity effects of the Proposed Project. Extensive measures have been incorporated for the Proposed Project, including:

- sensitive routeing and siting of infrastructure and temporary works;
- creation of woodland, grassland and pond habitat around the converter station, substation and permanent access road;
- using trenchless techniques for cable installation at the landfall to avoid impacts to designated sites Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC;
- noise fencing around works areas to avoid significant disturbance; and
- seasonal restrictions on some works.

6.2.86.2.9 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for ecology and biodiversity have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

6.2.96.2.10 During construction there is potential for the works to result in both adverse as well as positive significant effects on wildlife.

6.2.106.2.11 In the absence of additional mitigation, disturbance from construction noise is predicted at Sandwich Bay to Hacklinge Marshes SSSI as well as to birds outside of designated sites. Temporary habitat loss of approximately 5 ha of land from the Ash Level and South Richborough Pasture Local Wildlife Site would occur due to construction of the works areas and haul road necessary to reach the pylon construction areas. Construction lighting is predicted to result in adverse effects in the absence of mitigation through bat and fish disturbance. Bat habitat will also be affected in the absence of mitigation due to gaps in hedgerows during construction.

6.2.116.2.12 An adverse effect on bird habitat and bird disturbance is predicted through habitat loss, specifically the reduction of arable land, resulting in an adverse effect for ground nesting birds, such as skylark. In the long-term 10 ha of arable habitat enhancement to address these losses are proposed to address this effect, resulting in a significant positive effect for golden plover and skylark. Habitat creation as part of the converter station and substation proposals would also result in a positive significant effect for birds, water voles, terrestrial invertebrates and aquatic macrophytes.

Operation

6.2.126.2.13 Once the project is built and operational, there is the potential for significant negative and positive effects on wildlife, without additional mitigation.

6.2.136.2.14 In addition to the adverse effects predicted for construction, permanent culverts and outfalls would cause permanent habitat loss for aquatic macrophytes. Permanent loss of arable land would result in an adverse effect for ground nesting birds, such as skylark, through habitat loss. This therefore requires additional mitigation. Potential bird strike for some species has also been assessed due to the new section of overhead line and additional mitigation identified for inclusion.

6.2.146.2.15 As a result of habitat creation at the Minster Converter Station and Minster Substation, additional likely positive significant effects are also predicted for dormouse, badger, bats, reptiles.

Decommissioning

6.2.156.2.16 Any decommissioning phase impacts would be materially less than the construction phase impacts. While there would be temporary habitat losses for any decommissioning compounds, the decommissioning would result in a net gain in habitat and there would be no impacts on designated sites.

Additional Mitigation

6.2.166.2.17 Additional mitigation measures that have been applied to mitigate or offset any likely significant effects for ecology and biodiversity are included in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

6.2.176.2.18 Extensive additional mitigation measures have been incorporated, including delivery of 10 ha of off-site arable enhancement land for golden plover and for breeding skylark, seasonal restrictions on certain construction activities and the use of bird diverters on the new section of overhead line.

Residual Effects and Conclusions

6.2.186.2.19 Due to the time required for the proposed planting to mature, residualaul adverse significant effects have been identified in the short to medium term for breeding and wintering birds and for habitats of up to regional importance. The assessment has concluded that there are no likely significant adverse residual effects on ecology and biodiversity as a result of the construction or operation of the Proposed Project once compensatory habitat has been established.

6.2.196.2.20 The Proposed Project will result in significant positive residual effects in the long-term on bats, water voles and birds as a result of the proposed habitat creation.

6.3 Cultural Heritage

Approach to the Assessment

6.3.1 The EIA considers the significant effects of the Kent Onshore Scheme on cultural heritage. This includes archaeological remains, built heritage assets and historic landscape assets. Some of these are designated, such as scheduled monuments and listed buildings, however many are also undesignated.

6.3.2 To inform the baseline study, a Study Area of 500 m from the Order Limits was applied for designated and non-designated heritage assets. A further Study Area of 2 km was applied from the main permanent above ground infrastructure (converter stations, substations and OHLs) for assessing change to the setting of heritage assets. This was in line with guidelines for cultural heritage assessment and was used to conduct a desk study.

6.3.3 The desk study is supported by archive research, review of historical maps, site walkover surveys, geophysical surveys, aerial photography and LiDAR review, archaeological evaluation trenching, and geoarchaeological assessment to obtain further evidence to inform the assessment. The geophysical surveys and evaluation trenching focused on areas of the Kent Onshore Scheme that may result in ground disturbance, as this risks disturbing buried archaeological remains.

Existing Environment

6.3.4 There are no designated heritage assets within the Order Limits.

6.3.5 There are three scheduled monuments within the 500 m Study Area and a further two scheduled monuments within the 2 km Study Area. There are also 40 listed buildings in the 500 m Study Area with a further 45 in the wider 2 km Study Area. The closest

scheduled monument is Richborough, which consists of a Saxon shore fort, Roman port and other associated remains dating from the Iron Age through to the medieval period located in an elevated position to the south of the Kent Onshore Scheme.

6.3.6 The majority of the listed buildings are Grade II listed, with most dating to the post-medieval period and they largely consist of farmhouses and associated agricultural buildings. The remaining listed buildings include three Grade I buildings in the 500 m Study Area, comprising the Minster Abbey and Church of St. Mary in Minster, and Richborough Castle.

6.3.7 A total of 427 non-designated heritage assets were recorded within the 500 m Study Area on the Kent HER and 72 of these are within the Order Limits, consisting of early prehistoric archaeology to Second World War remains.

Assessment of Impacts and Likely Significant Effects

6.3.8 The results of archaeological geophysical survey and evaluation trenching have made an important contribution to the design of the Kent Onshore Scheme. Embedded mitigation measures have been applied to reduce, and where possible avoid, cultural heritage effect of the Proposed Project. Measures that have been incorporated include the avoidance of archaeological remains identified from geophysical survey and trench evaluation, including sensitive routing and siting of infrastructure and temporary works to avoid or minimize impacts.

6.3.9 Where impacts to known archaeological remains cannot be avoided, the archaeology will be excavated and recorded by professional archaeologists prior to construction starting. The archaeological investigations have been agreed with the Archaeology Advisor for KCC and are detailed in **Application Document 7.5.4.2 Kent Outline Onshore Overarching Written Scheme of Investigation.**

6.3.10 For further detail on the commitments made with regard to avoiding cultural heritage impacts, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction to cultural heritage receptors have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

6.3.11 A complex multi-period site, comprising Bronze Age, Iron Age and Roman remains, has been recorded and investigated through geophysical surveys and evaluation trenching. The results of the evaluation trench have identified the location of the best preserved and most sensitive remains, and these are being avoided by the Kent Onshore Scheme. A small part of the remains on the outside of the complex would likely be impacted by the permanent access and cable route. This would result in a pre-mitigation significant adverse effect.

6.3.12 A circular feature, of unknown date but could be a prehistoric roundhouse, has been recorded from aerial photographs within the Order Limits. The feature would likely be impacted by the construction of a temporary compound, resulting in a pre-mitigation significant adverse effect.

Operation

6.3.13 There would be no significant pre-mitigation adverse effects to heritage assets during the operation and maintenance phases, due to there being no significant levels of change to the setting of heritage assets that affects their heritage value.

Decommissioning

6.3.14 During decommissioning of the Kent Onshore Scheme, it is considered that all elements would be removed in accordance with relevant statutory process and no additional permanent effects on below ground archaeology would occur. Therefore, during decommissioning no effect to cultural heritage assets are predicted to occur.

Additional Mitigation

6.3.15 Additional mitigation measures that have been applied to mitigate or offset likely significant effects to buried archaeological remains are detailed in **Application Document 7.5.4.2 Kent Outline Onshore Overarching Written Scheme of Investigation** which will be secured by Requirement 14 in Schedule 3 of the DCO.

6.3.16 Mitigation Measures detailed in **Application Document 7.5.4.2 Kent Outline Onshore Overarching Written Scheme of Investigation** include:

- signposting/fencing off locations of known archaeological interest/value during construction works to protect and preserve them;
- archaeological investigation to excavate and record archaeological remains in advance of construction;
- measures for reporting and protecting unexpected archaeological remains that may be found during construction; and; and
- measures to ensure that the results of all archaeological investigations are published.

Residual Effects and Conclusions

6.3.17 The EIA concluded that with the proposed mitigation in place, there are no significant residual adverse effects anticipated for cultural heritage.

6.4 Water Environment

Approach to the Assessment

6.4.1 The EIA, which has been informed by an FRA (**Application Document 6.8**) and WFD Assessment (**Application Document 6.9**), has considered the likely significant effects of the Kent Onshore Scheme on the Water Environment. This includes potential effects to surface water features including rivers, such as the River Stour, and minor watercourses, surface water resources and flood risk from a range of sources.

6.4.2 To inform the assessment, a Study Area of 500 m from the Order Limits has been applied. This is justified through technical knowledge and has been agreed with key water environment stakeholders. A desk study has been undertaken to inform the assessment, and data has been collected from key flood risk management authorities. This has been supplemented by information gathered during ecology surveys.

Existing Environment

6.4.3 The Kent Onshore Scheme is situated in the hydrological catchment of the River Stour. The River Stour is a designated main river that rises as the Great Stour in Lenham and flows towards and through Canterbury, where it becomes tidal, finally discharging to the sea at Pegwell Bay. The river has extensive areas of floodplain. In addition to the River Stour, within the Study Area there are networks of watercourses that drain the marshes at Minster, and which are managed by the Kent (Stour) Internal Drainage Board. Key watercourses include the Minster Stream to the north and the Richborough Stream to the south of the Stour.

Assessment of Impacts and Likely Significant Effects

6.4.4 Embedded mitigation measures have been applied to reduce, and where possible avoid, water environment effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works to avoid locating construction compounds, cable joint transitional bays and the Minster Substation and Converter in areas at high risk of flooding;
- a commitment to make landfall using a trenchless crossing technique beneath saltmarsh habitat and watercourses that drain to Pegwell Bay, avoiding any disturbance to these features;
- converter station, substation and compounds to be served by sustainable urban drainage systems. that will capture rainfall runoff, treat it and ensure no increase in rainfall runoff into the surrounding environment; and
- water conservation measures during construction.

6.4.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for water environment have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

6.4.6 The construction of the Kent~~Suffolk~~ Onshore Scheme has the potential to impact watercourses, drainage and flood risk. These impacts would be temporary and deemed not significant. The impacts are associated with:

- construction of watercourse crossings;
- piling activities;
- soil stripping and earthworks;
- establishment and use of construction compounds;
- changes to land surface permeabilities due to earthworks, and the introduction of hard surfacing; and
- interception of land drainage routes and disruption to existing field drainage.

