

**The Great Grid Upgrade**

Grimsby to Walpole

# Preliminary Environmental Information Report

Volume 2 Part B Section Specific Assessments

Section 3 New Lincolnshire Connection Substations A and B

Chapters 1 to 13

June 2025



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# Grimsby to Walpole

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# Preface

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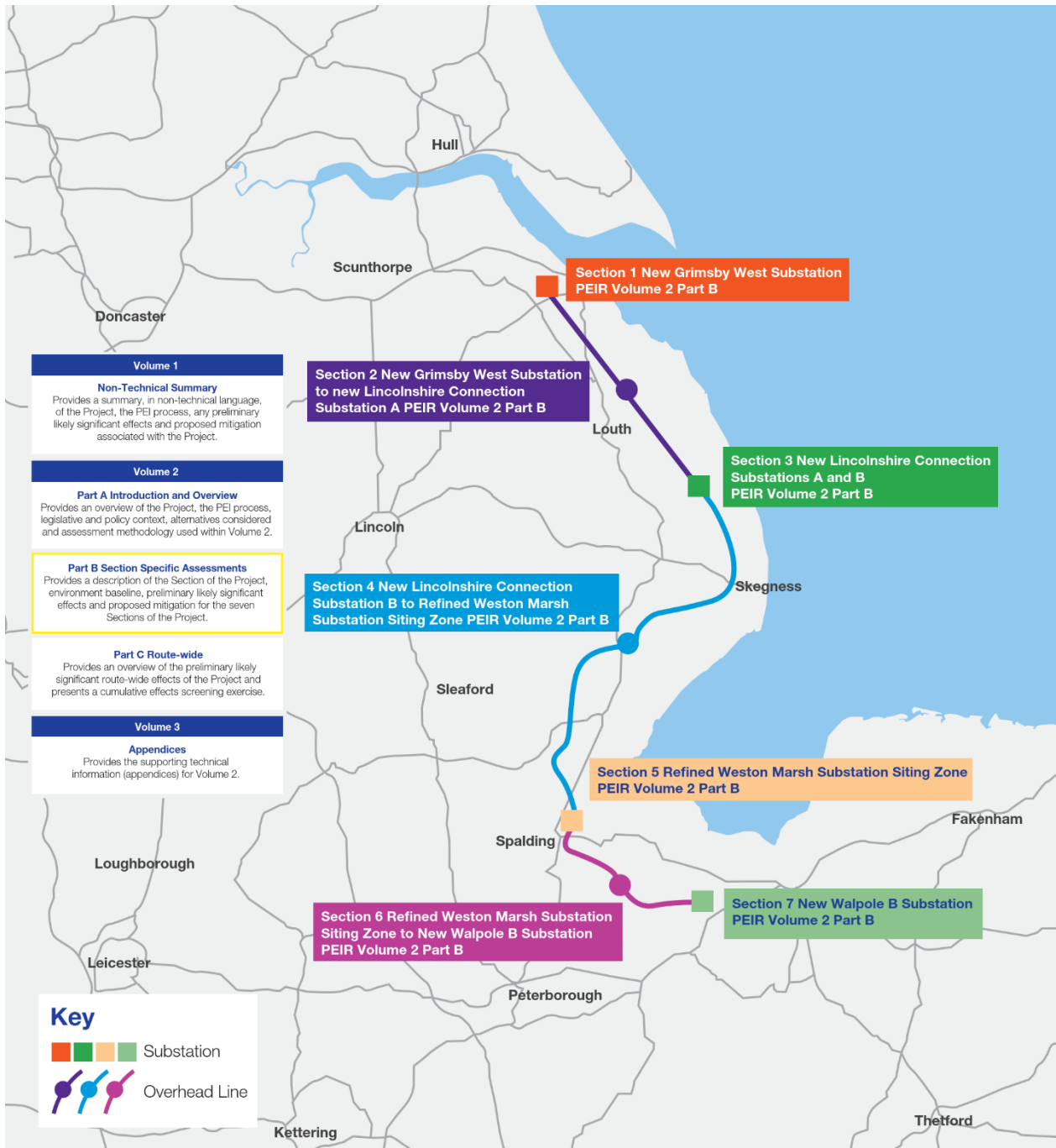
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# 1. Part B Preface

## 1.1 Structure and Context of the Preliminary Environmental Information Report

- 1.1.1 This **Preliminary Environmental Information (PEI) Report Volume 2 Part B** is part of the wider suite of documents that make up the PEI Report for the Grimsby to Walpole Project (the Project), prepared by Ove Arup and Partners Ltd and AECOM Ltd, on behalf of National Grid Electricity Transmission plc (National Grid). The purpose of this PEI Report is to give consultees an understanding of the potential likely significant environmental effects (positive or negative) of the Project to enable them to prepare well-informed responses to the statutory consultation. This PEI Report has been prepared in accordance with the Planning Inspectorate (PINS) Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Ref 1).
- 1.1.2 The proposal by National Grid is to reinforce the transmission network with a new 400 kilovolt (kV) electricity transmission line over a distance of approximately 140 kilometres (km) starting from a new 400 kV substation west of the town of Grimsby in North East Lincolnshire and ending at a new 400 kV substation west of the village of Walpole St Andrew and north of the town of Wisbech, in King's Lynn and West Norfolk District. The Project also includes the construction of two new 400 kV Lincolnshire Connection Substations located south-west of Mablethorpe in East Lindsey, up to two new 400 kV substations in the vicinity of the Spalding Tee-Point in South Holland District and the decommissioning (in full or part) of the existing Grimsby West Substation.
- 1.1.3 The Project is a Nationally Significant Infrastructure Project (NSIP), as defined under Section 16 of the Planning Act 2008 (PA 2008) (Ref 2), because it comprises a new electricity line above ground with a length of more than 2 km, and with an operating voltage of above 132 kV. Regulation 12(2) of the EIA Regulations (Ref 3) defines preliminary environmental information as information that has been compiled by the applicant and is '*reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development)*'. This PEI Report consists of three volumes:
- i. **PEI Report Volume 1** contains the Non-technical Summary (NTS);
  - ii. **PEI Report Volume 2 Part A** contains an Introduction and Overview;
  - iii. **PEI Report Volume 2 Part B** contains the Section Specific Assessments;
  - iv. **PEI Report Volume 2 Part C** contains the Route-wide Assessments; and
  - v. **PEI Report Volume 3** contains the technical appendices supporting Volume 2.
- 1.1.4 Further detail on the structure and content of this PEI Report is provided in the following figure:



# References

- Ref 1      References Planning Inspectorate (PINS) (2020) Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements. [online]. Available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an> [Accessed 21 February 2025]
- Ref 2      Planning Act 2008 [online]. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/part/3> [Accessed 21 February 2025].
- Ref 3      The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [online]. Available at: <https://www.legislation.gov.uk/uksi/2017/572/contents/made> [Accessed 31 January 2025].



# 1. Overview of the Section and Description of the Project

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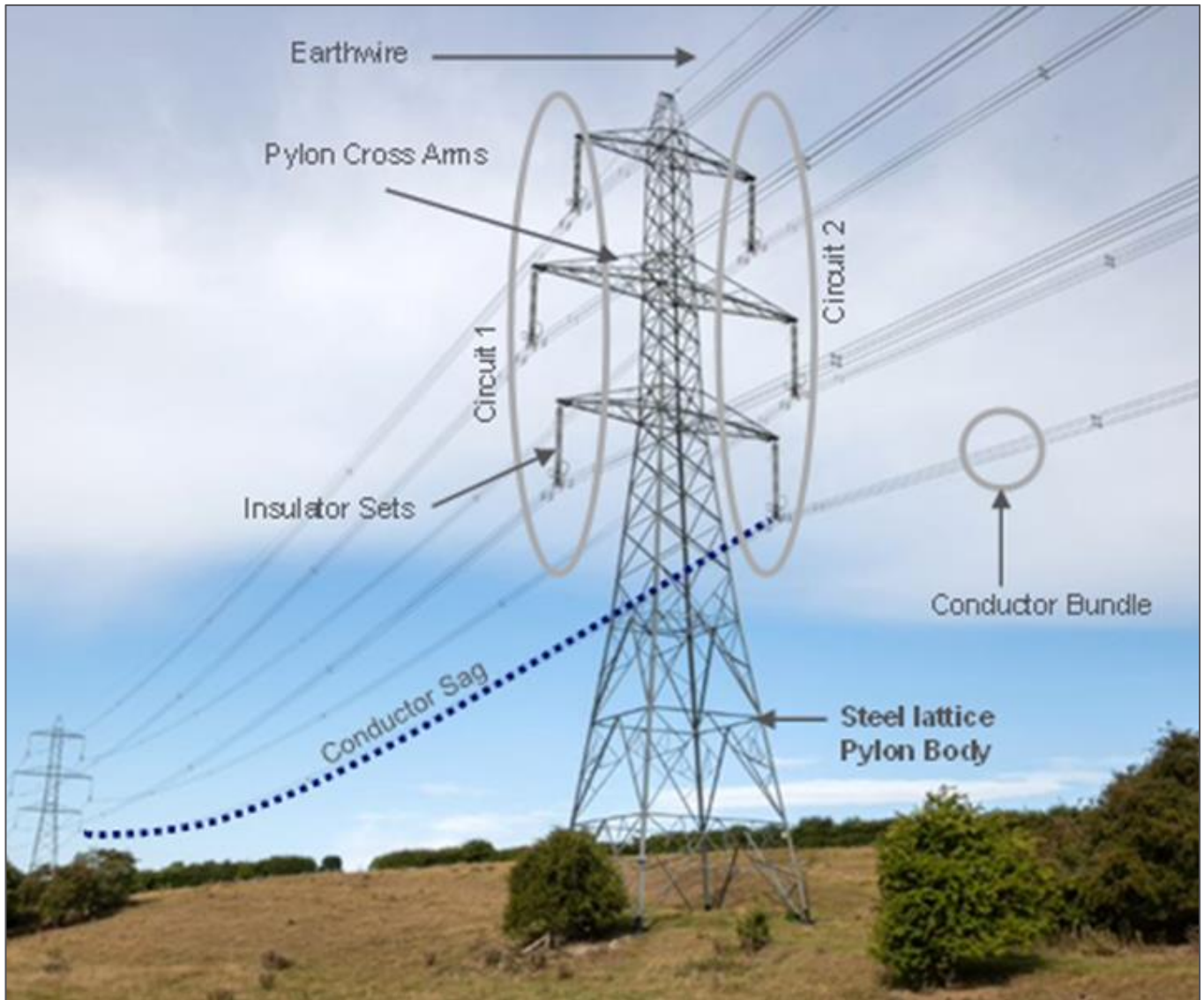
# 1. Overview of the Section and Description of the Project

## 1.1 Overview of the Section

- 1.1.1 This chapter presents an overview of the Grimsby to Walpole Project (the Project) within the New Lincolnshire Connection Substations A and B (Section 3) and has informed the preliminary environmental assessments reported in subsequent Chapters 2 to 13 within Preliminary Environmental Information (PEI) Report Volume 2 Part B Section 3.
- 1.1.2 Section 3 is located within the north eastern extent of the Project and principally comprises two new substations, Lincolnshire Connection Substation (LCS) A and LCS B, connected by approximately 4.3 km of new 400 kilovolt (kV) overhead line. Section 3 also includes two short sections of the new 400 kV overhead line, one of which connects the proposed New LCS A to the Route Section break between Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A (Section 2) and Section 3 and the other of which continues on from the New LCS B to the Route Section break between Section 3 and New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone Section (Section 4).
- 1.1.3 Section 3 is located from west of Rye Lane towards Windowfen Lane. The Section is located within the local authority area of East Lindsey. The draft Order Limits for Section 3 are presented in **PEI Report Volume 2 Part B Section 3 Figure 1.1 Draft Order Limits**.
- 1.1.4 In summary, within Section 3, the Project includes the following components and activities:
- i. an approximately 0.4 km long section of the new 400 kV overhead line from the Route Section break between Section 2 and Section 3 at Rye Lane continuing in an east direction to the New LCS A;
  - ii. the New LCS A located east of Mother Wood;
  - iii. an approximately 4.3 km long section of new 400 kV overhead line from the New LCS A continuing in a south east direction to the New LCS B;
  - iv. the New LCS B located east of the A1111; and
  - v. an approximately 0.4 km long section of new 400 kV overhead line from the New LCS B continuing in a south east direction to the Route Section break between Section 3 and Section 4 at Windowfen Lane.
- 1.1.5 For the purposes of this PEI Report, it has been assumed that the pylon type is a typical steel lattice pylon. The main components of an overhead line and a typical steel lattice pylon are shown in **Image 1.1** below. Further detail on the selected pylon model will be included within the Environmental Statement (ES).
- 1.1.6 A more detailed description of the design of Section 3 is provided in section 1.2 below. For the purpose of reporting within this PEI Report, pylons located within

Section 3 have been assigned a nominal code with the prefixes 'GL', 'LB' and 'LW', followed by a number. These can be seen on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features.**

Image 1.1 Components of a Typical Transmission Connection



## 1.2 Proposed Project

### The Proposed New Substations

- 1.2.1 Substations play a key role in the electricity transmission system, helping to manage and control electricity flows as well as connecting generators and/or connecting to the electricity distribution network at grid supply points.

### The New LCS A

- 1.2.2 The New LCS A is located south east of Rye Lane and east of Mother Wood and is a necessary component of the network reinforcement provided by the Project as it will enable a number of planned energy generation, storage developments and an

offshore link to connect to the electricity transmission system. Customers currently contracted to connect into the proposed New LCS A include:

- i. Mablethorpe Storage – Storage and Combined Cycle Gas Turbine (CCGT); and
- ii. East Lincolnshire Solar – Energy Storage/Solar.

1.2.3 For the purposes of the preliminary environmental assessment and consistent with paragraph 2.5.6 of the **Corridor Preliminary Routeing and Siting Study (CPRSS)** (Ref 1), it has been assumed that the proposed new LCS A would be an Air Insulated Switchgear (AIS) substation. AIS substations use air as the insulation medium for electrical equipment meaning that equipment is predominantly located outdoors. The proposed New LCS A will be located within a secured fenced compound. The total footprint of the New LCS A would be approximately 8.5 ha including a 5 m buffer around the fence line, with dimensions for the main compound of approximately 485 m by 178 m, (approximately 8.5 ha), plus a 30 m by 7 m (approximately 0.02 ha) extra area near the entrance for ancillary equipment and car parking. Within the New LCS A there will be a range of specialist electrical equipment. The maximum height for High Voltage (HV) plant and buildings within the substation is 12.5 m, and the maximum height for gantries, which connects the new overhead line to it, is assumed to be 15 m.

1.2.4 During operation, lighting would be required at the substation sites to allow for safe movement and the operation of equipment. Security lighting would also be required. All lighting would be designed in accordance with the appropriate design standards and National Grid technical specifications. For the purpose of the PEI Report, it is assumed that the security lighting would be event activated (i.e. would not be continuous) and would be designed to be environmentally sensitive (e.g. directional and low light not exceeding 50 lux). Further information regarding substation lighting design will be provided within the project description within the ES. An overview of the proposed substation design is provided in **PEI Report Volume 2 Part B Section 3 Figure 1.4 New Lincolnshire Connection Substations (LCS) A and B Layout**.