6.4.7 There are no likely significant effects expected in relation to water environment receptors, land drainage or flood risk during construction.

Operation

6.4.8 Once constructed, the Proposed Project would pose a low risk of pollution to watercourses within the Study Area, given the treatment measures for operational drainage and other mitigation that will be in place. The temporary culverts would also be removed and watercourse channels will be reinstated. As result, no likely significant effects on water environment receptors, land drainage or flood risk are anticipated during operation.

Decommissioning

6.4.9 Decommissioning activities such as temporary compounds, dismantling and demolition would be expected to take place in accordance with the relevant permits, good practice and mitigation measures. No likely significant effects associated with decommissioning of the Kent Onshore Scheme are therefore anticipated.

Additional Mitigation

6.4.10 No likely significant adverse effects have been identified after considering embedded mitigation and control measures. Additional mitigation measures are therefore not required to reduce environmental effects on water environment receptors.

Residual Effects and Conclusions

6.4.11 As no additional mitigation measures are required, residual effects for water environment will remain as described for pre-mitigation.

6.5 Geology and Hydrogeology

Approach to the Assessment

6.5.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme geology and hydrogeology, including potential effects on hydrogeological receptors (such as aquifers and groundwater abstractions), mineral resources and receptors that could be impacted or exposed to potentially contaminated land (such as site workers and groundwater).

6.5.2 To inform the assessment, a Study Area of the Order Limits plus a 250 m buffer for geology and contaminated land, and the Order Limits plus a buffer of 500 m for hydrogeology has been applied.

6.5.3 A desk study has been undertaken to establish the existing baseline. This has been supported by a programme of ground investigation across parts of the Order Limits to obtain further information in relation to geological strata and groundwater levels likely to be encountered by the Proposed Project.

6.5.4 The chapter is informed by a preliminary contamination risk assessment (see **Application Document 6.3.3.5.A Appendix 3.5.A Preliminary Contamination Risk Assessment)**, which identifies locations where there is the potential for a source of existing contamination to be present and assesses whether the existing contamination

presents a risk to identified receptors. The chapter is also informed by a groundwater risk assessment (see **Application Document 6.3.3.5.B Appendix 3.5.B Qualitative Groundwater Risk Assessment)** which assesses the potential risks to groundwater quality, quantity and levels and a preliminary minerals resource assessment

Existing Environment

6.5.5 The geology within the Kent Onshore Scheme is variable. Superficial deposits to the west of the A256 Richborough Way and beneath the St Augustine's and Stonelees Golf Course is indicated to predominately comprise soft mud and/or sand and soft silty clay, with layers of sand, gravel and peat. Along the eastern boundary of the Order Limits around Pegwell Bay, comprises beach type deposits of shingle, sand, silt and clay are present. There are also some limited areas within the Study Area where superficial deposits are found to be absent, predominately immediately adjacent either side of the A256. The bedrock geology, underlying the superficial deposits, comprise the Thanet Formation comprising silty fine-grained sand, with sandy silt, silt or sandy, silty clay. The Thanet Formation is directly underlain by the White Chalk Subgroup

6.5.6 There are no statutory designated sites of geological importance within the Study Area, with the exception of Sandwich Bay to Hacklinge Marshes SSSI which is designated as a Geological Conservation Review Site and forms the eastern part of the Order Limits, at Pegwell Bay. The potential impacts on the geological aspects of the SSSI are discussed within **Application Document 6.2.4.1 Part 4 Marine Chapter 1 Physical Environment.**

6.5.7 The superficial geology is classified by the Environment Agency as either a Secondary A aquifer, Secondary Undifferentiated aquifer or Unproductive Strata (depending on the geology). The bedrock geology is generally classified as a Secondary A aquifer, with the White Chalk Subgroup designated as a Principal Aquifer. The Environment Agency data set indicates that a SPZ1 and corresponding SPZ2 is crossed by the Order Limits in the northeast of the Proposed Project, where a temporary construction compound and access road are proposed. Information has been obtained from the Environment Agency regarding groundwater abstractions and deregulated abstractions, which indicates one groundwater abstraction is located outside of the Order Limits but within the Study Area at the location of St Nicolas Court Farm, further assessment of this location identified that the abstraction abstracts from the chalk which is at some depth beneath the surface and is protected by the clays of the overlying strata. Further information on this groundwater abstraction is presented in **Application Document 6.3.3.5.B Appendix 3.5.B Qualitative Groundwater Risk Assessment.** Information has also been obtained from the Local Planning Authority regarding private water supplies. The data set has identified there are no private water supplies located within the Study Area.

6.5.8 Historical mapping indicates that the majority of the Study Area comprises undeveloped agricultural land with a very low risk of a significant source of potential existing contamination being present. However, there are discrete areas within the Study Area where either the historical or current land use has been identified as potentially contaminative. The assessment presented within **Application Document 6.3.2.5.A Appendix 2.5.A Preliminary Contamination Risk Assessment** describes that there are no sites that were assessed to have a moderate or above risk to sensitive receptors from existing contamination and therefore that significant effects in relation to contamination are unlikely. Further assessment and laboratory analysis of soil and groundwater samples were taken as part of the ground investigation for the Proposed

Project which identified the risk to human health receptors from existing contamination was generally assessed to be low to very low in soils and moderate in groundwater.

Assessment of Impacts and Likely Significant Effects

6.5.9 Embedded mitigation measures have been applied to reduce, and where possible avoid, geological and hydrogeological effects of the Proposed Project. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works by avoiding, where practicable, known sources of contamination (e.g. landfills) and sensitive hydrogeological features (such as SPZ1) and by consideration of the specific ground conditions through ground investigation and assessment. This has informed the engineering design of the Proposed Project meaning risks, such as ground instability and soil contamination in the ground, are considered and mitigated.

6.5.10 A range of control and management measures and commitments to further reduce potential impacts relating to geology and hydrogeology have also been incorporated into the Proposed Project. Examples of these measures include the following:

- piled foundations (if required) and trenchless crossings to be designed and constructed by techniques that minimise the risk of introducing contamination into aquifers. This will be achieved by the completion of a Foundation Works Risk Assessment, informed by ground investigation data as part of the detailed design of the Proposed Project;
- use of appropriate occupational health and safety measures, appropriate training of construction and maintenance workers and best practice for storage, handling and use of fuels and other chemicals;
- any dewatering activities to be undertaken in accordance with Environment Agency guidance and if required, the relevant licences and permits;
- a protocol for dealing with any unexpected contamination and the provision of a drilling fluid breakout plan; and
- additional design and operation measures for the construction compound within the SPZ1.

6.5.11 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for geology and hydrogeology are presented in **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**.

Construction

6.5.12 The construction of the Kent Onshore Scheme has the potential to impact geology and hydrogeology. These impacts are assessed as no change from the baseline, negligible or minor, and therefore not significant. The impacts are associated with:

- exposure to existing potential contamination through ground disturbance;
- mobilisation of existing contamination;
- ingress and accumulation of ground gases;
- mixing of aquifer bodies at trenchless crossings; and

- changes to groundwater levels, quality and groundwater flow direction caused by dewatering during construction.

6.5.13 The Sandwich Bay to Hacklinge Marshes SSSI has been identified within the study area, however the impacts on this receptor are assessed within **Application Document 6.2.4.1 Part 4 Marine Chapter 1 Physical Environment** as it locates within the coastal marine section of the Proposed Project.

Operation

6.5.14 The operation of the Kent Onshore Scheme has the potential to impact geology and hydrogeology. These impacts are deemed negligible, and therefore not significant. The impacts are associated with:

- ingress and accumulation of ground gases; and
- changes to groundwater levels and/recharge rates from new impermeable surfaces.

Decommissioning

6.5.15 The decommissioning effects are considered to be the same as those discussed within the construction phase as the activities required to complete the decommissioning are of a similar nature to the construction phase.

Additional Mitigation

6.5.16 The assessment has concluded that there are no likely significant effects in relation to geology and hydrogeology receptors during construction, with the implementation of the good practice measures outlined in the CoCP. The assessment has also concluded that there are no likely significant effects on geology and hydrogeology receptors during operation. Therefore, no additional mitigation measures are required. Residual Effects and Conclusions

6.5.17 As no additional mitigation measures are required, the residual effects on geology and hydrogeology remain as those described above.

6.6 Agriculture and Soils

Approach to the Assessment

6.6.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme on agriculture and soils. This includes effects on land quality including BMV land, loss of land for agricultural use and impacts on the operation of land holdings. It also considers the effects on soil and soil resources in terms of damage and loss and how construction and operation may impact on soil quality and associated ecosystem services.

6.6.2 To inform the assessment, a Study Area comprising the land which would be directly affected within the Order Limits for the Kent Onshore Scheme (through disturbance or temporary covering) has been applied. This is justified through professional judgment, knowledge of similar schemes and relevant standards.

6.6.3 Existing conditions were established through a desk study to inform the assessment. This was supplemented through the use of Predictive Modelling to produce an assessment of likely ALC grades and BMV presence across the Study Area as physical

surveys were unable to be completed due to a high risk from UXO across the Study Area.

6.6.4 The development of the Predictive Modelling was an approach discussed with Natural England and has been used successfully on other large infrastructure projects. Best available data was gathered from key sources to collate a model to predict ALC grades based upon soil and land characteristics (e.g. soil texture, geological bedrock, climatic data, topography etc.). Soil and ALC surveys will be completed prior to construction once the UXO risk has been addressed.

Existing Environment

6.6.5 The solid geology underlying the Study Area is described as comprising the Thanet Formation. This comprises sand, silt, and clay sedimentary rocks. The soil types present within the Order Limits are predominantly described as loamy and clayey soils of coastal flats with naturally high groundwater. It is considered that these soils are of very high, high and medium sensitivity.

6.6.6 The initial desk study showed that the Study Area is comprised of land Provisionally mapped as ALC Grade 1, 2, 3 and 5. The ALC information available indicates that a large portion of the Study Area may comprise BMV land (BMV land comprises Grades 1, 2 and 3a). This information was then updated through the use of the Predictive Modelling. The modelling data predicts that 50.11% of the Study Area comprises land classified as BMV. Individually, the largest predicted grade proportion is Grade 3b, with 41.88% of the land within the study area predicted as being Grade 3b. No Grade 1 land has been predicted within the Study Area.

6.6.7 The model accounts for approximately 156 ha of agricultural land within the Study Area, and detailed aerial photography and OS Mapping shows that the land use appears to be principally arable, with small areas of pasture on either side of the River Stour, and golf courses east of Richborough Way.

Assessment of Impacts and Likely Significant Effects

6.6.8 Embedded mitigation measures have been applied to reduce, and where possible avoid, agriculture and soil effects of the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works;
- rationalisation of the design to minimise permanent land take requirements; and
- temporary construction activities and restoration of land is likely to result in the avoidance of long-term impacts on agricultural and soil receptors.

6.6.9 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for agriculture and soils have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

Construction activities can impact soil through excavation and storage, and through risks of compaction and pollution. These activities can impact the quality of the soils and therefore impact soil functions and the ecosystem services these drive.

6.6.10 For the Kent Onshore Scheme, there would be disturbance to soils from construction of the temporary access and haul roads, temporary construction compounds and construction laydown areas, soil stripping of working areas for underground cabling, and soil stripping for the permanent infrastructure.

6.6.11 Likely significant adverse effects are anticipated from the temporary impacts to soil function and disruption to soil ecosystem services as well as temporary and permanent loss of BMV agricultural land. The impacts on soils have the potential to occur across the land within the Order Limits, adversely affecting the ecosystem services the soils provide. The implementation of the embedded mitigation and control measures would reduce the detrimental effects on soil function and reinstated soils would provide their ecosystem services after reinstatement.

6.6.12 Likely significant effects from the temporary and permanent loss of BMV land are anticipated. This is from the construction of the temporary access and haul roads, temporary construction compounds and construction laydown areas, soil stripping of working areas for underground cabling, and soil stripping for the permanent infrastructure.

6.6.13 Good practice measures have been identified in the CoCP (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**), with specific handling and management measures detailed in the oSMP (**Application Document 7.5.10.2 Outline Soil Management Plan – Kent**). These measures would protect soil quality and structure during construction and as the majority of land would be reinstated at the end of the construction phase, this would reduce detrimental effects on soil functions and BMV land.

Operation

6.6.14 After the implantation of embedded mitigation and control measures, no likely significant effects have been identified for agriculture and soil during operation and maintenance.

Decommissioning

6.6.15 During decommissioning there would be disturbance to soils, from construction of the temporary access and haul roads, temporary compounds and laydown areas. There would also be removal of infrastructure and the subsequent reinstatement of the land. The decommissioning works would result in a likely significant adverse effect to soils. The implementation of the good practice measures as detailed in the CoCP (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) and oSMP (**Application Document 7.5.10.2 Outline Soil Management Plan – Kent**) would reduce the detrimental effects on soil function and BMV land.

6.6.16 A likely significant affect is also anticipated due to temporary loss of BMV land. However, the permanent reinstatement of BMV land after decommissioning would result in a likely significant beneficial effect.

Additional Mitigation

6.6.17 There are no additional mitigation measures which can be incorporated to further reduce likely significant effects on agriculture and soils. The primary embedded mitigation measures are detailed in the CoCP (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) and oSMP (**Application Document 7.5.10.2 Outline Soil Management Plan – Kent**) would reduce the detrimental effects on soil function and BMV land.

Residual Effects and Conclusions

6.6.18 As there were no additional mitigation measures identified, the residual agriculture and soils effects of the Proposed Project are as described above.

6.7 Traffic and Transport

Approach to the Assessment

6.7.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme for traffic and transport. This includes potential effects on the road, walking and cycling networks including PRoW and its users including road users, walkers, cyclists and horse riders. A Transport Assessment Note has also been prepared to inform the traffic and transport chapter of the ES.

6.7.2 The assessment focuses on construction impact, where the Proposed Project would require staff (commuting journeys), deliveries of materials/equipment to site by LGVs and HGVs and the removal of debris from the site by HGVs. The Proposed Project would also include abnormal indivisible loads for the delivery of cable drums and transformers. The Proposed Project could cause disruption to local roads as a result of construction traffic and PRoW as a result of closures/diversions, and various measures are therefore proposed to mitigate these potential impacts during construction.

6.7.3 There would be very limited vehicle movements the during operational and maintenance phase, as the Kent Onshore Scheme will be manned by two operatives across the site (associated with the operation of the proposed Minster Converter Station and Minster Substation). There will also be additional infrequent trips associated with monthly or annual maintenance/inspections or repairs when required. Therefore, due to the low level of trips likely to be generated, operational effects have been scoped out of the traffic and transport assessment.

6.7.4 If the Proposed Project is decommissioned, there are expected to be fewer HGV, LGV and worker arrivals and departures associated with the decommissioning phase of the Kent Onshore Scheme than during the construction phase. The impacts of the decommissioning phase are therefore expected to be the same as, and not greater than, the construction phase.

Existing Environment

6.7.5 The Study Area for the assessment has been defined as the area where there could potentially be transport impacts resulting from the construction of the Kent Onshore Scheme. This includes routes along which HGVs will travel during construction, as well as the most likely routes that will be used by construction workers. Traffic surveys were carried out in January 2024 to identify baseline traffic flows for the surrounding highway network.

6.7.6 The Study Area includes key areas of the surrounding highway network. The most prominent are the A256 Richborough Way, A299 Hengist Way, Sandwich Road, Ebbsfleet Lane and Ebbsfleet Lane North. Other local routes within the Study Area include Brook Lane, Jutes Lane, Cottington Link Road, Cottington Road, Marsh Farm Road, Richborough Road and Whitehouse Drove, but these are not expected to be frequently utilised by construction vehicles. Public transport is not expected to be a key travel method for construction workers, however potential services which could be used include rail services from Thanet Parkway railway station or bus services running between Ramsgate and Sandwich. There are also many PRoW and walking/cycling routes which pass through or within close proximity to the Order Limits which are included within the Study Area.

6.7.7 Embedded mitigation measures have been applied to reduce, and where possible avoid, traffic and transport effects from the Proposed Project. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works including to minimise the requirement to close/divert PRoW;
- using trenchless methods at landfall to minimise potential impacts on the highway and walking/cycling routes; and
- potential carriageway widening works, vegetation clearance and street furniture removal to accommodate construction vehicles.

6.7.8 Further to the above, **Application Document 7.5.1.2 Outline Construction Traffic Management and Travel Plan – Kent** includes construction traffic management measures that will be implemented in support of the Proposed Project, to avoid any adverse impacts on the surrounding networks during the construction phase. **Application Document 7.5.9.2 Outline Public Rights of Way Management Plan – Kent** includes measures that will be implemented in support of the Proposed Project, to avoid any adverse impacts on the surrounding PRoW network during all phases of the Proposed Project.

6.7.9 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

6.7.10 An assessment of severance of communities, pedestrian delay, non-motorised user amenity, fear and intimidation, driver delay, road safety, hazardous/large loads and PRoW diversions and closures has been undertaken for the Study Area. The impacts caused by the Kent Onshore Scheme are classified as minor or negligible in nature. Therefore, no likely significant effects are anticipated for traffic and transport during construction.

Operation

6.7.11 Due to the low level of trips likely to be generated, it has been agreed to scope out operational phase transport effects from the EIA. Therefore, no likely significant effects are anticipated for traffic and transport during operation and maintenance.

Decommissioning

6.7.12 There are expected to be fewer HGV, LGV and worker arrivals and departures associated with the decommissioning phase of the Kent Onshore Scheme than during the construction phase. It is therefore considered reasonable to assume that the impacts of the decommissioning phase will be the same as, or not greater than, the construction phase.

Additional Mitigation

6.7.13 No further mitigation measures are considered to be necessary for traffic and transport receptors in addition to the embedded mitigation and control and management measures already identified.

Residual Effects and Conclusions

6.7.14 As no additional mitigation measures are required, the residual effects for traffic and transport during construction, operation and maintenance or decommissioning will remain as those described above and are not expected to be significant.

6.8 Air Quality

Approach to the Assessment

6.8.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme on air quality. This considers emissions from fugitive dust, equipment and generators and traffic and the effects that these would have on people (human receptors) and habitats (ecological receptors) during the construction and decommissioning of the Proposed Project. The assessment also considers emissions from vehicles and back-up generators at the substation and converter station during the operation and maintenance of the Proposed Project.

6.8.2 The Study Area for the assessment varies for different emission sources. A 250 m buffer around the Order Limits for construction dust was used, and a 50 m buffer from the routes used by construction vehicles on the public highway up to 250 m from the access points was used for dust emissions from vehicle movements. For construction traffic, a 200 m buffer was used around the construction traffic routes. For construction generators and other machinery, a 200 m buffer was used around the construction compounds. For the back-up generator emissions, a buffer of 200 m from the converter station and substation was used.

Existing Environment

6.8.3 There are a number of human and ecological receptors surrounding the Proposed Project. The closest receptors to the Minster converter station and substation are Great Oaks Small School whilst the closest ecological receptor to the Kent Offshore Scheme is Sandwich Bay to Hacklinge Marshes SSSI. Existing local authority air quality monitoring data shows no exceedances of the air quality mean objectives in the most recent annual reports.

Assessment of Impacts and Likely Significant Effects

6.8.4 Embedded mitigation measures have been applied to reduce, and where possible avoid, air quality effects of the Proposed Project. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works;

6.8.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for air quality have also been applied. Please refer to **Application Document 7.5.3.1 CEMP**

Appendix A Outline Code of Construction Practice for detail on these measures and the AQMP (**Application Document 7.5.6.2 Air Quality Management Plan - Kent**) which outlines the air quality monitoring proposed during construction.

Construction

6.8.6 The construction dust risk assessment identified high sensitivity human receptors within the Study Area, including Great Oaks Small School and residential properties in Minster and Richborough, as well as high sensitivity ecological sites. With the implementation of relevant mitigation and good practice measures, the effect of construction dust emissions is predicted to be not significant.

6.8.7 The primary construction vehicle routes to/from the Kent Onshore Scheme will be via the A299 and A256 to the respective access points. The effects from construction vehicle emissions from the Kent Onshore Scheme are predicted to be negligible and therefore not significant.

6.8.8 There are a small number of receptors within 200 m of construction compounds, substation and converter station. Due to the temporary nature of construction equipment and implementation of control measures, the effect of emissions from construction equipment would not be significant.

Operation

6.8.9 During the operational and maintenance phase, the Kent Onshore Scheme will be staffed by a limited number of operatives, with additional and infrequent maintenance trips. As such air quality effects from operation vehicles are considered to be not significant.

6.8.10 Sandwich Bay to Hacklinge Marshes SSSI is approximately 20 m from the Minster Converter Station and Substation, however there are no human receptors within 200 m. The effects of back-up generator emissions from Minster Converter Station and Substation are predicted to be not significant.

Decommissioning

6.8.11 There is the potential for emissions from fugitive dust, vehicles and equipment during the decommissioning phase of the Kent Onshore Scheme. However, the potential effects on air quality during decommissioning are considered to the same, or less than, the construction phase. The effects on air quality during decommissioning would therefore not be significant.

Additional Mitigation

6.8.12 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

6.8.13 No likely significant effects are anticipated for air quality during construction, operation and maintenance or decommissioning.