1.2.5 Further detail on the evolution of the design of the Project, and the design of Section 3, can be found in the **Grimsby to Walpole Design Development Report**.

#### Mitigation measures

1.2.6 As detailed within **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information** there are three types of mitigation measures that have been considered across the Project. In summary the three types are:

- i. Design mitigation measures which are those that are intrinsic to and built into the design;
- ii. Control mitigation measures which comprise management activities, control measures and techniques, that would be implemented during construction or operation of the Project to limit impacts; and
- iii. Additional mitigation measures which comprise measures over and above any design or control and management mitigation measures, for which the Environmental Impact Assessment (EIA) has identified a requirement to further reduce significant environmental effects.



- 1.2.7 Additional environmental mitigation measures which have been incorporated into the Project have been assigned a unique code to identify the location and nature of the measure. This code begins with the Route Section number (e.g. S1; S2) followed by either 'L+V' for Landscape and Visual measures, or 'ECO' for those regarding Ecology. Each measure is then numbered sequentially, starting with 01.
- 1.2.8 Additional environmental mitigation measures that have been incorporated into the design of Section 3 in proximity to the New LCS A include the following:
- i. a management regime for grassland to the east of the New LCS A to provide habitat for Skylark;
  - ii. planting of native hedgerows with trees to aid landscape integration to the north of the New LCS A; and
  - iii. planting of woodland around the New LCS A to provide visual screening.

## The New LCS B

### Design and overview

- 1.2.9 The New LCS B is located adjacent to the A1111 and north east of Bilsby and is a necessary component of the network reinforcement provided by the Project as it will enable a number of planned energy generation, storage developments and offshore links to connect to the electricity transmission system. Customers currently contracted to connect into the proposed New LCS B include:
- i. SENECA – Interconnector;
  - ii. Eco Mablethorpe – Energy Storage and PV Array;
  - iii. Mablethorpe Green Energy Centre – Energy Storage and PV Array; and
  - iv. Eastern Green Link 5.
- 1.2.10 For the purposes of the preliminary environmental assessment and consistent with paragraph 2.5.6 of the CPRSS (Ref 1) it has been assumed that the New LCS B will be an AIS substation. AIS substations use air as the insulation medium for electrical equipment meaning that equipment is predominantly located outdoors. The New LCS B will be located within a secured fenced compound. The total footprint of the New LCS B Substation would be approximately 9.6 ha, including a 5 m buffer around the fence, with dimensions for the main compound of approximately 522.5 m by 178 m, (approximately 9.3ha), plus a 85 m by 40 m (approximately 0.3 ha) extra area near the entrance for ancillary equipment and car parking. Within the New LCS B there will be a range of specialist electrical equipment The maximum height for High Voltage (HV) plant and buildings within the substation is 12.5 m, and the maximum height for gantries, which connects the new overhead line to it, is assumed to be 15 m. An overview of the proposed substation design is provided in **PEI Report Volume 2 Part B Section 3 Figure 1.2 Temporary and Construction Features**.
- 1.2.11 Further detail on the evolution of the design of the Project, and the design of Section 3, can be found in the **Grimsby to Walpole Design Development Report**.

### Mitigation measures

- 1.2.12 Additional environmental mitigation measures that have been incorporated into the design of Section 3 in proximity to the proposed New LCS B include the following:

- i. a management regime for grassland to the south of the New LCS B to provide habitat for Skylark;
- ii. planting of native hedgerows with trees to aid landscape integration to the west and south-west of the New LCS B; and
- iii. planting of woodland around the New LCS B to provide visual screening.

1.2.13 These mitigation areas can be seen on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features**.

### Construction

1.2.14 Subject to gaining development consent in 2028, it is anticipated that construction of the Project would commence in 2029, starting with enabling works. It is expected that the main construction works (construction of substations and overhead line) would continue through to 2033 (four years).

1.2.15 Construction of the New LCS A and New LCS B includes the following key stages and activities:

- i. site establishment;
- ii. site preparation and earthworks;
- iii. civil works;
- iv. construction of buildings;
- v. installation of electrical equipment;
- vi. site reinstatement and landscaping; and
- vii. commissioning.

1.2.16 In regard to temporary construction requirements, there are two construction compounds located within Section 3. This includes the following:

- i. a construction compound located to the east of the proposed New LCS A with an area of 3.6 ha; and
- ii. a construction compound located to the north of the proposed New LCS B, with an area of 3.6 ha.

1.2.17 The land on which construction compounds are located would be reinstated upon completion of construction.

1.2.18 Construction and permanent access for the New LCS A connects to Rye Lane. For the New LCS B, construction and permanent access connects to Sutton Road.

1.2.19 **PEI Report Volume 2 Part B Section 3 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 3 in place as part of construction, including for the New LCS A and New LCS B, and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on what the construction of the New LCS A and New LCS B entails.

### Operation

1.2.20 During operation the Project would reinforce the electricity transmission network in Lincolnshire, Cambridgeshire and Norfolk, and facilitate the connection of planned

offshore wind generation, battery storage/solar, combined cycle gas turbines, interconnectors with other countries, increased distribution network capacity and subsea links to Scotland.

- 1.2.21 The New LCS A and the New LCS B within Section 3 forms part of this reinforcement by enabling a number of planned energy generation and storage developments to connect to the electricity transmission system, and providing a connection point for the new overhead line to link with the existing transmission network. Once operational, on-site activity at the New LCS A and New LCS B would generally be limited to regular inspection and maintenance.
- 1.2.22 **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 3 in place as part of operation of the Project, including for the New LCS A and New LCS B and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on the what the operation of the New LCS A and New LCS B entails.

## Proposed Overhead Line Route

### Design and overview

- 1.2.23 There are three sections of new overhead line route measuring approximately 0.4 km, 4.3 km, and 0.4 km included within Section 3, connecting to the New LCS A and the New LCS B.
- 1.2.24 The first section of the new 400 kV overhead line measures approximately 0.4 km and extends in a south east direction from the Route Section break between Section 2 and Section 3 at Rye Lane, to the New LCS A. Along this stretch, there are five structures, this includes two gantries at a height of up to 15 m which are located within the New LCS A, and three pylons ranging from a height of approximately 49 m to 58 m (including Limits of Deviation (LoD)). The span distances between structures within this section of new 400 kV overhead line ranges from approximately 70 m to approximately 380 m.
- 1.2.25 The second section of new 400 kV overhead line measures approximately 4.3 km and extends in a south east direction from the New LCS A to the New LCS B. Along this stretch, the new 400 kV overhead line crosses Greenfield Lane, the A1104 at Alford Road and the A1111 at Sutton Road. Furthermore, there are 21 structures including four gantries at a height of up to 15 m which are located within the New LCS A and New LCS B, and 17 pylons ranging from a height of approximately 49 m to 60 m (including LoD). The span distance between structures within this section of new 400 kV overhead line ranges from approximately 70 m to approximately 390 m.
- 1.2.26 The third section of new 400 kV overhead line measures approximately 0.4 km and extends in a south east direction from the New LCS B to the Route Section break between Section 3 and Section 4 at Widowfen Lane. Along this stretch, there are five structures, this includes two gantries at a height of up to 15 m which are located within the New LCS B, and three pylons ranging from a height of approximately 49 m to 66 m (including LoD). The span distances between structures within this section of new 400 kV overhead line ranges from approximately 70 m to approximately 380 m.
- 1.2.27 The pylons along the new 400 kV overhead line route within Section 3 are assumed to comprise of steel lattice mast pylons, the foundations of which would either be a standard foundation (concrete pad and column) or non-standard foundation (either

concrete pad and column of increased dimension or depth, or piled foundations). The selection of foundation type would depend upon the ground conditions encountered.

- 1.2.28 Within the design of the Project, there is a need for some flexibility, which has been accounted for in the assessments within this PEI Report. The horizontal LoD applied either side of the full length of the overhead line centreline is 50 m, for a total width of 100 m. Where the LoD is 100 m, the extent of movement of any pylon is limited by the span length and conductor swing. At a maximum span length, the centre of the pylon could move approximately 20 m either side of the centreline subject to topography and local conditions.
- 1.2.29 There is no fixed limit on the movement of a pylon along the centreline of the proposed route i.e. pylons can move up and down the centreline (longitudinal LoD). While there is no fixed limit, in practical terms the movement of pylons along the centreline is constrained by a combination of the span distance between adjacent pylons and maintaining the necessary ground clearances without exceeding the vertical LoD.
- 1.2.30 The vertical LoD applied along the length of the overhead line is 6 m to allow for the pylon height to be increased in order to increase ground clearances.

### **Construction**

- 1.2.31 The construction of the new 400 kV overhead line would generally follow the sequence outlined below:
- i. surveys including archaeological investigation;
  - ii. ground investigation;
  - iii. installation of bellmouths and creation of visibility splays;
  - iv. installation of stock proof fencing and gates or equivalent;
  - v. topsoil stripping, temporary drainage installation where required;
  - vi. installation of access tracks (including culverts and bridges) and demarcated pylon working areas;
  - vii. installation of pylon foundations (pad and column, mini pile, tube pile or bespoke);
  - viii. working area and layout of steelwork in preparation for erection;
  - ix. assembly (painting if required) and erection of steelwork;
  - x. installation of tower signage including safety notice plate and anti-climbing devices;
  - xi. installation of crossing protection prior to stringing of conductors, including scaffolding;
  - xii. installation of insulator assemblies on suspension pylons;
  - xiii. establishment of machine sites for conductor stringing;
  - xiv. conductor and earthwire stringing;
  - xv. temporary earthing;
  - xvi. installation of tension insulator assemblies on tension and terminal pylons;

xvii. removal of construction equipment and reinstatement of ground and restoration of soils;

xviii. removal of access tracks and bellmouths; and

xix. removal of construction compounds and ground reinstatement.

- 1.2.32 Detail on the location of construction compounds in regard to Section 3 is provided above under construction of the New LCS A and the New LCS B.
- 1.2.33 In regard to construction access points, there will be a temporary construction corridor established along the route which comprises a temporary haul road (which is assumed to be stone, noting that trackway may be used in some localised areas), soil storage and temporary drainage. There is the potential to reduce carbon emissions/embodied carbon associated with construction and temporary works requirements through measures such as soil stabilisation. These are access points where construction traffic will access/egress the construction corridor.
- 1.2.34 There will also be crossover points where construction traffic will cross the public highway, but traffic will not be permitted to access/egress at these points.
- 1.2.35 Temporary access points would be removed following completion of construction, and access for maintenance and inspection would typically be via field gates agreed with landowners.
- 1.2.36 Within Section 3, there are six construction access points. Construction access points for the new 400 kV overhead line route stem from Rye Lane (in proximity to pylon no. GL119), Greenfield lane (in proximity to pylon no. LB8) and an unnamed road (in proximity to pylon no. LB12).
- 1.2.37 Within Section 3, there are also four crossover points which are for crossing the existing road network only, and would not be used for turning onto or off of the roads being crossed.
- 1.2.38 **PEI Report Volume 2 Part B Section 3 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 3 in place as part of construction, including for the proposed 400 kV overhead line and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on the what the construction of the new 400 kV overhead line route entails.

## Operation

- 1.2.39 During operation the Project would reinforce the electricity transmission network in Lincolnshire, Cambridgeshire and Norfolk, and facilitate the connection of planned offshore wind generation, battery storage/solar, combined cycle gas turbines, interconnectors with other countries, increased distribution network capacity and subsea links to Scotland.
- 1.2.40 The overhead line within Section 3 forms part of this reinforcement by providing a high capacity power transmission route between the New LCS A and the New LCS B. Overhead lines require minimal maintenance during operation and will be monitored and regularly inspected for signs of fatigue. Subject to planting within the vicinity of Section 3, there may also be an ongoing vegetation management regime. Overall, once operational, the overhead line will not generate significant activity beyond ordinary inspection and maintenance.



- 1.2.41 **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 3 in place as part of operation, including for the proposed 400 kV overhead line and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on what the operation, inspection and maintenance of the new 400 kV overhead line entails.

# References

- Ref 1      Grimsby to Walpole Corridor Preliminary Routeing and Siting Study. January 2024 [online]. <https://www.nationalgrid.com/document/352621/download> [Accessed 3 March 2025].

# 2. Landscape

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## 2. Landscape

### 2.1 Introduction

- 2.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Landscape assessment for the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 2.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 2.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and subsequent scope of the Landscape assessment (section 2.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high-level summary of the methodology of the Landscape assessment within Section 3 (section 2.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Landscape assessment (section 2.5);
  - vi. A description of mitigation measures included for the purposes of the Landscape assessment reported within the PEI Report (section 2.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Landscape effects arising during construction and operation of the Project within Section 3, based upon the assessment completed to date (section 2.7); and
  - viii. An outline of the proposed monitoring requirements in relation to Landscape (section 2.8).
- 2.1.2 Further supporting information is set out in **Table 2.1** below, including supporting figures and technical appendices.



Table 2.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<p><b>Figure 2.1 Landscape Designations and Features</b></p> <p><b>Figure 2.2 Landform and Drainage</b></p> <p><b>Figure 2.3 National Character Areas</b></p> <p><b>Figure 2.4 Regional and Local Landscape Character Areas</b></p> <p><b>Figure 3.2 Zone of Theoretical Visibility (ZTV)</b></p>
PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline	Description of the landscape character baseline across the route of the Project.
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific Policy	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	A summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.

Supporting Information	Description
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 2.1.3 There are also interrelationships related to the potential effects on Landscape and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 3 Visual** should be consulted in relation to the viewpoint assessment. This helps to inform the baseline description and supports the assessment of effects on the landscape.
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** should be consulted in relation to impacts on trees and woodland. An Arboricultural Impact Assessment will be presented as an appendix to the ES and will be cross referenced in relation to impacts on trees and woodland. Both documents will be used to help inform the baseline landscape and support the assessment of effects on the landscape reported in the ES.
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 5 Historic Environment** should be consulted in relation to historic assets including historic landscapes and Registered Parks and Gardens, which may contribute to the value of the landscape. This helps to inform the baseline description and supports the assessment of effects on the landscape.
  - iv. **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement** should be consulted in relation to increased traffic flows which may influence the character of the landscape through noise and visual disturbance. This helps to inform the baseline description and supports the assessment of effects on the landscape
  - v. **PEI Report Volume 2 Part B Section 3 Chapter 10 Noise and Vibration** should be consulted in relation to noise intrusion which may affect the perceptual qualities of the landscape. This helps to inform the baseline description and supports the assessment of effects on the landscape.
  - vi. **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** should be consulted in relation to areas of recreational importance which may contribute to the value of the landscape. The outputs of the landscape assessment will inform the assessment of effects on recreation and tourism.
  - vii. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
  - viii. **PEI Report Volume 2 Part C Chapter 2 Landscape** should be consulted in relation to the assessment of effects on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (Area of Outstanding Natural

Beauty (AONB)). This helps to inform the baseline description and supports the assessment of effects on the landscape.

- ix. **PEI Report Volume 2 Part C Route Wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 2.2 Legislation and Policy Framework

### Legislation and National Policy

- 2.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, detail of which is set out in **Table 2.1**.

### Regional and Local Policy

- 2.2.2 Regional and local plans or policies relevant to this assessment are as follows.