6.9 Noise and Vibration

Approach to the Assessment

6.9.1 The EIA has considered the likely significant effects of the Suffolk Onshore Scheme in terms of noise and vibration. This considers effects from construction activities, construction traffic, the operational phase, and decommissioning phase on nearby noise sensitive receptors.

6.9.2 There would be very limited traffic movements during operation. Therefore, operational effects from vehicles have been scoped out of the noise and vibration assessment. The only operation effect assessed is the operation noise from the proposed converter station and substation.

6.9.3 The Study Area for noise and vibration varies for different noise and vibration sources. For construction noise, the Study Area includes sensitive receptors (such as residential properties) located within 300 m of the construction works (excluding construction traffic). For construction vibration, the Study Area includes sensitive receptors located within 100 m of construction activities. For construction traffic the Study Area considers the existing road network, with a further assessment considering sensitive receptors within 50m of construction routes. For operational noise, the Study Area includes sensitive receptors within 1 km of the converter station and substation.

6.9.4 A desk study has been undertaken to identify sensitive receptors within the Study Area. A construction and operational noise assessment were then undertaken which were informed by noise survey data.

Existing Environment

6.9.5 NSRs within the Study Area include built up residential areas such as Minster to the northwest, Cliffsend to the northeast, Ebbsfleet to the southwest, and Richborough to the south. The Kent Onshore Scheme noise and vibration Study Area includes a mix of predominantly residential and rural environments. The noise climate is therefore relatively quiet away from main transport routes. It is assumed that existing vibration levels are negligible in the Study Area.

6.9.6 Baseline noise surveys have been conducted at a location representative of sensitive receptors close to the proposed converter station and substation in order to inform the operational noise assessment. The surveys included daytime, night-time, weekday and weekend periods.

Assessment of Impacts and Likely Significant Effects

6.9.7 Embedded mitigation measures have been applied to reduce, and where possible avoid, noise and vibration effects of the Proposed Project. Measures have been incorporated such as sensitive routing and siting of infrastructure and temporary works.

6.9.8 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for noise and vibration have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** and **Application**

Document 7.5.8.2 Outline Construction Noise and Vibration Management Plan - Kent for detail on these measures.

Construction

6.9.9 There are a number of sources of noise and vibration during construction. Anticipated works which will cause noise and vibration effects include setup of site compounds and access, construction of underground cables, and horizontal direction drilling for trenchless crossings, pylon construction, substation construction and converter station construction.

6.9.10 For construction noise, the assessment indicated that no significant adverse effects are expected where best practicable means are used to control and manage construction noise. Best practicable means are standard noise mitigation measures and includes consideration of working methods, plant and equipment type, site layout and orientation, screening, enclosures, and consideration of working periods. Although significant effects from construction noise are not expected, the assessment identified construction noise 'hot spots' where best practicable means are required to avoid potential significant effects. This includes five sensitive receptors during daytime works, and five sensitive receptors during potential weekend works. During daytime and weekend periods, these 'hot spots' include the construction of some temporary access routes. No 'hot-spots' have been identified in relation to potential night-time works. The contractor will undertake a detailed construction noise assessment prior to commencing works and specific best practicable means to reduce the effects on construction noise will be determined and used during the works.

6.9.11 The assessment of construction vibration considered the effect on people within buildings, and on buildings and structures. Activities that may generate significant effects are ground compaction and piling. No significant effects are expected from either activity, but short duration effects may occur during some ground compaction activities. However, the duration of these activities is not considered significant, and although they may be perceptible to people within buildings, would be below the level at which potential building or structural damage would be expected. As with noise, best practicable means would be employed to reduce potential effects from construction vibration. This would include consideration of working methods, plant and equipment type, and consideration of working periods. Therefore, no significant construction vibration effects are anticipated. The contractor will undertake a detailed construction vibration assessment prior to commencing works and specific best practicable means to reduce the effects of construction vibration will be determined and used during the works.

6.9.12 The construction traffic noise assessment considered the additional vehicle traffic on the local road network. This indicated negligible effects on all routes, therefore, no significant adverse effects from construction traffic are anticipated.

Operation

6.9.13 After the implementation of mitigation measures, the impact from the proposed converter station and substation on all nearby sensitive receptors are considered to be not significant. Detailed operational noise assessments will be undertaken during the design phase and specific mitigation measures will be incorporated into the design.

6.9.14 Operational maintenance activities are not expected to generate high levels of noise or vibration. Therefore, the impact from these operational maintenance activities is considered to be not significant.

Decommissioning

6.9.15 The effects from decommissioning would be expected to be similar to those during the construction phase. The contractor will undertake detailed noise and vibration assessment to reduce the effects during the decommissioning phase. Noise and vibration effects at decommissioning are considered to be not significant.

Additional Mitigation

6.9.16 The contractor will undertake a detailed construction noise and vibration assessment prior to commencing works and specific best practicable means to reduce the effects of construction vibration will be determined and used during the works.

6.9.17 Detailed operational noise assessments will be undertaken during the design phase and specific noise mitigation measures will be incorporated into the design of the proposed converter station and substation.

Residual Effects and Conclusions

6.9.18 The assessment concluded that noise and vibration levels during the construction, operational, and decommissioning phases can be controlled through standard mitigation measures such that significant adverse effects would be avoided at all noise sensitive receptors. Therefore, no likely significant adverse effects for noise and vibration during construction, operation and maintenance, and decommissioning are anticipated.

6.10 Socio-Economics, Recreation and Tourism

Approach to the Assessment

6.10.1 The EIA has considered the likely significant effects of the Proposed Project on socio-economics, recreation and tourism. This considers impacts on receptors including population and deprivation, employment, recreational routes and PRoWs, residential properties, local businesses, visitor attractions, community facilities, open space, development land and accommodation facilities. Potential effects of these impacts may be generation of temporary employment opportunities, temporary closure/diversion resulting in changes to the wider PRoW network and changes in journey times.

6.10.2 The Study Area varies across spatial levels according to the potential effect. A Study Areas of a 60-minute travel area for employment generation, GVA (effect upon the local economic environment) and accommodation services. A 500 m Study Area from the Order Limits has been applied for impacts to PRoW and recreational routes, and residential and business properties. Finally, a 1 km Study Area has been applied from the Order Limits for severance of local communities.

Existing Environment

6.10.3 The settlement of Richborough lies adjacent to the Kent Onshore Scheme Order Limits to the south of the Kent Onshore Scheme. A number of isolated residential properties lie

within 500 m of the Kent Onshore Scheme Order Limits. These include a cluster of properties approximately 75 m to the north of the Kent Onshore Scheme Order Limits on Ebbsfleet Lane North.

6.10.4 There are 15 PRoWs and recreational routes which pass within the Kent Onshore Scheme Order Limits plus a further 13 PRoW and recreational routes located within 500 m of the Kent Onshore Scheme. There are no residential properties located within the Kent Onshore Scheme Order Limits, whilst 26 business premises and 4 visitor attractions are located within 500 m of the KentSuffolk Onshore Scheme. There are also numerous community facilities and open spaces within 500 m of the KentSuffolk Onshore Scheme.

Assessment of Impacts and Likely Significant Effects

6.10.5 Embedded mitigation measures have been integral to reduce, and where possible avoid, socio-economics, tourism and recreation effects of the Proposed Project. Measures include sensitive routing and siting of infrastructure and temporary works to avoid or reduce impacts on receptors.

6.10.6 **Application Document 7.5.9.2 Outline Public Rights of Way Management Plan - Kent** identifies the mitigation measures which will be required to maintain the operation of impacted PRoW. It also details how these mitigation measures will be managed, including who will be responsible for their management.

6.10.7 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for socio-economics, tourism and recreation have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

6.10.8 An assessment of economic impacts on employment generation, GVA and local accommodation capacity has been undertaken for the construction phase of the Proposed Project. Land use and severance impacts on PRoW and recreational routes, residential properties, local businesses, visitor attractions, community facilities, open space, development land have also been assessed. The impacts caused by the Kent Onshore Scheme on these receptors are classified as minor or negligible in nature. Therefore, no likely significant effects are anticipated for socio-economics, recreation and tourism during construction.

Operation

6.10.9 There are no further impacts identified for the operational and maintenance phase of the Kent Onshore Scheme beyond those identified for construction.

Decommissioning

6.10.10 In the event that the KentSuffolk Onshore Scheme is decommissioned, the effects on socio-economic, tourism and recreation receptors would be anticipated to be same as, or not greater than, the construction phase. However, the decommissioning phase assessment of likely significant effects would be reviewed at the time of decommissioning.

Additional Mitigation

6.10.11 After embedded mitigation and control measures, the assessment has concluded that there are no likely significant effects in relation to socio-economics, recreation and tourism during construction, operation and maintenance and decommissioning. Therefore, there are no additional mitigation measures required for socio-economic, recreation and tourism receptors.

Residual Effects and Conclusions

6.10.12 As no relevant additional mitigation measures are proposed, the likely significant effect for the Kent Onshore Scheme during construction will remain as those described above. There are no likely significant effects identified in relation to the construction, operation and maintenance or decommissioning phases.

6.11 Health and Wellbeing

Approach to the Assessment

6.11.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme on health and wellbeing. This considers impacts such as access to healthcare services, access to open space, air quality, noise and vibration, and employment.

6.11.2 The Study Area for health and wellbeing effects variers dependent on the receptor. For impacts on access to healthcare and social infrastructure, a 1 km radius from the Order Limits is used. For impacts to accessibility to PRoW, recreational routes and open space, a 500 m radius from the Order Limits is used. For beneficial impacts on employment, a 60-minute travel area from the Order Limits is used. For Potential adverse impacts on social cohesion and community identity, a 3 km radius from the Order Limits is used. Finally for air quality and noise and vibration, the Study Areas used in their corresponding chapters is used.

Existing Environment

6.11.3 The baseline for this topic includes population, ethnicity, deprivations, health profiles, local health priorities, settlements, healthcare and education facilities, employment, PRoW, existing traffic and transport, air quality, noise and landscape. For detailed information on the baseline considered for health and wellbeing, refer **to Application Document 6.2.3.11 Part 32 KentSuffolk Chapter 11 Health and Wellbeing**.

Assessment of Impacts and Likely Significant Effects

6.11.4 Embedded mitigation measures have been applied to reduce, and where possible avoid, health and wellbeing effects of the Kent Onshore Scheme. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works.

6.11.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for health and wellbeing have also been applied. Please refer to **Application Document**

7.5.3.1 CEMP Appendix A Outline Code of Construction Practice for detail on these measures.

Construction

6.11.6 The assessment undertaken for impacts on health and wellbeing during construction determined that no likely significant effects are anticipated for the Kent Onshore Scheme. Minor adverse effects were identified for access to healthcare services (for the more vulnerable sub-population aged over 65), air quality (for the more vulnerable sub-population aged over 65), noise and vibration, transport and physical activity, and social cohesion and community identity. A minor beneficial effect was identified for employment and income as a result of job generation.

Operation

6.11.7 The assessment undertaken for impacts on health and wellbeing during operation determined that no likely significant effects are anticipated for the Kent Onshore Scheme. Minor adverse effects were identified for air quality (for the more vulnerable sub-population aged over 65), noise and vibration, and social cohesion and community identity.

Decommissioning

6.11.8 In the event that the Kent Onshore Scheme is decommissioned, the effects on health and wellbeing receptors would be anticipated to be same as, or not greater than, the construction phase. However, the decommissioning phase assessment of likely significant effects would be reviewed at the time of decommissioning.

Additional Mitigation

6.11.9 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

6.11.10 No likely significant effects are anticipated for health and wellbeing during construction, operation and maintenance or decommissioning.

6.12 Kent Onshore Scheme Intra-Project Cumulative Effects

Approach to the Assessment

6.12.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme from an intra-project cumulative perspective. The approach to the assessment of the intra-project cumulative effects for the Kent Onshore Scheme is as described for the Suffolk Onshore Scheme in Section 5.12 above.

Assessment of Intra-project Cumulative Effects

6.12.2 For nearby residential receptors, there could be a significant intra-project cumulative effect during construction and decommissioning as a result of these residential

receptors experiencing some minor adverse noise, traffic and transport and health and wellbeing effects issues alongside significant effects on visual amenity.

6.12.3 For people using public footpath TE37 and the Saxon Shore Way, there could be a significant intra-project cumulative effect during construction and decommissioning because the effects on visual amenity for users of these PRoWs is considered significant at some locations, and the regional trail might also experience some minor adverse traffic and transport socio-economic effects and health and well-being effects.

6.12.4 No likely significant intra-project effects are anticipated during operation for the Kent Onshore Scheme.

6.13 Kent Onshore Scheme Inter-Project Cumulative Effects

Approach to the Assessment

6.13.1 The EIA has considered the likely significant effects of the Kent Onshore Scheme from an inter-cumulative perspective. The approach to the assessment of the inter-project cumulative effects for the Kent Onshore Scheme is as described for the Suffolk Onshore Scheme in Section 5.13 above.

Assessment of Inter-Project Cumulative Effects

6.13.2 During construction and decommissioning, likely significant adverse effects are anticipated in relation to temporary disturbance to soils and temporary and permanent loss of BMV land as a result of the Proposed Project in-combination with other individual developments, namely Residential Development (Hoo Farm), Richborough Energy Park, Land on the West Side of Tothill Street, Goshall Valley East Street (Ash) and Spitfire Green.

Assessment of Total Cumulative Effects

6.13.3 When considering the total potential cumulative effect of all the other developments combined with the Kent Onshore Scheme, there is the potential for a significant total cumulative effect on LCA E1 Stour Marshes.

6.13.4 The concentration of energy related development close to and within Richborough Energy Park whilst occupying the less sensitive part of LCA E1, would have the potential to result in a small and peripheral part of LCA E1 becoming an energy-focused landscape, rather than exhibiting characteristics of the wider marsh. The mitigation planting associated with the Kent Onshore Scheme would provide some separation between the combined developments and the wider marsh landscape, thereby limiting the potential for cumulative significant effects to within the eastern periphery of LCA E1. The remaining part of LCA E1 would not experience significant total cumulative effects.

6.13.5 The total temporary disturbance to soils and temporary and permanent loss of BMV land as a result of the Proposed Project combined with Residential Development Hoo Farm, Richborough Energy Park, Land On The West Side Of Tothill Street, Goshall Valley East Street (Ash) and Spitfire Green developments is considered likely to result in a significant cumulative effect.

Sequential landscape and visual assessment

6.13.6 A sequential cumulative visual assessment has not identified any likely significant effects as a result of the Proposed Project and other developments.

7. Offshore Scheme

7.1 Physical Environment

Approach to the Assessment

7.1.1 The EIA has considered the likely significant effects of the Offshore Scheme on marine physical environment. This considers the interaction between the Offshore Scheme and receptors such as seabed geology, surficial sediments, water quality and other seabed features. Impacts from this interaction may include changes to seabed geology, water quality or other features of interest.

7.1.2 The Study Area for this assessment runs from the landfall in Aldeburgh, Suffolk, to the landfall in Pegwell Bay, Kent, crossing the outer Thames Estuary in the southern North Sea.

Existing Environment

7.1.3 The Suffolk landfall is located on a stretch of coast known as The Haven (Local Nature Reserve & SSSI) which is a shingle beach. To the north of the Suffolk landfall is the town of Thorpeness and the Thorpeness headland. To the south of the Suffolk landfall is Aldeburgh. This stretch of coastline forms a shallow curve aligned north-south and is characterised by a wide shingle beach. The Suffolk coastline is characterised by relatively young and soft geology with sedimentary formations largely comprising sands, muds and shingle, which are all readily eroded by the sea.

7.1.4 Pegwell Bay, where the Offshore Scheme makes landfall on the Kent coast, is a shallow inlet within the English Channel, southwest of Ramsgate, which spans across the estuary of the River Stour. The shoreline of Pegwell Bay is characterised by a sand beach stretching from Ramsgate in the north, to Pegwell Bay Nature Reserve in the south. The nature reserve features coastal habitats such as saltmarsh and mudflats.

Assessment of Impacts and Likely Significant Effects

7.1.5 Embedded mitigation measures have been integral in reducing, and where possible avoiding, the physical environment effects of the Offshore Scheme. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works and the utilisation of rock bags or mattresses for cable protection at the Coralline Crags, not pre-cut trenches.

7.1.6 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.1.7 The assessment undertaken for physical environment during construction determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor effects are anticipated through the preparation of the route and the installation of the cable. The preparation of the route is anticipated to pose minor adverse effects to sediment processes, seabed morphology and bedforms. The installation of the cable is anticipated to pose minor adverse effects to seabed, beach and regional coastline morphology.

Operation

7.1.8 The assessment undertaken for impacts on physical environment during operation and maintenance determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor adverse effects are anticipated for coastal geomorphological change, changes to sediment transport and offshore scour of the seabed.

Decommissioning

7.1.9 Any impacts from the decommissioning phase activities involved in cable removal, will be similar to those occurring during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.1.10 In addition to the embedded mitigation and control measures, additional mitigation and enhancement measures are included within **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments.**

7.1.11 Mitigation Measures that are relevant to physical environment include:

- leeping any rock protecting the cable to a minimum height and width with suitable side slopes;
- depth of Burial Monitoring surveys to be undertaken post installation; and
- further monitoring of the beach profile and erosion rates at the Suffolk landfall.

Residual Effects and Conclusions

7.1.12 No likely significant effects are anticipated for the physical environment during construction, operation and maintenance or decommissioning.

7.2 Benthic Ecology

Approach to the Assessment

7.2.1 The EIA has considered the likely significant effects of the Offshore Scheme on benthic ecology. This considers the potential effect of the Offshore scheme with organisms that live on the sea floor.

7.2.2 The Study Area for this assessment runs from the landfall in Aldeburgh, Suffolk, to the landfall in Pegwell Bay, Kent, crossing the outer Thames Estuary in the southern North Sea.

Existing Environment

7.2.3 The subtidal benthic habitats identified along the proposed Offshore Scheme were generally dominated by areas of mud and sand in the northernmost sections of the route. Further south, the sediment becomes more mixed with the presence of soft rock in nearshore areas. Several subtidal habitats are listed as habitats of conservation importance. **Application Document 6.6 Habitats Regulations Assessment Report** evaluates the potential impacts of the Proposed Project on relevant protected European sites such as SACs and SPAs to ensure the protection of biodiversity and the preservation of vital natural habitats. The proposed Offshore Scheme is located partially within the Goodwin Sands Marine Conservation Zone (MCZ) which is designated for several habitats including 'subtidal sands'. For further details on the specific consideration of the potential for impacts on Marine Conservation Zones from the Proposed Project, see **Application Document 6.11 Marine Conservation Zone Assessment.**

Assessment of Impacts and Likely Significant Effects

7.2.4 Embedded mitigation measures have been integral in reducing, and where possible avoiding, the benthic ecology effects of the Offshore Scheme. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works.

7.2.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.2.6 The assessment undertaken for benthic ecology during construction determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor effects are anticipated due to temporary disturbance to habitats and species, suspended sediment concentrations and deposition, and changes to marine water quality.

Operation

7.2.7 The assessment undertaken for benthic ecology during operation and maintenance determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor effects are anticipated due to direct loss of benthic habitats and species, introduction and spread of invasive non-native species, and electromagnetic fields.

Decommissioning

7.2.8 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.2.9 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

7.2.10 No likely significant effects are anticipated for benthic ecology during construction, operation and maintenance or decommissioning.

7.3 Fish and Shellfish Ecology

Approach to the Assessment

7.3.1 The EIA has considered the likely significant effects of the Offshore Scheme on fish and shellfish. This considers potential impacts such as permanent loss of fish and shellfish habitat due to placement of hard substrates on the seabed, and temporary physical disturbance to fish and shellfish habitat.

7.3.2 The Study Area for this assessment extends from the Outer Thames Estuary and southern North Sea between the Suffolk and Kent coastlines.

Existing Environment

7.3.3 There are several fish and shellfish species known to be present in the Study Area that are protected under international and national conservation legislation. Four designated sites relevant to fish and shellfish are located within the Study Area. These are Goodwin Sands, Thanet Coast, Dover to Deal and Medway Estuary. These are all MCZs designated for the protection of blue mussel (*Mytilus edulis*) or native oyster (*Ostrea edulis*) beds. For further details on the specific consideration of the potential for impacts on MCZs from the Proposed Project, see **Application Document 6.11 Marine Conservation Zone Assessment.** The Offshore Scheme also passes through the jurisdictions of two Inshore Fisheries and Conservation Authorities.

Assessment of Impacts and Likely Significant Effects

7.3.4 Embedded mitigation measures have been integral in reducing the fish and shellfish ecology effects of the Offshore Scheme. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works; and
- seasonal restrictions for offshore cable installation activities for spawning seasons.

7.3.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.3.6 The assessment undertaken for fish and shellfish ecology during construction determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor effects are anticipated on herring and sandeel due to increased suspended sediment concentrations and deposition, and temporary physical disturbance to habitats.

Operation

7.3.7 The assessment undertaken for fish and shellfish ecology during operation and maintenance determined that no likely significant effects are anticipated for the Offshore Scheme. In addition to the effects anticipated during the construction phase, there is also a minor adverse effect anticipated to elasmobranchs (a subclass of fish including sharks, rays and skates) due to disturbance from electromagnetic fields.