- i. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 1)
  - Policy S14: Renewable Energy details the support for renewable energy schemes, including ancillary development, only where the direct, indirect, individual and cumulative impacts are, or will be made, acceptable;
  - Policy S16: Wider Energy Infrastructure details the support for proposals that seek to aid the transition to Net Zero and that any such proposals will take reasonable measures to mitigate harm; and
  - Policy S62: Areas of Outstanding Natural Beauty and Areas of Great Landscape Value requires that all development proposals within, or affecting the setting of, the AONB shall protect and enhance important views into, out of and within the AONB.
- ii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2)
  - Strategic Policy 23: Landscape states that the policy aims to protect, enhance, and manage the District's landscapes to create an attractive and healthy living and working environment. Development will adhere to the District's Landscape Character Assessment and the Council will support development that conserves and enhances designated and historic landscapes to improve the visitor experience; and
  - Strategic Policy 27: Renewable and low carbon energy which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation to landscape and amenity.

## 2.3 Scope of Assessment

- 2.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 3) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 4). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Landscape chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 2.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 2.3.3 The scope of the construction and operation assessment covers the following receptor types:
- i. Locally designated landscapes;
  - ii. Landscape Character Types (LCT);
  - iii. Regional Landscape Character Types (RLCT); and
  - iv. Landscape Character Areas (LCA).
- 2.3.4 A preliminary assessment of the effects of the Project on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (AONB) has been produced as a separate route-wide assessment and is presented in **PEI Report Volume 2 Part C Chapter 2 Landscape**. This is because multiple Sections of the Project potentially impact the receptor, so it was considered appropriate to assess it at a route-wide level.
- 2.3.5 For completeness and to provide further context to the assessment, the relevant National Character Areas (NCA) as defined by Natural England (Ref 5) are listed under baseline conditions in section 2.5. This is to ensure that the potential for significant effects at a wider level than district level is understood, given the length of the route and geographical coverage of the Project. An assessment of the effects of the Project on the NCAs will be provided in the project-wide assessment of landscape effects presented in the ES once the assessments of the more detailed regional and local landscape types have been completed.
- 2.3.6 Where a receptor is impacted by multiple sections of the Project, section 2.7 describes the impact upon the receptor within this Section first. It then provides an aggregated assessment of all impacts across all Sections upon the receptor to assess how the cumulative effect of the Project as a whole impacts the receptor from a landscape perspective.

## 2.4 Assessment Methodology

- 2.4.1 The assessment methodology, relevant guidance, key assumptions and limitations for the Landscape assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and

significance of effects are all described and assigned to the assessment. A summary of the key components is outlined below.

## Approach

- 2.4.2 As explained in paragraph 5.1 of GLVIA3 (Ref 6) “*An assessment of landscape effects deals with the effects of change and development on landscape as a resource*”. Changes may affect the elements that make up the landscape, its aesthetic and perceptual aspects, and its distinctive character.
- 2.4.3 Landscape receptors are the elements or aspects of the landscape that may be affected by a proposed development or change. These can include physical, visual, and experiential components of the landscape.
- 2.4.4 The landscape assessment is based on published landscape character assessments across the Study Area. The baseline for the preliminary assessment is presented in **PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline**.
- 2.4.5 In accordance with GLVIA3 (Ref 6), the assessment of landscape effects involves evaluating both the nature of the landscape receptors (their sensitivity) and the nature of the effects on those receptors (the magnitude of effect). These factors are then considered together to form an overall judgment regarding the significance of landscape effects.
- 2.4.6 The Landscape section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** describes the methodology used to evaluate sensitivity and magnitude and how the judgements on sensitivity and magnitude of effect are combined to make an informed professional assessment of the significance of each landscape effect. A summary of the approach is set out below.

### Establishing landscape sensitivity

- 2.4.7 In accordance with paragraph 5.39 of GLVIA3 (Ref 6) evaluations of the sensitivity of a landscape receptor to change are based on consideration of the judgements on the value attached to the landscape (which is established and reported as part of the baseline) and the susceptibility of the landscape to change arising from the Project. These judgements are guided by the indicative criteria set out in the Landscape section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Judgements on value and susceptibility are recorded as either very high, high, medium or low.

### Predicting the magnitude of change

- 2.4.8 In accordance with paragraph 5.48 of GLVIA3 (Ref 6), evaluations of the magnitude of landscape change are based on consideration of the judgements on the size/scale, geographical extent, duration and reversibility of the predicted change and are guided by the indicative criteria set out in the Landscape section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Judgements on the magnitude of predicted landscape change are recorded as large, medium, small and very small.



## Judging levels of landscape effect and significance

- 2.4.9 The final step in the assessment requires the judgements on the sensitivity of the landscape receptors and the predicted magnitude of landscape change to be combined to make an informed professional assessment of the significance of each landscape effect. In accordance with paragraph 5.55 of GLVIA3 (Ref 6) the evaluations of the individual aspects set out above (susceptibility, value, size and scale, geographical extent, duration and reversibility) are considered together to provide an overall profile of each identified landscape effect guided by the indicative criteria set out in the Landscape section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 2.4.10 Professional judgement and experience are applied to balance the many different variables which need to be considered and given different weight according to site-specific and location-specific considerations.
- 2.4.11 Levels of landscape effect are identified as major, moderate, minor, or negligible, and the direction of change as beneficial or adverse. Effects judged to be moderate or major are considered significant in the context of the EIA Regulations (Ref 7). The general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels, which will be presented in the ES.

## Assessment Assumptions and Limitations

- 2.4.12 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 3.
- 2.4.13 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 2.5 Baseline Conditions

### Study Area

- 2.5.1 The Study Area for the preliminary assessment is shown on **PEI Report Volume 2 Part B Section 3 Figure 2.1 Landscape Designations and Features**. The extent of the Study Area for the preliminary landscape assessment (based on the same approach which will be adopted when defining the EIA Study Area), extends 5 km from the Limits of Deviation (LoD) for the overhead line<sup>1</sup>. This distance was informed by the ZTV, the scale and appearance of the pylons (as detailed in **PEI Report Volume 2 Part A Chapter 5 Project Description**), field survey and professional judgment, and is considered sufficient to capture the likely significant landscape

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<sup>1</sup> The Study Area for the preliminary assessment is measured from the LoD for the new 400 kV overhead line as significant effects are most likely to result from construction and operation of the new substations and 400 kV overhead line rather than the temporary access tracks, which in some instances could extend several kilometres from the draft Order Limits but are unlikely to result in significant effects.

effects of the Project. Although the ZTV indicates potential visibility beyond 5 km in certain directions, based on previous experience of similar schemes, significant landscape impacts are highly unlikely to arise beyond this distance.

- 2.5.2 The preliminary cumulative Landscape assessment Study Area extends to 10 km from the LoD for the new 400 kV overhead line. This radius was established to evaluate potential cumulative landscape impacts in conjunction with other existing, consented, and/or proposed developments.
- 2.5.3 The ZTV map, which incorporates screening elements such as buildings and woodland, is presented in **PEI Report Volume 2 Part B Section 3 Figure 3.2 Zone of Theoretical Visibility (ZTV)**. Based on pylon locations provided by design engineers, the ZTV identifies areas where the new 400 kV overhead line may theoretically be visible. It also helps determine the extent of the Study Area for the landscape assessment. The theoretical visibility of individual pylons is limited to a maximum distance of 10 km, as beyond this distance the pylons would be almost imperceptible. This also covers the full extent of the Study Area for the cumulative assessment.
- 2.5.4 Further information on Study Area definition and ZTV production is presented in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 2.5.5 To ensure that all likely significant effects are captured in the assessment, the extent of the Study Area will continue to be reviewed in the light of feedback received during statutory consultation, ongoing site surveys, and following the production of updated ZTVs as the Project develops.

## Data Collection

- 2.5.6 The following data has been used to inform the baseline conditions:
- i. Ordnance Survey (OS) 1:10,000, 1:25,000, 1:50,000 and 1:250,000 base mapping;
  - ii. OS Terrain® 50 mid-resolution and LIDAR Composite 2017 – 50 cm Digital Terrain Model (DTM);
  - iii. Google Earth Pro aerial photography, and Google Maps Street View;
  - iv. Base mapping from ArcGIS Map Service;
  - v. Open source Geographic Information System (GIS) data;
  - vi. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 1);
  - vii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2);
  - viii. Natural England National Character Area Profiles (Ref 5);
  - ix. Lincolnshire Historic Landscape Characterisation Project (Ref 8); and
  - x. East Midlands Regional Landscape Character Assessment (Ref 9).
- 2.5.7 Site surveys were carried out during several visits under differing weather conditions between spring 2023 and summer 2024.

## Existing Baseline

- 2.5.8 The following section outlines the Landscape baseline and should be read in conjunction with **PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline**. The appendix provides a description of the landscape, including its elements, features, and overall character, with reference to the landscapes and landscape character areas listed below. It also includes judgements on the landscape's relative value and its susceptibility to change resulting from the Project.
- 2.5.9 The baseline section should also be read in conjunction with the following supporting Figures and Appendix, as found within **PEI Report Volume 2** and **Volume 3**:
- i. **PEI Report Volume 2 Part B Section 3 Figure 2.1 Landscape Designations and Features;**
  - ii. **PEI Report Volume 2 Part B Section 3 Figure 2.2 Landform and Drainage;**
  - iii. **PEI Report Volume 2 Part B Section 3 Figure 2.3 National Character Areas;**
  - iv. **PEI Report Volume 2 Part B Section 3 Figure 2.4 Regional and Local Landscape Character Areas;** and
  - v. **PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline.**
- 2.5.10 **PEI Report Volume 2 Part B Section 3 Figure 2.1 Landscape Designations and Features** shows the distribution of woodland across the Study Area.

## Designated Landscapes

- 2.5.11 The Lincolnshire Wolds National Landscape (AONB) overlaps the western side of the Study Area for Section 3.

## Landscape Character

- 2.5.12 The following landscape character areas cover the Study Area for Section 3:
- i. Natural England - National Character Area Profiles (NCA)
    - NCA 42 Lincolnshire Coast and Marshes; and
    - NCA 43 Lincolnshire Wolds.
  - ii. East Midlands Regional Landscape Character Areas (RLCT)
    - RLCT 2A Settled Fens and Marshes which is considered to be of medium value and medium susceptibility to the Project;
    - RLCT 2C Fen and Marsh Margin Farmlands which is considered to be of high value and medium susceptibility to the Project; and
    - RLCT 7A Chalk Wolds which is considered to be of very high value and very high susceptibility to the Project.

## Future Baseline

- 2.5.13 The future baseline relates to known or foreseeable changes to the current baseline in the future which will be assessed as part of the Project in the ES. Specifically, it accounts for anticipated changes including those caused by changing climatic

conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete before construction of the Project.

- 2.5.14 At ES stage the future baseline for Landscape will consider any relevant changes to the existing baseline as a result of confirmed developments scheduled for completion prior to the commencement of the Project's construction phase. A list of the currently known developments is provided within **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information Annex I Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline
- 2.5.15 Ash trees (*Fraxinus excelsior*) within the Study Area for Section 3 may be affected by ash dieback, a frequently fatal disease caused by the fungus *Hymenoscyphus fraxineus*. Therefore, the future baseline assumes long-term ash tree loss, with other species filling gaps in the short-term, keeping overall vegetation levels similar. An Arboricultural Impact Assessment will record incidents of ash dieback, which in turn will inform the detailed Landscape assessment presented in the ES.

## 2.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 2.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 10) which apply to the routing of new overhead lines and the 'Horlock Rules' (Ref 11), which apply to the design and siting of substations. These approaches are explained in further detail within the **Corridor Preliminary Routeing and Siting Study (CPRSS)** (Ref 12) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 2.6.2 Following the selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- i. Locating the New Lincolnshire Connection Substation A close to existing woodlands which would help to provide immediate screening and filtering of views of the new substation and also help to integrate the substation into the wider landscape; and
  - ii. Amendments to locations of access tracks and bellmouths and the overhead line alignment to minimise loss of mature vegetation, which in turn would help to retain existing landscape character.
- 2.6.3 The Project has also committed to producing an Outline Landscape Environmental Management Plan (LEMP) (commitment GG06), which will set out the measures to protect existing vegetation and details regarding the reinstatement and additional planting. This will also account for biodiversity net gain targets (see **PEI Report Volume 2 Part B Sections 1-7 Chapter 4 Ecology and Biodiversity**) and will accompany the ES and DCO application.

- 2.6.4 A detailed mitigation plan for Section 3 will be presented in the ES. This will include proposals for planting, including indicative species mixes and will be presented as part of the Outline LEMP.

## Control Mitigation Measures

- 2.6.5 A Preliminary Code of Construction Practice (CoCP) is provided in **PEI Report Volume 3 Appendix 5A Preliminary Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Landscape assessment of Section 3 include:
- i. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value;
  - ii. LV02: The contractor(s) will apply the relevant protective principles set out in British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction Recommendations. This will be applied to trees within the Order Limits which will be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. An Arboricultural Clerk of Works will ensure the suitability of tree protection before and during the construction phase. All works to high grade trees, including trees under Tree Preservation Orders and veteran trees, will be undertaken, or supervised by a suitably qualified arboriculturist.
  - iii. LV03: A five-year aftercare period will be established for all reinstatement and mitigation planting, details of which will be set out in the LEMP.
  - iv. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.
  - v. B08: Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are necessary, 'dead hedging' should be used, where practicable, in the interim periods to retain connectivity during construction. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.
  - vi. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the Construction Environmental Management Plan (CEMP).



## Additional Mitigation Measures

- 2.6.6 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 2.6.7 Potential additional mitigation measures which may be required to reduce the effects of the Project upon Landscape are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. These typically include additional measures which specifically serve a mitigation function, to reduce the scale of potential impacts.
- 2.6.8 As set out within **PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operation Features** the preliminary additional mitigation measures embedded into the design of Section 3 for Landscape includes areas of woodland planting and tree planting on field boundaries around the New Lincolnshire Connection Substations A and B to provide visual screening, which would help with landscape integration for Section 3.
- 2.6.9 Any measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 2.6.10 Finalised additional mitigation measures will be detailed within the ES.

## 2.7 Preliminary Assessment of Effects

- 2.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, operational and/or maintenance activities within Section 3.
- 2.7.2 The preliminary assessment of effects reported below takes into account the Design Mitigation Measures, Control Mitigation Measures and Additional Mitigation Measures (where they have already been included in the design), as previously described.
- 2.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 2.2**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 2.7.4 As explained in section 2.3.5 of this PEI Report, the Natural England NCAs which are included in the baseline above are not assessed at this preliminary stage. An assessment of the effects of the Project on the NCAs will be provided in the project-wide assessment of landscape effects presented in the ES once the more detailed assessments have been completed.
- 2.7.5 Where an effect is reported in this PEI Report it is an adverse effect unless stated otherwise.
- 2.7.6 Reference is made in the assessment to 'direct' and 'indirect effects'. Direct effects occur within the draft Order Limits and involve physical changes to components of the landscape such as vegetation removal or the presence of new structures, while indirect effects arise from the interaction between the Project and its surrounding context for example, effects on the character and perception of the landscape.

- 2.7.7 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

- 2.7.8 Changes in the character and perception of the landscape could occur during construction due to physical impacts, arising from activities such as vegetation removal, and the presence of construction compounds, storage areas, access tracks, plant (including mobile cranes), vehicles and personnel. However, these effects would be temporary and reversible once the works are complete, and the land is reinstated<sup>2</sup>.