Decommissioning

7.3.8 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.3.9 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

7.3.10 No likely significant effects are anticipated for fish and shellfish during construction, operation and maintenance or decommissioning.

7.4 Marine Mammals

Approach to the Assessment

7.4.1 The EIA has considered the likely significant effects of the Offshore Scheme on marine mammals. This considers the potential impacts on two groups of marine mammals occurring in UK waters, namely cetaceans (whales, dolphins and porpoises) and pinnipeds (seals).

7.4.2 Marine mammals are highly mobile and transient species, which means there can be implications for wider populations as a result of localised impacts. Therefore, the Study Area for this assessment has applied species-specific Study Areas relating to the relevant management units which have been defined by relevant conservation organisations.

Existing Environment

7.4.3 In the UK, two groups of marine mammals occur: cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals). Most marine mammals are wide ranging and those recorded within the Study Area are likely to be individuals from larger biological populations originating from other points along the UK coast. The Offshore Scheme passes through the Southern North Sea SAC, which has been designated for the protection of the harbour porpoise.

Assessment of Impacts and Likely Significant Effects

7.4.4 Embedded mitigation measures have been integral in reducing the effects from the Offshore Scheme on marine mammals. Measures that have been incorporated include

sensitive routing and siting of infrastructure and temporary works. **Application Document 7.5.11 Outline Marine Mammal Mitigation Plan** has been prepared in order to specify the overarching principles and detailed measures to minimise and mitigate the effects of the construction activities associated with the Proposed Project on marine mammals.

7.4.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.4.6 The assessment undertaken for marine mammals during construction determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor effects are anticipated through underwater sound disturbance, vessel collision during construction activities, and airborne soundsth and visual disturbance at Pegwell Bay and Goodwin Sands. **Application Document 6.3.4.4.A Pegwell Bay Seal Survey Report** provides an overview of the exact locations where seals are at low tide in order to identify the proximity of the seals to Proposed Project activities in Pegwell Bay.

Operation

7.4.7 The assessment undertaken for marine mammals during operation and maintenance determined that no likely significant effects or minor effects are anticipated for the Offshore Scheme.

Decommissioning

7.4.8 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.4.9 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

7.4.10 No likely significant effects are anticipated for marine mammals during construction, operation and maintenance or decommissioning.

7.5 Marine Ornithology

Approach to the Assessment

7.5.1 The EIA has considered the likely significant effects of the Offshore Scheme on birds. This considers potential impacts such as disturbance, displacement and loss of habitat to ornithology receptors.

7.5.2 The Study Area for this assessment runs from the landfall in Aldeburgh, Suffolk, to the landfall in Pegwell Bay, Kent, crossing the outer Thames Estuary in the southern North Sea.

Existing Environment

7.5.3 The proposed Offshore Scheme directly passes through six sites that are designated nationally or internationally for the protection of seabirds and waterbirds. These are the Outer Thames Estuary SPA, Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar, Sandwich and Pegwell Bay National Nature Reserve, Sandwich Bay to Hacklinge Marshes SSSI, and Leiston-Aldeburgh SSSI. The Outer Thames Estuary SPA is designated, in part, for the protection of foraging areas for non-breeding red-throated diver. **Application Document 7.8 Red Throated Diver Protocol** outlines the measures to be implemented to reduce the Proposed Projects impacts on red-throated diver.

7.5.4 The Offshore Scheme is located in waters that are used by foraging seabirds during both the breeding and non-breeding season, including species of gulls and terns, guillemot and razorbill. The intertidal mudflats and saltmarsh at Pegwell Bay, Kent also supports aggregations of non-breeding waterbirds, including important populations of cormorant, golden plover and sanderling.

7.5.5 **Application Document 6.6 Habitats Regulations Assessment Report** evaluates the potential impacts of the Proposed Project on relevant protected European sites such as SACs and SPAs to ensure the protection of biodiversity and the preservation of vital natural habitats.

Assessment of Impacts and Likely Significant Effects

7.5.6 Embedded mitigation measures have been integral in reducing the adverse effects to birds of the Offshore Scheme. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works; and
- commitments made within **Application Document 7.5.3.2 Appendix B Register of Environmental Actions and Commitments.**

7.5.7 Measures relevant to the control and management of impacts that could affect ornithology receptors have been included in **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**.

Construction

7.5.8 The assessment undertaken for birds during construction determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor adverse effects are anticipated due to disturbance and displacement of red-throated diver in the Outer Thames Estuary SPA and non-breeding waterbirds occurring in Pegwell Bay, as well as loss and disturbance of habitat used by red-throated diver within the Outer Thames Estuary SPA.

Operation

7.5.9 The assessment undertaken for ornithology during operation and maintenance determined that no likely significant effects or minor adverse effects are anticipated for the Offshore Scheme.

Decommissioning

7.5.10 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.5.11 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

7.5.12 No likely significant effects are anticipated for ornithology during construction, operation and maintenance or decommissioning.

7.6 Marine Archaeology

Approach to the Assessment

7.6.1 The EIA has considered the likely significant effects of the Offshore Scheme on marine archaeology. This considers the impact from potential interaction of the Offshore Scheme with the known and potential marine archaeology and cultural heritage.

7.6.2 The Study Area for this assessment runs from the landfall in Aldeburgh, Suffolk, to the landfall in Pegwell Bay, Kent, crossing the outer Thames Estuary in the southern North Sea.

Existing Environment

7.6.3 There are no designated sites or known sites of prehistoric date within the Study Area, however there is potential for prehistoric archaeological material to be discovered during seabed works associated with the Offshore Scheme. Within the Study Area, 28 palaeogeographic features of archaeological potential were identified following the assessment of geophysical and geotechnical survey data. **Application Document 7.6 Method Statement for Geoarchaeological Assessment of Geotechnical Site Investigations** has been prepared in support of an EIA Scoping Request for additional geotechnical survey works for the Proposed Project.

7.6.4 There are currently no maritime or aviation sites within the Study Area that are subject to statutory protection. Within the Study Area, a total of 1289 sites comprising geophysical anomalies and archive records were identified as being of known and possible archaeological potential.

7.6.5 There are currently no coastal or intertidal sites within the Study Area that are subject to statutory protection. Within the Study Area, a total of 34 records relating to known and potential archaeological features have been recorded; one at the Suffolk landfall and 33 at the Kent landfall. An additional 141 geophysical anomalies have also been identified in the intertidal area of Pegwell Bay.

7.6.6 The assessment of the Historic Seascape Characterisation of the Study Area promotes an understanding of the trends and processes in the area, to inform the sustainable

management of change over time. The Study Area was characterised as having several elements, for instance fishing, navigation, energy industry and telecommunications.

7.6.7 A detailed description of the existing baseline is presented in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.

Assessment of Impacts and Likely Significant Effects

7.6.8 Embedded mitigation measures have been integral in reducing the impacts on marine archaeological receptors as a result of the Offshore Scheme. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works to avoid known archaeological receptors and a project-specific protocol for reporting discoveries of an archaeological nature. The proposed measures are detailed within the overarching Outline Written Scheme of Investigation (**Application Document 7.5.5 Outline Offshore Written Scheme of Investigation**).

7.6.9 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for marine archeology receptors have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for details on these measures.

Construction

7.6.10 Activities undertaken during the construction phase have the potential to either directly or indirectly impact marine archaeology receptors located on or under the seabed, resulting in their total or partial physical loss, a change to their setting, and/or the disruption of relationships between receptors within their wider surroundings. Due to the sensitivity of archaeological receptors, the assessment undertaken for marine archaeology during construction determined several likely significant effects are anticipated for the Offshore Scheme.

7.6.11 Pre-mitigation likely significant adverse effects are anticipated for the direct damage and/or loss of potential heritage receptors, the indirect damage caused by erosion or scour due to changes to hydrodynamic and sedimentary regimes, and temporary or permanent change to the setting of known heritage receptors (marine and coastal military remains).

Operation

7.6.12 Activities undertaken during the operation and maintenance phase have the potential to either directly or indirectly impact marine archaeology receptors, located on or under the seabed, resulting in their total or partial physical loss, a change to their setting, and/or the disruption of relationships between receptors within their wider surroundings.

7.6.13 Pre-mitigation likely significant adverse effects are anticipated for the direct damage and/or loss of potential heritage receptors, the indirect damage caused by erosion or scour due to changes to hydrodynamic and sedimentary regimes.

Decommissioning

7.6.14 Any potential impacts from the decommissioning phase activities involving cable removal will be similar to those carried out during the construction phase. The effects of

these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.6.15 Additional mitigation measures that have been applied to mitigate or offset any likely significant effects for Marine Archaeology are included in **Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation** which will be secured by Requirement 14 in Schedule 3 of the DCO. All mitigation measures are included in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

7.6.16 Extensive additional mitigation measures have been incorporated, including anomaly investigation, further surveys and watching briefs. After the implementation of embedded and additional mitigation, no likely significant effects have been predicted for marine archaeology.

Residual Effects and Conclusions

7.6.17 No likely significant effects are anticipated for marine archaeology during construction, operation and maintenance or decommissioning.

7.7 Shipping and Navigation

Approach to the Assessment

7.7.1 The EIA has considered the likely significant effects of the Offshore Scheme on shipping and navigation. This considers potential impacts such as collisions, disruption to vessel routes and fishing gear snagging.

7.7.2 The Study Area for this assessment comprises a 10 Nautical Mile buffer around the Offshore Scheme Order Limits which runs from the landfall in Aldeburgh, Suffolk, to the landfall in Pegwell Bay, Kent, crossing the outer Thames Estuary in the southern North Sea.

Existing Environment

7.7.3 There are four port and harbour authority areas which overlap with the Study Area. These are Harwich Haven, Port of London, Port of Ramsgate and Sandwich Port and Haven. The Offshore Scheme runs through an extremely busy area for shipping known as ‘the Sunk’. This is a small area of exceptional water depth which forms common access to Harwich Haven and the Thames Estuary, and a number of Traffic Separation Schemes (TSS) have been established across this region to control traffic and reduce the risk of collisions. The Offshore Scheme routes through Pegwell Bay to the Kent landfall, which is a shallow, tidal area of challenging navigation. The Study Area also includes numerous areas for anchorage, aids to navigation (such as beacons and buoys), pilot boarding stations, military practice areas as well as other navigational features.

Assessment of Impacts and Likely Significant Effects

7.7.4 Numerous embedded mitigation measures have been integral in reducing the shipping and navigation effects of the Offshore Scheme. Some measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works;
- early and continued stakeholder consultation;
- compliance with relevant guidance on navigation; and
- designing rock berms (protection for the cable) to reduce snagging.