### Designated landscapes

- 2.7.9 The Lincolnshire Wolds National Landscape (AONB) overlaps the western side of the Study Area for Section 3.
- 2.7.10 A preliminary assessment of the effects of the Project on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (AONB) has been produced as a separate route-wide assessment and is presented in **PEI Report Volume 2 Part C Chapter 2 Landscape**. This is because multiple Sections of the Project potentially impact the receptor, so assessing it at a route-wide level was considered appropriate.

### East Midlands Regional Landscape Character Assessment

#### RLCT 2C Fen and Marsh Margin Farmlands

- 2.7.11 RLCT 2C Fen and Marsh Margin Farmlands, which is located within the Study Area for Section 3, is also located in:
- i. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A; and
  - ii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.
- 2.7.12 The preliminary assessment of the effects on RLCT 2C Fen and Marsh Margin Farmlands presented below considers the part of the RLCT that is located within the Study Area for Section 3.
- 2.7.13 RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the construction of the New LCS A and New LCS B, approximately 4.5 km of overhead line including pylons GL119, GL120 and GL122, LB2, LB3, LB5-LB18 and LB20 and LW2, LW4-LW5 and the presence of two construction compounds and a haul road. It

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<sup>2</sup> To prevent double counting, the effects resulting from vegetation loss are assessed as part of the operational phase rather than the construction phase. This approach ensures that the long-term impacts of vegetation removal on the landscape are considered in the context of the final, post-construction condition.



would affect an area of settled farmland that partly lies within the Lincolnshire Wolds National Landscape (AONB) setting. The size/scale of change resulting from the Project's construction would diminish the RLCT's rural character. The overall magnitude of predicted change is medium. Combined with the landscape's high value and medium susceptibility, this would result in a likely significant effect on the part of the RLCT in Section 3.

- 2.7.14 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increases but remains in the medium category. When combined with the high value and medium susceptibility of RLCT 2C Fen and Marsh Margin Farmlands, the Project would result in a likely significant effect.

### Operation

- 2.7.15 The potential effects that could result from the operation phase of the Project are changes to the composition, character and perception of the landscape due to long-term loss of elements and features in the landscape, changes to the landform, introduction of new infrastructure and introduction of landscape elements such as trees and hedgerows. The effects would be long-term and considered permanent.

### Designated Landscapes

- 2.7.16 The Lincolnshire Wolds National Landscape (AONB) overlaps the western side of the Study Area for Section 3.
- 2.7.17 A preliminary assessment of the effects of the Project on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (AONB) has been produced as a separate route-wide assessment and is presented in **PEI Report Volume 2 Part C Chapter 2 Landscape**. This is because the receptor is potentially impacted by multiple Sections of the Project, so assessing it at a route-wide level was considered appropriate.

### East Midlands Regional Landscape Character Types

#### RLCT 2C Fen and Marsh Margin Farmlands

- 2.7.18 RLCT 2C Fen and Marsh Margin Farmlands, which is within the Study Area for Section 3, is also located in:
- i. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A; and
  - ii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.
- 2.7.19 The preliminary assessment of the effects on RLCT 2C Fen and Marsh Margin Farmlands presented below considers the part of the RLCT that is located within the Study Area for Section 3.
- 2.7.20 The presence of the Project would directly impact RLCT 2C Fen and Marsh Margin Farmlands. The New LCS A would be located close to the east of Mother Wood and Greenfield Wood, while the New LCS B would be in farmland to the north east of Bilsby. Approximately 4.5 km of new 400 kV overhead line including pylons GL119, GL120 and GL122, LB2, LB3, LB5-LB18 and LB20 and LW2, LW4-LW5 would run

through the central part of the RLCT. The size/scale of change resulting from the presence of the two new substations would diminish the RLCT's rural character. The overall magnitude of predicted change is medium. Combined with the landscape's high value and medium susceptibility, this would result in a likely significant effect on the part of the RLCT in Section 3. Over time, the maturing mitigation planting associated with the two new substations would be maturing and provide some screening of the infrastructure. This may slightly reduce the overall effects on the landscape, but due to the size and scale of the Project, the effect is likely to be significant.

- 2.7.21 When considering the operational phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increases but remains in the medium category. Combined with the high value and medium susceptibility of RLCT 2C Fen and Marsh Margin Farmlands, the Project would result in a likely significant effect.

#### RLCT 7A Chalk Wolds

- 2.7.22 RLCT 7A Chalk Wolds which is within the Study Area for Section 3, is also located in:
- i. Section 1: New Grimsby West Substation;
  - ii. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A; and
  - iii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.
- 2.7.23 The preliminary assessment of the effects on RLCT 7A Chalk Wolds presented below considers the part of the RLCT that is located within the Study Area for Section 3.
- 2.7.24 There would be no direct impacts on RLCT 7A Chalk Wolds. While the Project may be present in views east of this elevated RLCT, most of the substation infrastructure would be obscured by the intervening woodland and settlement of Alford. It would also be more than 2 km distant, which would further reduce the size/scale of the effect. The most noticeable part of the Project would be the new pylons (GL119, GL120 and GL122, LB2, LB3, LB5-LB18 and LB20 and LW2, LW4-LW5). The new 400 kV overhead line would be visible on the skyline and detract from the rural character of the views from the Wolds. The overall magnitude of predicted change is medium. Combined with the landscape's very high value and susceptibility, this would result in a likely significant effect on the part of the RLCT in Section 3.
- 2.7.25 When considering the operational phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increases, but remains in the medium category. Combined with the very high value and susceptibility of RLCT 7A Chalk Wolds, the Project would result in a likely significant effect.

### Likely Non-Significant Effects

- 2.7.26 For completeness, **Table 2.2** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Landscape effects.
- 2.7.27 The preliminary assessment of effects below considers receptors that are not significantly affected in Section 3 but, when evaluated as a whole across all the Sections in which they occur, would experience a likely significant effect.

## Construction

### East Midlands Regional Landscape Character Types

#### RLCT 2A Settled Fens and Marshes

- 2.7.28 RLCT 2A Settled Fens and Marshes, which is located within the Study Area for Section 3 is also located in:
- Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A;
  - Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone;
  - Section 5 Refined Weston Marsh Substation Siting Zone;
  - Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation; and
  - Section 7 New Walpole B Substation.
- 2.7.29 The preliminary assessment of the effects on RLCT 2A Settled Fens and Marshes presented below considers the part of the RLCT that is located within the Study Area for Section 3.
- 2.7.30 There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While construction of the Project may be present in views west out of the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to the coastal settlements of Mablethorpe and Sutton on Sea, wind turbines and other discordant elements and features, which reduces the size/scale of change. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 3 are unlikely.
- 2.7.31 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increases to medium. Combined with the medium value and medium susceptibility of RLCT 2A Settled Fens and Marshes, the Project would result in a likely significant effect.

#### RCTL 7A Chalk Wolds

- 2.7.32 RCTL 7A Chalk Wolds, which is located within the Study Area for Section 3, is also located in:
- Section 1 New Grimsby West Substation;
  - Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A; and
  - Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.
- 2.7.33 The preliminary assessment of the effects on RLCT 7A Chalk Wolds presented below considers the part of the RLCT that is located within the Study Area for Section 3.
- 2.7.34 There would be no direct impacts on RLCT 7A Chalk Wolds. While construction of the Project may be present in views east out from this elevated RLCT, most of the

works would be obscured by the intervening woodland and settlement of Alford. It would also be greater than 2 km, which would further reduce the size/scale of the effect. The overall magnitude of predicted change is small. Even given the landscape's very high value and susceptibility, significant effects on the part of the RLCT in Section 3 are unlikely.

- 2.7.35 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increases to medium. Combined with the very high value and susceptibility of RLCT 7A Chalk Wolds, the Project would result in a likely significant effect.

## Operation

### East Midlands Regional Landscape Character Types

#### RLCT 2A Settled Fens and Marshes

- 2.7.36 RLCT 2A Settled Fens and Marshes, which is within the Study Area for Section 3, is also located in:
- i. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A;
  - ii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone;
  - iii. Section 5 Refined Weston Marsh Substation Siting Zone;
  - iv. Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation; and
  - v. Section 7 New Walpole B Substation.
- 2.7.37 The preliminary assessment of the effects on RLCT 2A Settled Fens and Marshes presented below considers the part of the RLCT that is located within the Study Area for Section 3.
- 2.7.38 There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While the two new substations and the new 400 kV overhead line may be present in views west out of the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to the coastal settlements of Mablethorpe and Sutton on Sea, wind turbines and other discordant elements and features, which reduces the size/scale of change. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 3 are unlikely.
- 2.7.39 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increases to medium. Combined with the medium value and susceptibility of RLCT 2A Settled Fens and Marshes, the Project would result in a likely significant effect.

Table 2.2 Preliminary summary of non-significant Landscape effects – Section 3

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
<b>East Midlands Regional Landscape Character Types</b>					
RLCT 2A: Settled Fens and Marshes	Indirectly affected by construction of the New LCS A and B and pylons GL119, GL120 and GL122, LB2, LB3, LB5-LB18 and LB20 and LW2, LW4-LW5.	Value – Medium Susceptibility – Medium	Construction - small	Construction - not significant	There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While construction of the Project may be present in views west out of the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to the coastal settlements of Mablethorpe and Sutton on Sea, wind turbines and other discordant elements and features, which reduces the size/scale of change. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 3 are unlikely.
	Indirectly affected by operation of the New LCS A and B and pylons GL119-123, LB3-LB16 and LW3-LW5.	Value – Medium Susceptibility – Medium	Operation - small	Operation - not significant	There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While the two new substations and new 400 kV overhead line may be present in views west out of the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to the coastal settlements of

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					Mablethorpe and Sutton on Sea, wind turbines and other discordant elements and features, which reduces the size/scale of change. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 3 are unlikely.
RCTL 7A: Chalk Wolds	Indirectly affected by construction of the New LCS A and LCS B	Value – Very high Susceptibility – Very high	Construction - small	Construction - not significant	There would be no direct impacts on RLCT 7A Chalk Wolds. While construction of the Project may be present in views east out from this elevated RLCT, most of the works would be obscured by the intervening woodland and settlement of Alford. It would also be at a distance of greater than 2 km which would further reduce the size/scale of effect. The overall magnitude of predicted change is small. Even given the landscape's very high value and susceptibility, significant effects on the part of the RLCT in Section 3 are unlikely.

## **2.8 Monitoring**

- 2.8.1 No Landscape monitoring is currently proposed for Section 3, as it is only necessary to ensure the establishment of mitigation planting. A five-year aftercare period for mitigation planting is secured through the Preliminary CoCP, eliminating the need for additional monitoring measures.



# References

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- Ref 5 Natural England (2024) National Character Area Profiles [online]. Available at: <https://nationalcharacterareas.co.uk/> [Accessed 20 September 2024].
- Ref 6 Landscape Institute and Institute for Environmental Management and Assessment (IEMA) (2013) Guidelines for Landscape and Visual Impact Assessment – 3rd Edition (GLVIA3).
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- Ref 10 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
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# 3. Visual

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## 3. Visual

### 3.1 Introduction

- 3.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Visual assessment of the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 3.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 3.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and subsequent scope (section 3.3) relevant to the Visual assessment in Section 3. Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high-level summary of the methodology of the Visual assessment within Section 3 (section 3.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Visual assessment (section 3.5).
  - vi. A description of mitigation measures included for the purposes of the Visual assessment reported within the PEI Report (section 3.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**.
  - vii. The likely significant and non-significant Visual effects arising during construction and operation of the Project within Section 3 Study Area, based upon the assessment completed to date (section 3.7).
  - viii. An outline of the proposed monitoring requirements in relation to Visual (section 3.8).
- 3.1.2 Further supporting information is set out in **Table 3.1** below, including supporting figures and technical appendices.

Table 3.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	Figure 3.1 Visual Receptors and Viewpoints Figure 3.2 Zone of Theoretical Visibility (ZTV)
PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints	This appendix provides background baseline information of the representative viewpoints selected within the Study Area.
PEI Report Volume 3 Part B Appendix 3B Visual Baseline	This appendix provides an overview of the visual baseline, explanation of proposed viewpoint selection and initial baseline information for the community areas within the Study Area.
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	A summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.



Supporting Information	Description
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice (CoCP)</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

3.1.3 There are interrelationships between the potential effects on Visual and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:

- i. **PEI Report Volume 2 Part B Section 3 Chapter 2 Landscape** should be consulted in relation to the landscape assessment. This helps to inform judgements on the value of the views and supports the Visual assessment.
- ii. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** should be consulted in relation to impacts on trees and woodland. An Arboricultural Impact Assessment will be presented as an appendix to the ES and will be cross referenced in relation to impacts on trees and woodland. Both documents will be used to help inform the baseline landscape and support the assessment of visual effects reported in the ES.
- iii. **PEI Report Volume 2 Part B Section 3 Chapter 5 Historic Environment** should be consulted in relation to historic assets including historic landscapes and Registered Parks and Gardens, which may contribute to the value of the view. This helps to inform the baseline description and supports the Visual assessment.
- iv. **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement** should be consulted in relation to increased traffic flows which may influence the character of the views through noise and visual disturbance. This helps to inform the baseline description and supports the Visual assessment.
- v. **PEI Report Volume 2 Part B Section 3 Chapter 10 Noise and Vibration** should be consulted in relation to noise intrusion which may affect the perception and value of a view. This helps to inform the baseline description and supports the Visual assessment.
- vi. **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** should be consulted in relation to areas of recreational importance which may contribute to the value of the view. The outputs of the visual assessment will inform the assessment of effects on recreation and tourism.
- vii. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** which provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
- viii. **PEI Report Volume 2 Part C Chapter 2 Landscape** should be consulted in relation to the assessment of effects on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (Area of Outstanding Natural Beauty (AONB)). This includes commentary on views in relation to the Special Qualities of the AONB.

- ix. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 3.2 Legislation and policy framework

### Legislation and National Policy

- 3.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, detail of which is set out in **Table 3.1**.

### Regional and Local Policy

- 3.2.2 Regional and local plans or policies relevant to this assessment are as follows:
  - i. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 1)
    - Policy S14: Renewable Energy details the support for renewable energy schemes, including ancillary development, only where the direct, indirect, individual and cumulative impacts are, or will be made, acceptable;
    - Policy S16: Wider Energy Infrastructure details the support for proposals that seek to aid the transition to Net Zero and that any such proposals will take reasonable measures to mitigate harm; and
    - Policy S62: Areas of Outstanding Natural Beauty and Areas of Great Landscape Value requires that all development proposals within, or affecting the setting of, the AONB shall protect and enhance important views into, out of and within the AONB.
  - ii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2)
    - Strategic Policy 23: Landscape states that the policy aims to protect, enhance, and manage the District's landscapes to create an attractive and healthy living and working environment. Development will adhere to the District's Landscape Character Assessment and the Council will support development that conserves and enhances designated and historic landscapes to improve the visitor experience; and
    - Strategic Policy 27: Renewable and low carbon energy which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation to landscape and amenity.

## 3.3 Scope of Assessment

- 3.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 3) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 4). The scope has also been informed through consultation and engagement with relevant consultees. A

summary of the Scoping Opinion together with a response against each point of relevance to the Visual chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Scoping Opinion Responses and Stakeholder Engagement Summary**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.

- 3.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 3.3.3 The scope of the construction and operation assessment covers the following receptor groups:
- i. Communities - People in communities for whom the surrounding environment is essential to their quality of life and work, including those engaging in recreational activities such as using Public Rights of Way (PRoW) and waterways; and
  - ii. Recreational Routes and Receptors - People using National Trails and regionally promoted routes, long distance cycle routes, and people at protected viewpoints, panoramas and viewing corridors and people visiting tourist attractions where views are important to the experience.
- 3.3.4 A preliminary assessment of the effects of the Project on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (AONB) has been produced as a separate route-wide assessment and is presented in **PEI Report Volume 2 Part C Chapter 2 Landscape**. This is because multiple Sections of the Project potentially impact the AONB, so it is appropriate to assess it at a route-wide level.

## 3.4 Assessment Methodology

- 3.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Visual assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components is outlined below.

### Approach

- 3.4.2 As explained in paragraph 6.1 of GLVIA3 (Ref 5), “*An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity*”. Changes in views can be experienced by individuals at various locations within the Study Area, including from static positions (typically assessed using representative viewpoints) and while moving through the landscape (commonly referred to as sequential views, such as those experienced from roads and footpaths).
- 3.4.3 Visual receptors are individuals or groups of people who may be affected by changes in views and visual amenity. As noted in paragraphs 6.31 - 6.32 of GLVIA3 (Ref 5), they are usually grouped by their occupation or activity (e.g. residents, motorists, recreational users, tourists visiting a specific location or area) and the extent to which their attention is focused on the view.

- 3.4.4 The visual assessment is based on communities within the jurisdiction boundaries of parishes (also referred to in this assessment as community areas) and the preliminary baseline for the community areas is presented in **PEI Report Volume 3 Part B Appendix 3B Visual Baseline**.
- 3.4.5 The visual assessment also includes consideration of the effects on sequential views from nationally designated and regionally promoted long distance footpaths and cycleways.
- 3.4.6 The visual assessment is informed by a series of publicly accessible viewpoint locations. These have been carefully chosen to provide a representative overview of the Project's potential visibility. Each viewpoint has been visited, with photography captured in line with TGN 06/19 (Ref 7) to document the existing visual characteristics of Section 3. The baseline for the representative viewpoints is presented in the Visual section of **PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints**.
- 3.4.7 In accordance with GLVIA3 (Ref 5), the assessment of visual effects involves evaluating both the nature of the visual receptors (their sensitivity) and the nature of the effects on those receptors (the magnitude of effect). These factors are then considered together to form an overall judgment regarding the significance of visual effects.
- 3.4.8 The Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** describes the methodology used to evaluate sensitivity and magnitude and how the judgements on sensitivity and magnitude of effect are combined to make an informed professional assessment on the significance of each visual effect. A summary of the approach is set out below.

#### **Establishing visual sensitivity**

- 3.4.9 In accordance with paragraph 6.31 of GLVIA3 (Ref 5), evaluations of the sensitivity of visual receptors to change are based on consideration of the judgements on the value attached to the existing view (which is established and reported as part of the baseline) and the susceptibility of the receptor to changes in the view arising from the Project. These judgements are guided by the indicative criteria set out in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Judgements on value and susceptibility are recorded as either very high, high, medium or low.

#### **Predicting the magnitude of change**

- 3.4.10 In accordance with paragraph 6.38 of GLVIA3 (Ref 5), judgements on the magnitude of visual change are based on consideration of the judgements on size/scale, geographical extent, duration and reversibility of the predicted change. They are guided by the indicative criteria set out in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Judgements on the magnitude of visual change are recorded as large, medium, small and very small.

#### **Judging levels of visual effect and significance**

- 3.4.11 The final step in the assessment requires the judgements on the sensitivity of the visual receptors and the predicted magnitude of visual change to be combined to make an informed professional assessment on the significance of each visual effect.

- 3.4.12 In accordance with paragraph 6.43 of GLVIA3 (Ref 5), the evaluations of the individual aspects set out above (susceptibility, value, size and scale, geographical extent, duration and reversibility) are considered together to provide an overall profile of each identified visual effect, guided by the indicative criteria set out in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 3.4.13 Professional judgement and experience are applied to take on board the many different variables which need to be considered, and given different weight according to site-specific and location-specific considerations.
- 3.4.14 Levels of visual effect are identified as major, moderate, minor, or negligible and the direction of change as beneficial or adverse. Effects judged to be moderate or major are considered significant in the context of the EIA Regulations (Ref 6). The general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels, which will be presented in the ES.

## Assessment Assumptions and Limitations

- 3.4.15 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 3.
- 3.4.16 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions applicable to the full assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 3.5 Baseline Conditions

### Study Area

- 3.5.1 The Study Area for the preliminary Visual assessment is shown on **PEI Report Volume 2 Part B Section 3 Figure 3.1 Visual Receptors and Viewpoints**. The extent of the Study Area for the preliminary Visual assessment (based on the same approach which will be adopted when defining the EIA study area), extends 5 km from the Limits of Deviation (LoD) for the new 400 kV overhead line<sup>1</sup>. This distance was informed by the ZTV, the scale and appearance of the pylons (as detailed in **PEI Report Volume 2 Part A Chapter 5 Project Description**), field survey and professional judgment, and is considered sufficient to capture the likely significant visual effects of the Project. Although the ZTV indicates potential visibility beyond 5 km in certain directions, based on experience of similar schemes, significant visual impacts are highly unlikely to arise beyond this distance.

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<sup>1</sup> The Study Area for the preliminary assessment is measured from the LoD for the new 400 kV overhead line as significant effects are most likely to result from construction and operation of the new substations and 400 kV overhead line rather than the temporary access tracks, which in some instances could extend several kilometres from the draft Order Limits but are unlikely to result in significant effects.



- 3.5.2 The preliminary cumulative Visual assessment Study Area extends to 10 km from the LoD for the new 400 kV overhead line. This radius was established to evaluate potential cumulative visual impacts in conjunction with other committed developments.
- 3.5.3 The ZTV map, which incorporates screening elements such as buildings and woodland, is presented in **PEI Report Volume 2 Part B Section 3 Figure 3.2 Zone of Theoretical Visibility (ZTV)**. Based on pylon locations provided by design engineers, the ZTV identifies areas where the new 400 kV overhead line may theoretically be visible. It also helps determine the extent of the Study Area for the Visual assessment. The theoretical visibility of individual pylons is limited to a maximum distance of 10 km, as beyond this distance the pylons would be almost imperceptible. This also covers the full extent of the Study Area for the cumulative assessment.
- 3.5.4 Further information on Study Area definition and ZTV production is presented in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 3.5.5 To ensure that all likely significant effects are captured in the assessment, the extent of the Study Area will continue to be reviewed in the light of feedback received during statutory consultation, ongoing site surveys, and following the production of updated ZTVs as the Project develops.

## Data Collection

- 3.5.6 The following data has been used to inform the baseline conditions:
- i. Ordnance Survey (OS) 1:10,000, 1:25,000, 1:50,000 and 1:250,000 base mapping;
  - ii. OS Terrain® 50 mid-resolution and LIDAR Composite 2017 – 50 cm Digital Terrain Model (DTM);
  - iii. Google Earth Pro aerial photography, and Google Maps Street View;
  - iv. Base mapping from ArcGIS Map Service;
  - v. Open source Geographic Information System (GIS) data;
  - vi. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 1); and
  - vii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2).
- 3.5.7 Site surveys were carried out during several visits under differing weather conditions between spring 2023 and summer 2024.

## Existing Baseline

- 3.5.8 The following section outlines the Visual baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:
- i. **PEI Report Volume 2 Part B Section 3 Figure 3.1 Visual Receptors and Viewpoints;**
  - ii. **PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints;** and



iii. **PEI Report Volume 3 Part B Appendix 3B Visual Baseline.**

- 3.5.9 **PEI Report Volume 2 Part B Figure 2.1 Landscape Designations and Features** shows the distribution of woodland across the Study Area.

**Communities**

- 3.5.10 The following communities, defined by parish jurisdictional boundaries, are considered receptors within the Study Area for Section 3. The viewpoint numbers refer to the representative viewpoints used to inform the assessment.
- 3.5.11 The people within the communities listed below are considered to be highly susceptible to visual change resulting from the Project, while the characteristics of the landscape indicate that the value of the views is assessed as medium.
- i. Alford (VP42, VP43);
  - ii. Beesby with Saleby (VP44, VP175);
  - iii. Bilsby (VP44, VP45, VP46);
  - iv. Hannah cum Hagnaby (VP37, VP38, VP39); and
  - v. Markby (VP169, VP170).
- 3.5.12 The people within the communities listed below are considered to be highly susceptible to visual change resulting from the Project, while the characteristics of the landscape indicate that the value of the views is assessed as high.
- i. Haugh;
  - ii. Rigsby with Ailby (VP41, VP42); and
  - iii. Well.
- 3.5.13 Descriptions of the baseline visual amenity of these community areas are provided in **PEI Report Volume 3 Part B Appendix 3B Visual Baseline**. This includes a description of the community area and its key visual receptors as well as a judgement on the value of the views currently experienced.

**Recreational Routes and Receptors**

- 3.5.14 The following recreational routes and receptors have been identified within Section 3.
- i. Lindsey Loop – A 163 km long distance route which links the six market towns in East and West Lindsey. This includes Alford in Section 3 where the route passes through the centre of the village. People using the Lindsey Loop have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 3 indicate that the value of the sequential views experienced is judged to be high. This is due to the proximity to the Lincolnshire Wolds National Landscape (AONB), the eastern part of the Lindsey Loop within Section 3 being located within the Lincolnshire Wolds National Landscape (AONB). Viewpoints VP41 and VP43 represents views from the route in Section 3.

## Future Baseline

- 3.5.15 The future baseline relates to known or foreseeable changes to the current baseline in the future which will be assessed as part of the Project in the ES. Specifically, it accounts for anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 3.5.16 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information Annex I Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 3.5.17 Ash trees (*Fraxinus excelsior*) within the Study Area for Section 3 may be affected by ash dieback, a frequently fatal disease caused by the fungus *Hymenoscyphus fraxineus*. Therefore, the future baseline assumes long-term ash tree loss, with other species filling gaps in the short-term, keeping overall vegetation levels similar. An Arboricultural Impact Assessment will record incidents of ash dieback, which in turn will inform the detailed landscape assessment presented in the ES.

## 3.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 3.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 8) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 9), which apply to design and siting of substations, converter stations and Cable Sealing End (CSE) compounds. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 11) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 3.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- Locating the New Lincolnshire Connection Substation A close to existing woodlands which would help to provide immediate screening and filtering of visual receptors; and
  - Amendments to locations of access tracks and bellmouths and the overhead line alignment to minimise loss of mature vegetation, which in turn would help to screen and filter views of the Project.

- 3.6.3 The Project has also committed to producing an Outline Landscape and Environmental Mitigation Plan (LEMP) (commitment GG06), which will set out the measures to protect existing vegetation and details regarding the reinstatement and additional planting. This will also account for biodiversity net gain targets (see **PEI Report Volume 2 Part B Sections 1-7 Chapter 4 Ecology and Biodiversity**) and will accompany the ES and DCO application.
- 3.6.4 A detailed mitigation plan will be presented in the ES. This will include proposals for planting including indicative species mixes and will be presented as part of the Outline LEMP.

## Control Mitigation Measures

- 3.6.5 A Preliminary Construction Practice (CoCP) is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice** Measures contained in the Preliminary CoCP that are relevant to the control and management of impacts that could affect the visual assessment are:
- i. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.;
  - ii. LV02: The contractor(s) will apply the relevant protective principles set out in British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction (Ref 10). This will be applied to trees within the Order Limits which will be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. An ACoW will ensure the suitability of tree protection before and during the construction phase. All works to high grade trees, including trees under Tree Preservation Orders and veteran trees, will be undertaken, or supervised by a suitably qualified arboriculturist;
  - iii. LV03: A five-year aftercare period will be established for all reinstatement and mitigation planting, details of which will be set out in the LEMP;
  - iv. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible; and
  - v. B08: Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are necessary, 'dead hedging' should be used, where practicable, in the interim periods to retain connectivity during construction. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.
  - vi. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises

noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the CEMP.

## Additional Mitigation Measures

- 3.6.6 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 3.6.7 Potential additional mitigation measures which may be required to reduce the effects of the Project upon Visual are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. These typically include additional measures which specifically serve a mitigation function, to reduce the scale of potential impacts.
- 3.6.8 As set out within **PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 3 for Visual includes areas of woodland planting around LCS A and LCS B to provide visual screening and reduce the effects for visual receptors, integrating the substations into the surrounding landscape.
- 3.6.9 Any measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 3.6.10 Finalised additional mitigation measures will be detailed within the ES

## 3.7 Preliminary Assessment of Effects

- 3.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction and/or operational activities within Section 3.
- 3.7.2 The preliminary assessment of effects reported below takes into account the Design Mitigation Measures, Control Mitigation Measures and Additional Mitigation Measures (where they have already been included in the design), as previously described.
- 3.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 3.2**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 3.7.4 The visual effects of maintenance activities during operation are scoped out of the assessment as agreed in the Scoping Opinion adopted by the Secretary of State on 10 September 2024 (Ref 3). As agreed in the Scoping Opinion adopted by the Secretary of State on 10 September 2024 (Ref 3), effects on people using the road or rail network or those working within the Study Area, are scoped out of the assessment as an appreciation of the wider landscape and views is generally not integral to their activities. These receptors are typically considered to have lower susceptibility to changes in the view and will often share views of the Project with receptors who have a greater susceptibility and are therefore included in the assessment in any event.

- 3.7.5 Where an effect is reported in this PEI Report it is an adverse effect unless stated otherwise.
- 3.7.6 Reference is made in the assessment and accompanying appendices to ‘direct’ and ‘indirect effects’. Direct effects occur within the draft Order Limits and involve physical changes to components of the landscape such as vegetation removal or presence of new structures, while indirect effects arise from the interaction between the Project and its surrounding context for example, effects on views and how they are perceived.
- 3.7.7 It should be noted that the assessment which has informed the conclusions presented remains ongoing and is subject to change, due to the ongoing survey activities and further design development of the Project. A full detailed assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

- 3.7.8 Changes in the character and perception of a view could occur during construction due to the physical effects on landscape character. Effects would arise from activities such as vegetation removal and presence of construction compounds, storage areas, access tracks, plant (including mobile cranes), vehicles and personnel. However, these effects would be temporary and reversible once the works are complete, and the site is reinstated<sup>2</sup>.

### Communities

- 3.7.9 Two communities have been identified as experiencing likely significant effects during construction of the Project in Section 3. All other communities would experience effects which have been judged to be not significant and are included in **Table 3.2**. There may be individual properties within community areas that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the Residential Visual Amenity Assessment (RVAA).

#### Beesby with Saleby

- 3.7.10 The community of Beesby with Saleby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.11 The parish would be directly impacted by the construction of the New LCS A, a construction compound, haul road, and approximately 4 km of new overhead line including pylons GL119-GL120, GL122, LB2-LB3 and LB5-LB15 and would therefore have close proximity views of the Project. Views out from the parish to the north east would also be affected by construction activities associated with the new 400 kV overhead line in Section 2 and to the south in Section 3. Overall, this would result in a large magnitude of change and likely significant effects.