7.7.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for shipping and navigation have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.7.6 The assessment undertaken for shipping and navigation during construction determined that no likely significant effects are anticipated for the Offshore Scheme. All potential impacts of the scheme in terms of collisions, disruption to established vessel routes and areas, vessel anchor drag and fishing gear snagging are anticipated to be tolerable after embedded mitigation and control measures.

Operation

7.7.7 The assessment undertaken for shipping and navigation during operation and maintenance determined that no likely significant effects or minor effects are anticipated for the Offshore Scheme. In addition to the effects anticipated for construction, there would also be a non-significant effect from electro-magnetic fields due to compass deviation in shallow areas caused by the cable.

Decommissioning

7.7.8 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.7.9 Additional mitigation measures that have been applied to mitigate or offset any likely significant effects for shipping and navigation are included in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

7.7.10 Numerous additional mitigation measures have been incorporated, including notification and engagement with regular shipping users, communication plans, temporary aids to navigation, and cable protection measures which consider fishing activity.

Residual Effects and Conclusions

7.7.11 No likely significant effects are anticipated for shipping and navigation during construction, operation and maintenance or decommissioning.

7.8 Commercial Fisheries

Approach to the Assessment

7.8.1 The EIA has considered the likely significant effects of the Offshore Scheme on commercial fisheries. This considers potential impacts on fishing activities, including mobile gear fisheries (dredgers, beam trawlers, and demersal trawls and seines) and static gear fisheries (pots and traps, and fixed and drift nets).

7.8.2 The Study Area for this assessment has been determined by the International Council for the Exploration of the Sea (ICES) who organize fishing regions into rectangles. The Study Area therefore comprises ICES rectangle 31F1 (southern section of the offshore scheme), 32F1 (middle section) and 33F1 (northern section).

Existing Environment

7.8.3 Throughout the Study Area the majority of vessels were trawlers (40.45%), and potters /whelkers (20.98%). The remaining gear types comprised gill and drift nets (14.59%), dredgers (9.48%), rod and line (8.83%), and seiners (2.04%). UK vessels account for the largest share of fishers utilising the Study Area, and are therefore, the most likely to be impacted by the Project.

Assessment of Impacts and Likely Significant Effects

7.8.4 Embedded mitigation measures have been integral in reducing the impact of the Offshore Scheme on commercial fisheries. Measures that have been incorporated include:

- sensitive routing and siting of infrastructure and temporary works; and
- minimising the amount of time the cable stays unprotected and exposed to potential interactions with anchoring vessels or fishing gear, during construction.

7.8.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.8.6 The assessment undertaken for commercial fisheries during construction determined potential for a likely significant adverse effect on static gear fisheries due to temporary loss of fishing grounds during construction. This is due to drift netters potentially becoming hesitant to deploy fishing gear whilst drifting over the Offshore Scheme during construction. All other effects anticipated during construction are not deemed to be significant.

Operation

7.8.7 The assessment undertaken for commercial fisheries during operation and maintenance determined potential for a likely significant adverse effect on drift netters due to the potential for bottom drift nets to snag on types of cable protection (such as rock berms with jagged edges). All other effects anticipated during operation are not deemed to be significant.

Decommissioning

7.8.8 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same than the impacts associated with the construction or operation phase.

Additional Mitigation

7.8.9 Additional mitigation measures that have been applied to mitigate or offset any likely significant effects for commercial fisheries~~ecology and biodiversity~~ are included in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

7.8.10 Additional mitigation measures have been incorporated, including compensation for loss or alternation of fishing grounds which will be agreed post consent as part of an evidence-based cooperation agreement between fisheries and the developer. In order to mitigated the effect of nets being caught on rock cable protection, further consultation with fishers on the design of cable protection and post installation surveys are considered to reduce this impact.

Residual Effects and Conclusions

7.8.11 After additional mitigation, the assessment concluded that there are no likely significant adverse residual effects on commercial fisheries as a result of the Offshore Scheme.

7.9 Other Sea Users

Approach to the Assessment

7.9.1 The EIA has considered the likely significant effects of the Offshore Scheme on other sea users. This considers potential impacts to recreational users (including boating, fishing, kayaking and swimming), oil and gas operations, offshore wind farms, cables, pipelines, and other developments.

7.9.2 The Study Area for this assessment extends to an area of 10 km width either side of the Offshore Scheme boundary.

Existing Environment

7.9.3 The coastal-marine environment supports numerous tourism and recreation activities. Within the Study Area, several Royal Yachting Association clubs are located in coastal areas around Margate and Ramsgate, and Orford Ness. The Royal Harbour Marina is also located in Ramsgate, with Highway Marine and Sandwich Marina located further inland of the Kent landfall. Recreational fishing boat operators such as Ramsgate

Fishing Charters and Kent Sea Fishing Trips are known to operate out of Ramsgate and are thought to run all year round. There are several offshore windfarms, with export cables, located in the Study Area, the closest being East Anglia One. Various mineral and aggregate extraction locations, dredging and disposal sites, and various other types of development are located within the Study Area.

Assessment of Impacts and Likely Significant Effects

7.9.4 Embedded mitigation measures have been integral in reducing the ~~fish and shellfish ecology~~ effects of the Offshore Scheme on other sea users. Measures that have been incorporated include sensitive routing and siting of infrastructure and temporary works.

7.9.5 For further detail on the commitments made, please refer to **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Measures relevant to the control and management of impacts during construction for traffic and transport have also been applied. Please refer to **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** for detail on these measures.

Construction

7.9.6 The assessment undertaken for other sea users during construction determined that no likely significant effects are anticipated for the Offshore Scheme. Potential minor effects are anticipated on marine tourism and recreation, offshore wind, mineral, dredging, military, cable and aquaculture sites. These are due to the installation of infrastructure, presence of vessels, visual and noise intrusion and pre-clearance sweeping of the seabed.

Operation

7.9.7 The assessment undertaken for other sea users during operation and maintenance determined that no likely significant effects or minor effects are anticipated for the Offshore Scheme. Similar minor adverse effects are anticipated as construction. In addition to the effects anticipated for construction, there would be minor adverse effects as a result of occupancy of the seabed.

Decommissioning

7.9.8 Any potential impacts from the decommissioning phase activities involved in cable removal, will be the same as those carried out during the construction phase. The effects of these impacts are predicted to be either the same or less than the impacts associated with the construction or operation phase.

Additional Mitigation

7.9.9 No likely significant effects have been predicted, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

7.9.10 No likely significant effects are anticipated for ornithology during construction, operation and maintenance or decommissioning.

7.10 Offshore Scheme Intra-Project Cumulative Effects

Approach to the Assessment

7.10.1 The EIA has considered the likely significant effects of the Offshore Scheme from an intra-project cumulative perspective. The approach to the assessment of the intra-project cumulative effects for the Offshore Scheme is as described for the Suffolk Onshore Scheme in Section 5.12 above

Assessment of Intra-project Cumulative Effects

7.10.2 The assessment has considered the potential effects for various types of effects to affect the same shared receptor. No shared receptors were present across the Offshore Scheme topic chapters. Therefore, all marine receptors have been assessed within each topic chapter and no intra-project cumulative effects are anticipated.

7.11 Offshore Scheme Inter-Project Cumulative Effects

Approach to the Assessment

7.11.1 The EIA has considered the likely significant effects of the Offshore Scheme from an inter-project cumulative perspective. With the exception of the ZOI which for the offshore inter-project cumulative assessment is 31 km, the approach to the assessment of the inter-project cumulative effects for the Offshore Scheme is otherwise as described for the Suffolk Onshore Scheme in Section 5.13 above.

Assessment of Inter-Project Cumulative Effects

7.11.2 The assessment has identified likely significant cumulative effects during construction in relation to temporary loss and alteration of fishing grounds for static gear fisheries, as well as, temporary displacement of commercial fishing activities and obstruction of navigation routes to commercial fishing grounds for static gear fisheries, as a result of the Proposed Project in-combination with each of the other projects considered (namely North Falls Offshore Windfarm, East Anglia ONE & TWO Offshore Windfarms, East Anglia THREE Offshore Windfarm, Five Estuaries Offshore Windfarm, Lionlink Offshore Interreconnector and NEMO Link). The displacement of commercial fishing activities for static gear fisheries (fixed and drift nets) during operational phase is also likely to result in a significant cumulative effect between the Proposed Project and each of the other developments.

7.11.3 To mitigate against these significant effects, a Fisheries Liaison Officer (FLO) and fisheries working group(s) will be maintained throughout installation to ensure project information is effectively disseminated, dialogue is maintained with the commercial fishing industry and access to home ports is maintained. Additionally, National Grid will maintain communications with other developments in the region with regard to respective installation timings and location. A procedure for the claim of loss of / or damage to fishing gear will also be developed as part of an evidence-based cooperation agreement between the Proposed Project and fisheries stakeholders.

7.11.4 The assessment also identified a likely significant cumulative effect during construction in relation to disturbanbnace to red throated diver as a result of the Proposed Project in-combination with each of the other projects considered (namely Sizewell C Nuclear

Power Plant, NeuConnect, GridLink, North Falls Offshore Windfarm, East Anglia ONE North Offshore Windfarm, East Anglia TWO Offshore Windfarm, East Anglia THREE Offshore Windfarm, Nautilus Offshore Interconnector, Five Estuaries Offshore Windfarm and Lionlink Offshore Interconnector). To reduce impacts on red-throated diver, which are considered to be the most sensitive species, National Grid has committed to implementing seasonal restriction between during offshore cable installation activities in the Outer Thames Estuary SPA and during landfall cable installation activities at the Suffolk Landfall in Aldeburgh to avoid cumulative effects on the species. Therefore, there will be no likely significant effect during the construction phase or the operation phase.

7.11.5 With the implementation of the above mitigation measures, the inter-project cumulative effects assessment has concluded that no significant residual inter-project cumulative effects are anticipated for the Offshore Scheme.

Assessment of Total Cumulative Effects

7.11.6 Due to the large number of other developments assessed and given the proximity of some of these to the Offshore Scheme, the overall cumulative effect of the Proposed Project with all other developments has also been assessed for each environmental topic.

7.11.7 The total cumulative effects assessment has concluded that no significant residual cumulative effects are anticipated for all topics for the Offshore Scheme.

7.12 Transboundary Effects

7.12.1 Within each of the topic chapters for the Offshore Scheme, transboundary effects have been assessed. A transboundary effect is any significant adverse effect on the environment resulting from human activity, the origin of which is situated within an area under the jurisdiction of another State.

7.12.2 All works associated with the Proposed Project fall within the UK jurisdiction. Given the distance of the Proposed Project from French waters (approximately 25 km), no significant transboundary effects have been identified. Predicted disturbance from the Proposed Project is short term and local and are therefore not anticipated to be sufficient to influence receptors outside UK waters and subsequently cause transboundary effects.