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<sup>2</sup> To prevent double counting, the effects resulting from vegetation loss are assessed as part of the operational phase rather than the construction phase. This approach ensures that the long-term impacts of vegetation removal on visual amenity are considered in the context of the final, post-construction condition.



## Bilsby

- 3.7.12 Bilsby Parish is located within Section 3, however a large part of the community including Thurlby is also located within Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone. The preliminary assessment of the effects on people living and moving around Bilsby Parish presented below considers the part of the community that is located within the Study Area for Section 3.
- 3.7.13 The community of Bilsby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.14 This parish would be directly impacted by the construction of the New LCS B, a construction compound, haul road, and approximately 1.4 km of new overhead line including pylons LB16-LB18, LB20, LW2, LW4-LW5 and would therefore have close proximity views of the Project. Views out of the parish to the north and south would also be affected by construction activities associated with the new 400 kV overhead line in Sections 3 and 4. The works would be viewed in at close range and overall, this would result in a large magnitude of change and likely significant effects.
- 3.7.15 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains large, the main impact being the construction of the New LCS B. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

## Recreational routes and receptors

- 3.7.16 No significant effects for recreational routes or receptors have been identified in Section 3 during construction. Effects which have been judged to be not significant are included in **Table 3.2**.

## Operation

- 3.7.17 The potential effects that would result from the operation of the Project are the effects on views due to loss of elements and features in the landscape, changes to the landform, introduction of new high voltage electricity infrastructure and introduction of landscape elements such as trees and hedgerows. The effects would be long-term and are considered permanent.

## Communities

- 3.7.18 Six communities have been identified as experiencing likely significant effects during operation of the Project in Section 3. All other communities would experience effects which have been judged to be not significant and are included in **Table 3.2**. There may be individual properties within community areas that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the RVAA.

## Aby with Greenfield

- 3.7.19 Aby with Greenfield Parish is located within Section 3, however a part of the community is also located within Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A. The preliminary assessment of the effects on people living and moving around Aby with Greenfield Parish presented below

considers the part of the community that is located within the Study Area for Section 3.

- 3.7.20 The community of Aby within Greenfield Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.21 The parish would be directly affected by views of the new LCS B and pylons outside the community area in Sections 3. The new LCS B would be visible from the eastern parts of the community area and along Greenfield Lane. Mature vegetation at Mother Wood and Greenfield Wood would screen the substation from properties. The Project would introduce a new 400 kV overhead line into views which currently have no existing overhead lines. Overall, this would result in a medium magnitude of change and likely significant effects.
- 3.7.22 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains medium. Although the new LCS B is located close to the edge of the parish and mitigation planting would help to screen views from visual receptors within the community, the presence of a new 400 kV overhead line would be prominent in views which currently do not contain any pylons. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

#### Alford

- 3.7.23 The community of Alford Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.24 While Alford would not be directly impacted by the Project, views out from the parish to the north and east would be affected by the presence of the new LCS A, the new LCS B and pylons in Sections 2 and 3. These views are currently unaffected by overhead lines or other discordant features. Views of the Project from the village of Alford would be partially screened by the existing vegetation, but the new 400 kV overhead line would still be visible in some views from the edge of the settlement. Mitigation planting would help to reduce the effects of the substations in the long-term, but the effects of the new overhead line would remain. Overall, this would result in a medium magnitude of change and potentially significant effects.

#### Beesby with Saleby

- 3.7.25 The community of Beesby with Saleby is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.26 The parish would be directly impacted by the operation of the new LCS A and pylons GL120-GL121 and LB3-LB13 and would therefore have close proximity views of the Project, as well as indirectly affected by views of pylons in Sections 2 and 3. While existing woodland and proposed mitigation planting would help screen and soften views of the substation, the introduction of a new 400 kV overhead line would be a large new discordant feature. The Project would change the visual character of the area, with the overhead line becoming a prominent feature through its centre of the community. Overall, this would result in a large magnitude of change and likely significant effects.



#### Bilsby

- 3.7.27 Bilsby Parish is located within Section 3, however a large part of the community including Thurlby is also located within Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone. The preliminary assessment of the effects on people living and moving around Bilsby Parish presented below considers the part of the community that is located within the Study Area for Section 3.
- 3.7.28 The community of Bilsby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.29 The parish would be directly impacted by the operation of the LCS B and approximately 1.4 km of new overhead line including pylons LB16-LB18, LB20, LW2, LW4-LW5 and would therefore have close proximity views of the Project as well as indirectly affected by views of pylons in Sections 3 and 4. While proposed mitigation planting would help screen and soften views of the substation, it is likely to remain a prominent feature due to the openness of the surrounding landscape and the absence of existing woodland. The Project would introduce a new 400 kV overhead line into views that currently lack such infrastructure, altering the visual character across the centre of this community area. Overall, this would result in a large magnitude of change and likely significant effects.
- 3.7.30 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains large. Although the new LCS B is located within this parish and mitigation planting would help to screen views from visual receptors within the community, the presence of a new 400 kV overhead line would be prominent in views which currently do not contain any pylons. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

#### Hannah cum Hagnaby

- 3.7.31 The community of Hannah cum Hagnaby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.32 While Hannah cum Hagnaby would not be directly impacted by the Project, views out from the parish to the south and west would be affected by the presence of the new LCS B and pylons in Sections 2, 3 and 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Mitigation planting would help to reduce the effects of the substation in the long-term, but the pylons would remain very noticeable in open views out from the parish. Overall, this would result in a medium magnitude of change and potentially significant effects.

#### Markby

- 3.7.33 The community of Markby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.34 While Markby would not be directly impacted by the Project, views out from the parish to the south and west would be affected by the presence of the LCS B and pylons in Sections 2, 3, and 4. The Project would introduce a new 400 kV overhead

line into views which are currently free from high voltage electricity infrastructure and contain few other detractors. Due to the openness of the landscape, pylons would be widely visible from some locations. Overall, this would result in a medium magnitude of change and likely significant effects.

#### Rigsby with Ailby

- 3.7.35 The community of Rigsby with Ailby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate the value of the views currently experienced is considered to be high due to the association with Lincolnshire Wolds National Landscape (AONB), with the south west of the community area being located within the designation.
- 3.7.36 While Rigsby with Ailby would not be directly impacted by the Project, views out from the parish to the north and east would be affected by the presence of the new LCS A and pylons in Sections 2 and 3. These views are currently free from high voltage electricity infrastructure and contain few other detractors. While existing vegetation at Greenfield Wood and proposed mitigation planting would help screen the new LCS A, the overhead line would remain visible, altering the character of the views experienced. Overall, this would result in a medium magnitude of change and likely significant effects.

#### Recreational Routes

##### The Lindsey Loop

- 3.7.37 The Lindsey Loop is located within Section 3 and is also located within Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A and Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.
- 3.7.38 The preliminary assessment of the effects on people using the Lindsey Loop presented below considers the part of the Lindsey Loop that is located within the Study Area for Section 3.
- 3.7.39 People using the Lindsey Loop are considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate the value of the views currently experienced is considered to be high in Section 3 due to its location partially within the Lincolnshire Wolds National Landscape (AONB) to the west and south of Alford. While the footpath would not be directly impacted by the Project, views from the footpath to the north and east would be affected by the presence of the new LCS A and pylons in Sections 2, 3 and 4 of the Project. These views are currently free from high voltage electricity infrastructure and contain few other detractors. While existing vegetation at Greenfield Wood and proposed mitigation planting would help screen the new LCS A, the new overhead line would remain visible, altering the character of the views experienced. Overall, this would result in a medium magnitude of change and likely significant effects.
- 3.7.40 When considering the operation phase of the Project, in its entirety across all Sections, the predicted magnitude of change is large. Approximately 30 km of the route would have views of the new 400 kV overhead line from the edge of the Lincolnshire Wolds National Landscape (AONB). When combined with the high value views and high susceptibility of people using the Lindsey Loop, the Project would give rise to a likely significant effect.

## Likely Non-Significant Effects

- 3.7.41 For completeness, **Table 3.2** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Visual effects.

Table 3.2 Preliminary summary of non-significant Visual effects – Section 3

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Communities</b>					
Alford (VP42, VP43)	Indirectly affected by construction of the New LCS A, the New LCS B and pylons in Sections 2 and 3.	Value of Views – Medium Susceptibility – High	Construction – small	Construction – not significant	Views of access roads and working areas associated with the works to the existing 400 kV overhead line and substations would be filtered by vegetation for visual receptors within this community area. Taller equipment may be visible above vegetation but would be temporary in nature.  The magnitude of change is considered to be small and effects on this community area likely be not significant during construction.
Hannah cum Hagnaby (VP169)	Indirectly affected by construction of the New LCS B and pylons in Sections 2, 3 and 4.	Value of Views – Medium Susceptibility – High	Construction – small	Construction – not significant	Construction will be perceptible from the majority of the community area due to the open views, however not in close proximity. There may be glimpses of taller equipment associated with the works to the existing overhead line and the new substation but this would be temporary in nature.  The magnitude of change is considered to be small and effects on this community area would likely be not significant during construction.

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Haugh	Indirectly affected by construction of the New LCS A and pylons in Sections 2 and 3.	Value of Views – High Susceptibility – High	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance.  The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - very small	Operation - Not significant	At 3.5 km to the closest visual receptors within the community area, the taller components of the Project may be perceptible but filtered by vegetation along the lanes and in adjacent community areas.  Due to the limited nature of views, the magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Markby (VP169, VP170)	Indirectly affected by construction of the New LCS B and pylons in Sections 2, 3 and 4.	Value of Views – Medium Susceptibility – High	Construction - small	Construction – not significant	Construction would be perceptible from the majority of the community area due to the open views, however not in close proximity. There may be glimpses of taller equipment associated with the works to the existing overhead line and the new substations but this would be temporary in nature.

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					The magnitude of change is considered to be small and effects on this community area would likely be not significant during construction.
Rigsby with Ailby (VP41, VP42)	Indirectly affected by construction of the Nnew LCS A and pylons in Sections 2 and 3.	Value of Views – High Susceptibility – High	Construction – small	Construction – not significant	Views of access roads and working areas associated with the works to the existing 400 kV overhead line and the new substation would be filtered by vegetation for the small number of visual receptors within this community area. Taller equipment may be visible above vegetation but would be temporary in nature.  The magnitude of change is considered to be small and effects on this community area likely be not significant during construction.
Well	Indirectly affected by construction and operation of the New LCS B and pylons in Sections 2, 3 and 4.	Value of Views – High Susceptibility – High	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance.  The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - small	Operation - Not significant	At 3.2 km to the closest visual receptors within the community area, pylons may be perceptible but filtered by the high level of vegetation



Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					cover which limits the effect of the Project from the majority of the area and the main village in particular. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
<b>Recreational Receptors</b>					
Lindsey Loop (VP41, VP43)	Indirectly affected by construction and operation of the New LCS A, and pylons in Sections 2, 3 and 4.	Value of Views – High Susceptibility – High	Construction – small	Construction – not significant	Views of access roads and working areas associated with the works to the existing 400 kV overhead line and the new substation would be filtered by vegetation including hedgerows and larger blocks of woodland such as Greenfield Wood. Taller equipment may be visible above vegetation but would be temporary in nature. Where the footpath becomes more elevated within the Lincolnshire Wolds National Landscape (AONB), there may be more open elevated views towards construction activities, however construction activities would be more distant and seen as part of the wider panorama. The magnitude of change is considered to be small and effects on people using the Lindsey Loop

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					likely be not significant during construction.

## **3.8 Monitoring**

- 3.8.1 No visual monitoring is currently proposed for Section 3, as it is only necessary to ensure the establishment of mitigation planting. A five-year aftercare period for mitigation planting is secured through the Preliminary CoCP, eliminating the need for additional monitoring measures.

# References

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- Ref 9 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
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# 4. Ecology and Biodiversity

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## 4. Ecology and Biodiversity

### 4.1 Introduction

- 4.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Ecology and Biodiversity assessment of the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 4.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 4.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** and supporting appendices;
  - iii. A summary of the assessment scoping process and the subsequent scope of the Ecology and Biodiversity assessment (section 4.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high level summary of the methodology of the Ecology and Biodiversity assessment within Section 3 (section 4.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Ecology and Biodiversity assessment (section 4.5);
  - vi. A description of mitigation measures included for the purposes of the Ecology and Biodiversity assessment reported within the PEI Report (section 4.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Ecology and Biodiversity effects arising during construction and operation of the Project within Section 3, based upon the assessment completed to date (section 4.7); and
  - viii. An outline of the likely monitoring requirements in relation to Ecology and Biodiversity (section 4.8).
- 4.1.2 Further supporting information is set out in **Table 4.1** below, including supporting figures and technical appendices.

Table 4.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<p><b>Figure 4.1 Sites Statutorily designated for their International Biodiversity Importance</b></p> <p><b>Figure 4.2 Sites Statutorily designated for their National and County Biodiversity Importance</b></p> <p><b>Figure 4.3 Sites Non Statutorily designated for their County Biodiversity Importance</b></p>
PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-24	Reports the suite of bird survey data collected at the time of the PEI Report production, including species recorded and counts.
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of national and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	A summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.

Supporting Information	Description
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

4.1.3 There are interrelationships between the potential effects on Ecology and Biodiversity and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:

- i. **PEI Report Volume 2 Part B Section 3 Chapter 6 Water Environment** and Flood Risk includes an assessment of effects upon sensitive surface water features, including Water Framework Directive (WFD) waterbodies, which are relevant to the assessment of impacts upon important ecological features, such as wetland Habitats of Principal Importance (HPI) and aquatic fauna.
- ii. **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology** includes effects identified by the geology and hydrogeology assessment that may affect ecological **receptors**.
- iii. **PEI Report Volume 2 Part B Section 3 Chapter 8 Agriculture and Soils** includes details of Agri-environment and Woodland and Forestry schemes, as well as relevant factors related to soil ecosystem services.
- iv. **PEI Report Volume 2 Part B Section 3 Chapter 10 Noise and Vibration** includes detail of the potential noise and vibration effects within Section 3 which are used to inform assessment of effects upon sensitive ecological features.
- v. **PEI Report Volume 2 Part B Section 3 Chapter 12 Air Quality** includes supporting detail on the potential impacts of any changes in air quality upon sensitive ecological features, such as designated sites and ancient woodland.
- vi. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported or all topics, based upon the preliminary assessment.
- vii. **PEI Report Volume 2 Part C Route-wide Chapter Ecology and Biodiversity** presents a summary of the route-wide preliminary impacts and likely significant effects of the Project upon the ecology and biodiversity.
- viii. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 4.2 Legislation and Policy Framework

### Legislation and National Policy

- 4.2.1 Legislation and national policy relevant to the Project and this chapter are described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** and supporting appendices, detail of which are set out in **Table 4.1**.

### Regional and Local Policy

- 4.2.2 Regional and local plans or policies relevant to this assessment are as follows:
- i. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 1):
    - Strategy Policy 24 (SP24) - Biodiversity and Geodiversity: which stipulates that development proposals should seek to protect and enhance biodiversity and geodiversity value of land, minimise fragmentation and maximise opportunities for connection between natural habitats.
    - Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy: which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation to sites or features of biodiversity or geodiversity importance, or protected species.