8. Project Wide Effects

8.1 Climate Change

Approach to the Assessment

8.1.1 The EIA has considered the likely significant climate change effects associated with the Proposed Project. This considers the effects of the Proposed Project on climate change, and the effects of climate change on the Proposed Project.

Lifecyle GHG Assessment

8.1.2 The effects of the Proposed Project on climate change are assessed by means of a lifecycle greenhouse gas (GHG) assessment. This assessment considers the GHG emissions associated with all relevant stages of the project, including embodied emissions in construction materials and emissions during operation.

8.1.3 The Study Area for the lifecycle GHG assessment includes the GHG emissions from within the Order Limits arising during all relevant phases of the Proposed Project. It also includes GHG emissions arising from offsite activities which are directly related to the on-site activities, such as transport of waste, materials and workers.

Climate Change Resilience Assessment

8.1.4 The effects of climate change on the Proposed Project are assessed by means of a climate change resilience (CCR) assessment. The CCR assessment considers the potential effects of climate hazards, such as increased temperatures and extreme weather events, on the Proposed Project.

8.1.5 The Study Area for the CCR assessment is the Order Limits for the Proposed Project.

Existing Environment

Lifecycle GHG Assessment

8.1.6 The current and future baseline for the GHG assessment is a ‘business as usual’ scenario where the Proposed Project is not constructed and operated. The baseline consists of existing carbon stocks and sources of GHG emissions within the boundary of the existing site activities.

8.1.7 The lifecycle GHG emissions determined in this assessment are considered to be additional to the baseline. This represents the worst-case scenario in terms of GHG emissions and is in line with GHG assessment best practice.

Climate Change Resilience Assessment

8.1.8 The current baseline used for the CCR assessment is based on historic climate data, including temperature, rainfall and sea level.

8.1.9 The future baseline for the CCR assessment is based on climate projections. In line with best practice, the worst-case plausible scenario for climate projections is used for the CCR assessment.

Assessment of Impacts and Likely Significant Effects

8.1.10 Mitigation measures have been embedded into the design of the Proposed Project which reduce, and where possible avoid, the climate change effects of the Proposed Project. Embedded mitigation measures include:

- sensitive routing and siting of infrastructure and temporary works;
- flood mitigation measures detailed in **Application Document 6.2.2.4 Part 2 Suffolk Chapter 4 Water Environment** and **Application Document 6.2.3.4 Part 3 Kent Chapter 4 Water Environment**;
- commitments made within **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**;
- use of materials with low embodied carbon, such as low-carbon concrete and steel;
- use of SF6-free switchgear (SF_6 is sulphur hexafluoride, a potent greenhouse gas);
- use of low carbon construction techniques, including low-carbon plant, vehicles and equipment;
- designing the Proposed Project to be resilient to significant effects of climate change; and
- the GHG management process detailed in **Application Document 7.5.13 Greenhouse Gas Reduction Strategy**. The GHG Reduction Strategy sets out how the GHG emissions associated with the Proposed Project should be managed and reduced, including a framework for identifying and prioritising GHG reduction opportunities.

Lifecycle GHG Assessment

Construction

8.1.11 The lifecycle GHG assessment indicates that the majority of construction phase GHG emissions are due to embodied emissions in raw materials. The main contributor to embodied carbon are the buildings and electrical equipment at the converter stations and substations. Other emission sources include material transport, construction activities, worker transport, waste and pre-construction demolition.

Operation

8.1.12 The lifecycle GHG assessment indicates that the majority of operational and maintenance phase GHG emissions are due to transmission losses. Other emission sources include emissions associated with repairs and maintenance activities.

Decommissioning

8.1.13 Decommissioning emissions are not likely to be significant due to no materials required for decommissioning (meaning no embodied carbon) and a much shorter duration of

works compared to the construction period (meaning significantly less use of plant and machinery).

Overall

8.1.14 The potential GHG emissions of the Proposed Project are estimated to contribute to less than 0.01% of any respective UK carbon budget.

8.1.15 Over its lifetime, the Proposed Project will be a key scheme for the UK to fulfil its net zero policy and transition away from fossil fuels. By reinforcing the electricity transmission network, the Proposed Project will facilitate the connection of new renewable and low carbon energy generation and interconnectors.

8.1.16 Therefore, the effect of GHG emissions associated with the Proposed Project is deemed **not significant**.

Climate Change Resilience Assessment

8.1.17 The CCR assessment has identified three 'Medium' risks which relate to an increase in winter precipitation over the construction phase, and an increase in frequency and severity of extreme storms together with sea level rise over the operational phase. These pose the risks of damage to onshore assets and endangering the health and safety of people on site. The rest of the risks are of a relatively lower likelihood and consequence and are therefore rated as 'Low'.

8.1.18 This assessment has found there are no significant climate change risks to the Proposed Project, assuming the embedded mitigation measures are successfully implemented into the design.

8.1.19 The effect of climate change risk on the Proposed Project is therefore deemed to be **not significant**.

Additional Mitigation

8.1.20 No likely significant effects are anticipated for climate change, therefore additional mitigation and enhancement measures are not required.

Residual Effects and Conclusions

8.1.21 No likely significant effects are anticipated for climate change during construction, operation and maintenance or decommissioning.

8.2 Project-wide (Combined) Effects of the Proposed Project

Approach to the Assessment

8.2.1 Project-wide (combined) effects are defined as those effects that are considered separately in relation to the three elements of the Proposed Project and reported in separate parts of the ES (these being the Suffolk Onshore Scheme, the Kent Onshore Scheme and the Offshore Scheme) but which have the potential to be of greater significance when considered in combination.

8.2.2 The potential for additional project-wide (combined) effects arises in two main circumstances:

- On the coast, at the interface between an Onshore Scheme and the Offshore Scheme, where impacts from both schemes could impact a single coastal receptor leading to a new significant effect; and Across both Onshore schemes, where a number of terrestrial impacts to a widespread terrestrial resource could exceed a threshold for significance which is not apparent when considering one Onshore scheme in isolation.
- The assessment of the project-wide (combined) effects of the Proposed Project is based on a the identification of shared receptors such as coastal receptors relevant to the Onshore and Offshore Schemes interfaces (e.g. designated site and ornithology), and terrestrial receptors relevant to both the Kent Onshore Scheme and the Suffolk Onshore Schemes (BMV land).

Project-wide (Combined) Effects of the Suffolk Onshore Scheme and Offshore Scheme

8.2.3 After an initial screening process, the receptors that are shared by the Suffolk Onshore Scheme and Offshore Scheme are designated sites (Sandlings SPA, Leiston-Aldeburgh SSSI, Outer Thames Estuary SPA and The Haven LNR) and birds (including seabirds and waterbirds) in non-designated areas. The combined effects on the designated sites from the Suffolk Onshore Scheme and Offshore Scheme are considered to be not significant in relation to either the loss of land or disturbance during construction after implementation of the embedded mitigation, control measures and additional mitigation identified in the topic chapters. With the implementation of mitigation and control and management measures, the likely significance combined effect on birds is also considered to be not significant

Project-wide (Combined) Effects of the Kent Onshore Scheme and Offshore Scheme

8.2.4 After an initial screening process, the receptors that are shared by the Kent Onshore Scheme and Offshore Scheme are designated sites (including Thanet Coast & Sandwich Bay SPA and Ramsar, Thanet Coast SAC, Sandwich Bay to Hacklinge Marshes SSSI, Sandwich Bay SAC and Stodmarsh SPA, Ramsar and SAC) and bird’s in non-designated areas.

8.2.5 The combined effects on the designated sites from the Kent Onshore Scheme and Offshore Scheme are not considered to be significant in relation to the loss of land and disturbance during construction due to both the design of the Proposed Project and the appropriate control measures that will be in place. ~~Similalrly~~Similarly, ~~co,nined~~combined effects on birds are also considered to be no ~~signifcaint~~significant after implementation of mitigation measures identified in the topic chapters.

Combined Effects of the Suffolk Onshore Scheme and Kent Onshore Scheme

8.2.6 After an initial screening process, the only shared receptor across the two onshore schemes is the permanent loss of BMV land, as there are losses in both Suffolk and Kent. The combined effect of permanent BMV loss as a result of the Suffolk Onshore Scheme and Kent Onshore Scheme combined is considered to be not significant.

9. Next Steps

9.1 What Happens Next?

9.1.1 This NTS forms part of the application for development consent submitted to the Planning Inspectorate.

9.1.2 The Planning Inspectorate, on behalf of the Secretary of State (SoS), will manage the planning process and will appoint the Examining Authority, to examine the DCO application.

9.1.3 After receipt of the application, the Planning Inspectorate has 28 days to review the application and decide whether or not to **accept** it for examination. If the application is accepted, the **pre-examination** phase would begin. At this point, National Grid would publish a notice saying where application documents can be viewed.

9.1.4 During the registration period of the pre-examination phase, members of the public can register as interested parties. This would entitle them to make "relevant representations" to the Planning Inspectorate and participate in the examination. Information on how to register can be found on the Planning Inspectorate's website for the Proposed Project:

https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN020026

9.1.5 Stakeholders, local communities, and members of the public can comment on the assessments undertaken, and the conclusions reached as part of their responses to the application for development consent itself. Once the application has been accepted by the Planning Inspectorate timescales will be set out for commenting.

9.1.6 The pre-examination phase ends just prior to the **preliminary meeting**, which registered interested parties are invited to attend. At the preliminary meeting, the Examining Authority would decide the key issues to take into account when examining the application.

9.1.7 The preliminary meeting marks the start of the **examination** phase during which any necessary hearings would be held to address key issues identified at the preliminary meeting.

9.1.8 Registered interested parties can send written representations to the Examining Authority and can ask to speak at a public hearing. The examination would last a maximum of six months.

9.1.9 The Examining Authority then has three months to consider the findings from the examination. The Examining Authority will then provide the SoS with a report including a recommendation on whether the application should be granted. The SoS would then have three months to decide whether or not to grant development consent. When the SoS's decision is published, there is a six week High Court challenge period. Once the DCO is issued, the decision is final.

9.2 Delivering the Project

9.2.1 Granting the DCO would give the Applicant the necessary legal powers to construct and operate the Proposed Project.

9.2.2 If National Grid is successful in gaining development consent for the Proposed Project, it would deliver the project in accordance with the DCO and the various controls contained within this, for example, the management plans secured through Requirement 6 of the DCO. The Proposed Project would allow National Grid to maintain a robust network, remain in accordance with its licence obligations, and to allow new sources of electricity generation to connect to the power grid. This is vital to facilitate the ambitious targets set by the Government, for secure, clean and affordable energy for the long term.

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