### Biodiversity Net Gain

- 4.2.3 National Grid Electricity Transmission plc (National Grid) has committed to 10 per cent net gain in environmental value, including as a minimum 10 per cent Biodiversity Net Gain (BNG) across all its construction projects, in line with the Environment Act 2021 (although the statutory requirement is not yet in force for Nationally Significant Infrastructure Projects (NSIPs)).

## 4.3 Scope of Assessment

- 4.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 1) provided by the Planning Inspectorate on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Ecology and Biodiversity chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 4.3.2 Non statutory consultation feedback has been addressed in the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 4.3.1 The scope of the Ecology and Biodiversity assessment for Section 3 includes consideration of the effects of construction and operation/maintenance of the Project. A summary of the sensitive receptors and potential impacts considered is provided below:

- i. Sites statutorily designated for their biodiversity value – habitat loss, habitat modification/degradation, fragmentation, and direct and indirect changes in surface water quality and quantity, and effects on qualifying features/notified species;
- ii. Sites non-statutorily designated for their biodiversity value – habitat loss, habitat modification/degradation, fragmentation and direct and indirect changes in surface water quality and quantity, and effects on qualifying features/notified species;
- iii. Ancient Woodland - habitat loss, habitat modification and fragmentation and change in surface water quality and air quality;
- iv. Aquatic and terrestrial habitats present within the Ecology and Biodiversity Study Area, including HPI - habitat loss, habitat modification, fragmentation and change to surface water quality or flows;
- v. Protected or notable species (e.g. Species of Principal Importance (SPIs)) which are either confirmed present or potentially present within the Section 3 Survey Area which could be impacted through habitat loss or degradation, disturbance (e.g. due to noise or light pollution) or killing/injury. Species considered are:  
 terrestrial invertebrates;  
 great crested newt;  
 reptiles;  
 wintering birds;  
 breeding birds;  
 badger;  
 bats;  
 otter;  
 water vole;  
 fish;  
 aquatic macroinvertebrates and macrophytes; and  
 other notable species.
- vi. invasive non-native species (INNS) – risk of spread due to construction and operational/maintenance activities and influence of presence upon habitat condition.

## 4.4 Assessment Methodology

- 4.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Ecology and Biodiversity assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components of the assessments, assumptions and limitations is outlined below.

- 4.4.2 The Ecology and Biodiversity assessment is being undertaken principally with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal and Marine (Ref 4).
- 4.4.3 Where possible, nationally recognised standard survey methods have and will continue to be used to inform biodiversity evaluation and impact assessment. The explanation of the methods and status of surveys are summarised in Table 4.1 in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 4.4.4 The current assessment presented in this PEI Report is preliminary and is likely to be subject to change as more detailed baseline data becomes available, such as completed ecological survey results. Additionally, the design will also be subject to further refinement prior to submission of the ES. On this basis, a precautionary approach has been taken to the preliminary assessment.

## Assessment Assumptions and Limitations

- 4.4.5 All general assumptions and limitations for Ecology and Biodiversity are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 3.
- 4.4.6 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions applicable to the full assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 4.5 Baseline Conditions

### Study Areas and Survey Areas

- 4.5.1 The desk Study Areas for the Ecology and Biodiversity assessment of Section 3 have been informed by published guidance and professional judgement. They include the area within the draft Order Limits and a wider zone of potential influence. This zone represents the areas within which effects could reasonably occur as a result of the Project and associated activities. It should be noted that in relation to each assessed receptor, the Project's zone of influence can vary, for example depending on the importance or sensitivity of the identified designated ecological sites. This could for example relate to where the features that define a given site are mobile or there could be connectivity between the proposed Project and a given site. The Study Areas will be reviewed and, as appropriate, refined for the assessment presented in the ES.
- 4.5.2 The desk Study Areas for different ecological features (referred to as 'the Study Areas') relevant to this assessment are set out in **Table 4.2** below.
- 4.5.3 The field Survey Areas for the Ecology and Biodiversity assessment of Section 3 have also been informed by published guidance and professional judgement. As with the desk Study Area, the Survey Areas are defined on a case-by-case basis and differ for each of the ecological features surveyed. The Survey Areas typically include land within the draft Order Limits (i.e. within the 'Site' boundary) plus wider areas



within the Zone of Influence (Zol), where the Project could result in impacts upon habitats or species.

- 4.5.4 The field Survey Areas for different ecological features (hereafter referred to as ‘the Survey Areas’) relevant to this assessment, including associated methods and status of surveys, are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.

Table 4.2 Study Areas for key ecological features for Section 3

Study Area (distance from Section 3 draft Order Limits)	Feature
30 km	Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites where bats or bird species with large foraging ranges are noted as, or one of, the qualifying features.
10 km	Statutory designated sites of international nature conservation importance e.g. SAC, SPA and Ramsar sites (as well as proposed or potential sites).
5 km	Statutory designated sites of up to national conservation importance e.g. Sites of Special Scientific Interest (SSSI) (also referencing Natural England Impact Risk Zones for SSSIs on the ‘Multi-Agency Geographic Information for the Countryside’ (MAGIC) website (Ref 5), National Nature Reserves (NNR) and Local Nature Reserves (LNRs)).
5 km	Specific ornithological records and data for wetland birds from the British Trust for Ornithology (BTO) Wetland Birds Survey (WeBS).
2 km	Non-statutory designated sites of nature conservation value e.g. Local Wildlife Sites (LWS), Roadside Nature Reserves (RNR), ancient woodland and other notable habitats (e.g. HPI’s(Ref 6)).
2 km	Records of protected and notable species received from Local Environmental Records Centres (LERC), including general ornithological records and INNS.

Data Collection

- 4.5.5 Desk study data sources have comprised LERCs, including requests to Greater Lincolnshire Nature Partnership (GLNP) (initially contacted in March 2024) for information on pre-existing ecological data (i.e. locations of non-statutory sites designated for nature conservation, existing records of protected/notable species and INNS).
- 4.5.6 Online data resources have comprised:
- i. the Natural England website (Ref 7) for information on statutory designated sites of nature conservation interest;
  - ii. the MAGIC website (Ref 5) to identify the location (and details) of statutorily designated sites, ancient woodland, HPIs (including Priority River Habitat) and for any granted European Protected Species Licence applications;

- iii. the Joint Nature Conservation Committee (JNCC) website (Ref 8) for site information and designation details of SACs, SPAs and Ramsar sites;
- iv. aerial imagery (Google Maps);
- v. Environment Agency Ecology and Fish Data for species records of fish, macroinvertebrate and macrophytes species (Ref 9); and
- vi. Environment Agency Catchment Data Explorer for data on WFD water bodies and water catchments (Ref 10).

4.5.7 In addition to these desk-based data, field survey data are in the process of being collected, and this work is on-going. Apart from pre-construction surveys and those specifically required to collect data to inform any applications for protected species licences, these surveys are anticipated to be complete by the end of 2025. Once planned surveys to support the DCO application are complete, results will be collated with the survey data already collected to date, for inclusion within the ES to be submitted with the DCO application (see **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** for a summary of surveys undertaken and those planned for 2025).

4.5.8 Features of ecological importance are in the process of being assessed. The data available at the time of writing this PEI Report varies for any given ecological feature, dependent on the extent of surveys undertaken. This is due to specific survey requirements (such as optimal timing of surveys) and/or where only partial access to land has been secured in advance of the PEI Report being developed. The survey data being collected is as follows:

- i. Habitat survey using the UK Habitat (UKHab) Classification for terrestrial habitats (Ref 11) and BNG condition assessments for applicable habitats.
- ii. Aquatic habitat surveys results, including an appraisal for suitability for fish, aquatic macrophytes and aquatic macroinvertebrates.
- iii. Results from protected species surveys:
  - great crested newt;
  - reptiles;
  - wintering birds;
  - breeding birds;
  - badger;
  - bats;
  - otter; and
  - water vole.
- iv. INNS surveys.

4.5.9 Incidental records of other notable species such as brown hare and hedgehog have also been recorded.

4.5.10 In addition to the above, arboricultural surveys are being undertaken in 2025. The results of which will be integrated into the ecological data collected for habitats (i.e. hedges, trees and woodland) and included within the ES.

## Existing Baseline

- 4.5.11 The following section outlines the Ecology and Biodiversity baseline based upon the ecological data obtained to date. The baseline section should be read in conjunction with the following supporting figures and appendices as found within PEI Report **Volume 2** and **Volume 3** respectively.
- i. PEI Report Volume 2 Part B Section 3 Figure 4.1 Sites Statutorily designated for their International Biodiversity Importance;
  - ii. PEI Report Volume 2 Part B Section 3 Figure 4.2 Sites Statutorily designated for their National and County Biodiversity Importance;
  - iii. PEI Report Volume 2 Part B Section 3 Figure 4.3 Sites Statutorily designated for their Local Biodiversity Importance; and
  - iv. PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-2024.

### Section Overview

- 4.5.12 A description of the works within Section 3 is provided within **PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project**. In summary, Section 3 includes the construction of the New LCS A and the New LCS B which are located north west and north east of Alford, respectively; and a new 400 kv overhead line of approximately 5.1 km in total, from north to south of the Section.
- 4.5.13 The habitats within the Section 3 Study Area are dominated by arable fields with boundary hedgerows and ditches. Section 3 intersects a number of these boundary hedgerows and ditches including Woldgrift Drain which is an Environment Agency Main River. The majority of and within the draft Order Limits of Section 3 is below 30 m above sea level.

### Designated sites

- 4.5.14 No site (nor part of any site) statutorily designated for its biodiversity value is present within the draft Order Limits for Section 3. There are however a number of statutory designated sites present within the defined Study Areas described in **Table 4.2**. A brief description of each of the designated sites within the Section 3 Study Area is provided in **Table 4.3**, which includes a summary of the main qualifying features and their relative distances from the Section 3 draft Order Limits at the closest point.
- 4.5.15 The Greater Wash SPA, Humber Estuary SPA, SAC, Ramsar site and the Saltfleetby-Theddlethorpe Dunes (and Gibraltar Point) SAC fall within 10 km of the draft Order Limits of Section 3. In addition, The Wash SPA, Ramsar site, where bird species with large foraging ranges are qualifying features, fall within 30 km of the draft Order Limits.
- 4.5.16 There are five SSSIs (Calceby Marsh, Hoplands Wood, Swaby Valley and Willoughby Meadow) and two LNRs (South Thoresby Warren and Willoughby Branch Line) within the Study Area within 5 km of the draft Order Limits and/or where the Impact Risk Zone (IRZ's) overlap. The IRZ's for Calceby Marsh SSSI, Swaby Valley SSSI and Theddlethorpe Dunes SSSI partially overlap with the Section 3 draft Order Limits.

- 4.5.17 There are 13 sites non-statutory designated for their biodiversity value as Local Wildlife Sites (LWSs) and Roadside Nature Reserves (RNRs) within the 2 km Study Area, one of which is located within the draft Order Limits of Section 3, Mother and Greenfield Woods LWS. This site is directly adjacent the New LCS A at the north-western extent of Section 3.

Table 4.3 Sites designated for their biodiversity value, their qualifying features and distance from the draft Order Limits of Section 3

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
<b>Internationally Designated (Statutory)</b>				
Gibraltar Point	SPA	422.2	Qualifying features of the SPA: <ul style="list-style-type: none"> <li>• Sanderling (<i>Calidris alba</i>) – non-breeding</li> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding</li> <li>• Grey plover (<i>Pluvialis squatarola</i>) – non-breeding</li> <li>• Little tern (<i>Sternula albifrons</i>) - breeding</li> </ul>	17.9 km south east
Gibraltar Point	Ramsar site	414.1	Designated under: <p><b>Ramsar Criterion 1:</b> Coastal dunes and saltmarsh habitats, including freshwater marsh.</p> <p><b>Ramsar Criterion 2:</b> Wetland invertebrate assemblage</p> <p><b>Ramsar Criterion 5:</b> Assemblages of international importance Species with peak counts in winter</p> <p>53072 waterfowl (5 year peak mean 1998/99-2002/2003)</p> <p><b>Ramsar Criterion 6:</b> Species/populations occurring at levels of international importance.</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> <li>• Grey plover (<i>Pluvialis squatarola</i>) - Wintering</li> <li>• Sanderling (<i>Calidris alba</i>)</li> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>)</li> <li>• Species with peak counts in winter:</li> <li>• Dark-bellied brent goose (<i>Branta bernicla bernicla</i>)</li> </ul>	17.9 km south east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p>Species/populations identified subsequent to designation for possible future consideration under Criterion 6.</p> <ul style="list-style-type: none"> <li>• Red knot (<i>Calidrus canutus islandica</i>) - Wintering</li> </ul>	
Greater Wash	SPA	344,267	<p>Qualifying features of the SPA:</p> <ul style="list-style-type: none"> <li>• Common scoter (<i>Melanitta nigra</i>) – non-breeding</li> <li>• Common tern (<i>Sterna hirundo</i>) – breeding</li> <li>• Little gull (<i>Hydrocoloeus (Larus) minutus</i>) – non-breeding</li> <li>• Little tern (<i>Sternula albifrons</i>) – breeding</li> <li>• Red-throated diver (<i>Gavia stellata</i>) – non-breeding</li> <li>• Sandwich tern (<i>Thalasseus sandvicensis</i>) - breeding</li> </ul>	5.9 km east
Humber Estuary	SPA	37,630.24	<p>Qualifying features of the SPA:</p> <ul style="list-style-type: none"> <li>• Avocet (<i>Recurvirostra avosetta</i>) – breeding</li> <li>• Avocet (<i>Recurvirostra avosetta</i>) – non-breeding</li> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding</li> <li>• Bittern (<i>Botaurus stellaris</i>) – breeding</li> <li>• Bittern (<i>Botaurus stellaris</i>) – non-breeding</li> <li>• Black-tailed godwit (<i>Limosa limosa islandica</i>) – non-breeding</li> <li>• Dunlin (<i>Calidris alpina alpina</i>) – non-breeding</li> <li>• Golden plover (<i>Pluvialis apricaria</i>) – non-breeding</li> <li>• Hen harrier (<i>Circus cyaneus</i>) – non-breeding</li> <li>• Knot (<i>Calidris canutus</i>) – non-breeding</li> <li>• Little tern (<i>Sternula albifrons</i>) – breeding</li> <li>• Marsh Harrier (<i>Circus aeruginosus</i>) – breeding</li> <li>• Redshank (<i>Tringa totanus</i>) – non-breeding</li> </ul>	9 km north east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> <li>• Ruff (<i>Calidris pugnax</i>) – non-breeding</li> <li>• Shelduck (<i>Tadorna tadorna</i>) – non-breeding</li> <li>• Waterbird assemblage</li> </ul>	
Humber Estuary	Ramsar site	37,630.24	<p>Designated under:</p> <p><b>Ramsar Criterion 1:</b> Near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons.</p> <p><b>Ramsar Criterion 3:</b></p> <ul style="list-style-type: none"> <li>• Grey seal (<i>Halichoerus grypus</i>) – breeding</li> <li>• Natterjack toad (<i>Epidalea calamita</i>)</li> </ul> <p><b>Ramsar Criterion 5:</b> Assemblages of international importance:</p> <p>153,934 waterfowl, non-breeding season (5 year peak mean 1996/1997-2000/2001)</p> <p><b>Ramsar Criterion 6:</b> Species/populations occurring at levels of international importance</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> <li>• Black-tailed godwit (<i>Limosa limosa</i>) - Passage</li> <li>• Dunlin (<i>Calidris alpina</i>)</li> <li>• Golden plover (<i>Pluvialis apricaria</i>)</li> <li>• Knot (<i>Calidris canutus</i>) – Wintering</li> <li>• Redshank (<i>Tringa totanus</i>)</li> <li>• Species with peak counts in winter:</li> <li>• Golden plover (<i>Pluvialis apricaria</i>)</li> <li>• Redshank (<i>Tringa totanus</i>)</li> <li>• Knot (<i>Calidris canutus</i>) – Wintering</li> </ul>	9 km north east



Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> <li>• Shelduck (<i>Tadorna tadorna</i>)</li> <li>• Dunlin (<i>Calidris alpina</i>)</li> <li>• Black-tailed godwit (<i>Limosa limosa</i>)</li> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>)</li> </ul> <p><b>Ramsar Criterion 8:</b> river lamprey (<i>Lampetra fluviatilis</i>) and sea lamprey (<i>Petromyzon marinus</i>)</p>	
Humber Estuary	SAC		<p>Designated for Annex I habitats:</p> <ul style="list-style-type: none"> <li>• H1110 Sandbanks which are slightly covered by sea water all the time</li> <li>• H1130 Estuaries</li> <li>• H1140 Mudflats and sandflats not covered by seawater at low tide</li> <li>• H1150 Coastal lagoons</li> <li>• H1310 Salicornia and other annuals colonising mud and sand</li> <li>• H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</li> <li>• H2110 Embryonic shifting dunes</li> <li>• H2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('White dunes')</li> <li>• H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')</li> <li>• H2160 Dunes with <i>Hippophae rhamnoides</i></li> </ul> <p>Designated for Annex II species:</p> <ul style="list-style-type: none"> <li>• S1095 Sea lamprey (<i>Petromyzon marinus</i>)</li> <li>• S1099 River lamprey (<i>Lampetra fluviatilis</i>)</li> <li>• S1364 Grey seal (<i>Halichoerus grypus</i>)</li> </ul>	9 km north east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Saltfleetby-Theddlethorpe Dunes (and Gibraltar Point)	SAC	968	Qualifying features of the SAC: <ul style="list-style-type: none"> <li>• H2110 Embryonic shifting dunes</li> <li>• H2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('White dunes')</li> <li>• H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')</li> <li>• H2160 Dunes with <i>Hippophae rhamnoides</i></li> <li>• H2190 Humid dune slacks.</li> </ul>	9 km north east
The Wash	SPA	63,135	Qualifying features of the SPA: <ul style="list-style-type: none"> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding</li> <li>• Bewick's swan (<i>Cygnus columbianus</i>) – non-breeding</li> <li>• Black-tailed godwit (<i>Limosa limosa islandica</i>) – non-breeding</li> <li>• Common scoter (<i>Melanitta nigra</i>) – non-breeding</li> <li>• Common tern (<i>Sterna hirundo</i>) - breeding</li> <li>• Curlew (<i>Numenius arquata</i>) – non-breeding</li> <li>• Dark-bellied brent goose (<i>Branta bernicla bernicla</i>) – non-breeding</li> <li>• Dunlin (<i>Calidris alpina alpina</i>) – non-breeding</li> <li>• Gadwall (<i>Mareca strepera</i>) – non-breeding</li> <li>• Wigeon (<i>Mareca penelope</i>) – non-breeding</li> <li>• Goldeneye (<i>Bucephala clangula</i>) – non-breeding</li> <li>• Grey plover (<i>Pluvialis squatarola</i>) – non-breeding</li> <li>• Knot (<i>Calidris canutus</i>) – non-breeding</li> <li>• Little tern (<i>Sterna albifrons</i>) - breeding</li> </ul>	19.9 km south east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> <li>• Oystercatcher (<i>Haematopus ostralegus</i>) – non-breeding</li> <li>• Pink-footed goose (<i>Anser brachyrhynchus</i>) – non-breeding</li> <li>• Pintail (<i>Anas acuta</i>) – non-breeding</li> <li>• Redshank (<i>Tringa totanus</i>) – non-breeding</li> <li>• Sanderling (<i>Calidris alba</i>) – non-breeding</li> <li>• Shelduck (<i>Tadorna tadorna</i>) – non-breeding</li> <li>• Turnstone (<i>Arenaria interpres</i>) – non-breeding</li> <li>• Waterbird assemblage</li> </ul>	
The Wash	Ramsar site		<p>Designated under:</p> <p><b>Ramsar Criterion 1:</b> Large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.</p> <p><b>Ramsar Criterion 3:</b> Inter-relationship between saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary.</p> <p><b>Ramsar Criterion 5:</b> Assemblages of international importance</p> <p>Species with peak counts in winter:</p> <p>292541 waterfowl (5 year peak mean 1998/99-2002/2003)</p> <p><b>Ramsar Criterion 6</b> – species/populations occurring at levels of international importance.</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> <li>• Oystercatcher (<i>Haematopus ostralegus</i>) – Wintering</li> </ul>	19.9 km south east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> <li>• Grey plover (<i>Pluvialis squatarola</i>) - Wintering</li> <li>• Knot (<i>Calidris canutus</i>) – Wintering</li> <li>• Sanderling (<i>Calidris alba</i>)</li> <li>• Curlew (<i>Numenius arquata arquata</i>) – Breeding</li> <li>• Redshank (<i>Tringa totanus</i>)</li> <li>• Turnstone (<i>Arenaria interpres</i>)</li> </ul> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> <li>• Pink-footed goose (<i>Anser brachyrhynchus</i>)</li> <li>• Dark-bellied brent goose (<i>Branta bernicla</i>)</li> <li>• Shelduck (<i>Tadorna tadorna</i>)</li> <li>• Pintail (<i>Anas acuta</i>)</li> <li>• Dunlin (<i>Calidris alpina</i>)</li> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>)</li> </ul> <p>Species/populations identified subsequent to designation for possible future consideration under Criterion 6</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> <li>• Ringed plover (<i>Charadrius hiaticula</i>)</li> <li>• Black-tailed godwit (<i>Limosa limosa islandica</i>)</li> </ul> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> <li>• Golden plover (<i>Pluvialis apricaria</i>)</li> <li>• Northern lapwing (<i>Vanellus vanellus</i>) – Breeding</li> </ul>	
<b>Nationally Designated (Statutory)</b>				
Calceby Marsh	SSSI	10.8	Calceby Marsh is of national importance as an outstanding example of a base-rich marsh. This habitat type typically follows the distribution of calcareous springlines and streams, in this case Calceby Beck, a	3.6 km south west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			Lincolnshire Wolds chalk stream. Such areas of base-rich marsh are becoming increasingly scarce in the county, as elsewhere in England, through the effects of drainage and other agricultural improvements. The site consists of 3 areas of marshland each differing slightly in species composition. They are surrounded by tussocky neutral grassland which is of value to breeding snipe ( <i>Gallinago gallinago</i> ) and lapwing ( <i>Vanellus vanellus</i> ). The site has been well surveyed for moths with at least 4 notable species recorded. The site is one of the few stations in the county, outside the Cambridgeshire Fens, where marsh moth ( <i>Athetis pallustris</i> ) occurs.	
Hoplands Wood	SSSI	14.4	One of the best remaining examples of oak ( <i>Quercus robur</i> )/ash ( <i>Fraxinus excelsior</i> ) ancient woodland in north Lincolnshire. It is characterised by a local abundance of alder ( <i>Alnus glutinosa</i> ) and a mosaic of tree species perpetuated by a long history of woodland management promoting both high forest and coppice-with-standards. This favours a rich and varied ground flora and breeding bird community. Of two hundred species of moths recorded the buttoned snout ( <i>Hypena rostralis</i> ) is notable. Breeding birds include woodcock, tawny owl ( <i>Strix aluco</i> ), greater spotted woodpecker ( <i>Dendrocopos major</i> ), tree creeper ( <i>Certhia familiaris</i> ) and four species of warblers.	4.8 km south west
Swaby Valley	SSSI	3.5	This glacial overflow valley supports two habitats now scarce in Lincolnshire - floristically diverse, lime-rich marsh and unimproved chalk turf. The marsh borders a stream bisecting the valley floor and the interest of the grassland is increased by the terraced nature of the slopes. Amongst the dominant tor-grass ( <i>Brachypodium pinnatum</i> ) are typical chalk herbs including salad burnet ( <i>Sanguisorba minor</i> ) and burnet saxifrage ( <i>Pimpinella</i>	4.1 km south west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p><i>saxifraga</i>). A feature of the north facing slope is the number of common spotted and pyramidal orchids (<i>Dactylorhiza fuchsia</i>) and (<i>Anacamptis pyramidalis</i>). Scattered hawthorn scrub provides structural diversity and sheltered conditions for up to 15 species of butterfly. Hard and jointed rushes (<i>Juncus inflexus</i>) and (<i>J. articulatus</i>) dominate the marsh providing cover for breeding snipe.</p>	
Saltfleetby-Theddlethorpe Dunes	SSSI		<p>This is a nationally important site and includes flats, dunes, salt and freshwater marsh which combined supports an exceptionally rich flora and fauna. There are outstanding assemblages of vascular plants, invertebrates and breeding birds and it is the most north-easterly breeding site in Britain for the natterjack toad (<i>Epidalea calamita</i>). The rapid accretion of dunes and saltmarsh make this an important site for research into the processes of coastal development. The intertidal sands and muds provide extensive feeding and roosting grounds for wildfowl and waders. Both the salt and freshwater marsh provide opportunities for breeding birds including warblers, water rail (<i>Rallus aquaticus</i>), snipe and yellow wagtail (<i>Motacilla flava</i>). Around the freshwater marsh natterjack toads breed along with other amphibians and the open water within ponds and dykes allow dragonflies to breed. At the interface between freshwater marsh and dunes, southern (<i>Dactylorhiza praetermissa</i>) and early marsh orchids (<i>D. incarnata</i>) are found in abundance. In the absence of grazing the dunes become dominated by scrub of sea buckthorn (<i>Hippophae rhamnoides</i>), hawthorn (<i>Crataegus monogyna</i>), wild privet (<i>Ligustrum vulgare</i>) and elder (<i>Sambucus nigra</i>), all frequented by migrant birds. Invertebrates recorded</p>	9 km north east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			include several notable moths and nationally rare species from the Lepidoptera and Coleoptera orders.	
Willoughby Meadow	SSSI	0.52	This meadow is the best example of the permanent unimproved neutral grassland once common over Lincolnshire Middle Marsh boulder clay. Well over one hundred species have been recorded from its small acreage. Surrounded by hedgerows, this field is still managed by the traditional means of taking a hay crop followed by grazing. Two small ponds are located at the field's edge. The turf is dominated by red and meadow fescues and ( <i>F. pratensis</i> ) along with sweet vernal grass and creeping bent ( <i>Agrostis stolonifera</i> ). Others amongst the twenty-seven different kinds of grass present are quaking grass ( <i>Briza media</i> ) and heath grass ( <i>Danthonia decumbens</i> ). Herbs are abundant within the sward.	5 km south west
South Thoresby Warren	LNR	12.43	Early successional grassland with young plantation. This former landfill site has been transformed into an area for both people and wildlife.	4.4 km south west
Willoughby Branch Line	LNR	6.24	The reserve is part of a disused branch railway line (taken up 1971) from Willoughby to Mablethorpe. The site is now made up of ash, hawthorn scrub and grassland that supports a range of flora and fauna such as birds and butterflies.	2.3 km south east
<b>County Designated (Non-statutory)</b>				
Disused Railway North of Swinn Wood	LWS	N/A	Disused railway with lowland mixed deciduous woodland and lowland calcareous grassland habitats	1.4 km north west
Grange Plantation, Aby	LWS	3.4	Disused railway with lowland mixed deciduous woodland and lowland calcareous grassland habitats	1.1 km north west



Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Great Eau	LWS	N/A	River habitat with lowland meadows and coastal and floodplain grazing marsh along its banks. Runs next to Withern lngs LWS which comprises lowland fens habitat.	1.7 km north
Hoppers holt	LWS	1.4	Woodland area of lowland mixed deciduous woodland habitat.	0.9 km north
Moors Wood, Aby	LWS	0.7	Ancient woodland dominated by ash ( <i>Fraxinus excelsior</i> )	2 km north west
Mother and Greenfield Woods	LWS	48.4	Ancient/semi ancient woodland area of lowland mixed deciduous woodland habitat. Mix of Ancient and ancient replanted woodland.	Directly borders the Section 3 draft Order Limits
Oak Plantation, Woodthorpe	LWS	1.0	Woodland area of lowland mixed deciduous woodland habitat.	0.8 km north east
Rigsby Wood	LWS	15.3	Woodland, a broad main ride, running and standing water, and a network of paths. A wide range of woodland and wetland plants is present, as well as associated birds and other fauna.	2 km
Swinn Wood	LWS	25.0	Ancient woodland area of lowland mixed deciduous woodland habitat.	1.1 km west
Swinn Wood	RNR	N/A	Road verge running adjacent to woodland	1.5 km west
Swinn Wood Road Verges	LWS	N/A	Road verge running adjacent to woodland	1.5 km west
The Browse	LWS	5.2	Woodland area of lowland mixed deciduous woodland habitat.	0.5 km north
Withern wood	LWS	4.6	Ancient woodland area of lowland mixed deciduous woodland habitat.	1.8 km north

## Habitats

### Habitats of Principal Importance

4.5.18 The following HPI have been identified within the Study Area:

- i. Coastal and Floodplain Grazing Marsh;
- ii. Woodland (potentially priority habitat if it meets HPI criteria); and
- iii. Priority River Habitat: Headwater areas.

### Ancient Woodland

4.5.19 An area of Ancient Woodland was recorded within the Study Area for Section 3, Hornby/Mother Woods, which lies on the western edge of the draft Order Limits within the Mother and Greenfield Woods LWS (**Table 4.3**) directly adjacent to the proposed site of the New LCS A.

4.5.20 This woodland is an irreplaceable habitat and is of National importance.

### Terrestrial habitats

4.5.21 Where the UKHab surveys have been completed within the Section 3 Survey Area, the primary habitat type was cropland, which is of negligible ecological importance.

4.5.22 The surrounding hedgerows provide important connectivity through the landscape and are therefore considered to be of Local importance.

4.5.23 Small woodland parcels are located adjacent to the draft Order Limits in the north of Section 3. Lowland mixed deciduous woodland is an HPI, however not all of the woodland parcels will meet the HPI criteria.

4.5.24 Modified grassland of negligible importance is present at the proposed site of the New LCS A.

4.5.25 Survey work will continue in 2025, to characterise the terrestrial habitat types which are present within the Section 3 Survey Area, their constituent flora and fauna, and to confirm the condition of relevant habitats. Survey findings will inform the design of appropriate mitigation and the assessment of impacts and effects to be reported within the ES.

### Aquatic habitats

4.5.26 The Woldgrift Drain Main River, flows south to north across the overhead line route, intersecting the Section 3 draft Order Limits to the north of Bilsby. This watercourse plays a role in local hydrology and provide habitat for aquatic and riparian species and are therefore assessed as being of County importance.

4.5.27 A network of smaller ditches/drains which are of Local importance would also be also traversed along the overhead line route.

4.5.28 No ponds have been identified within the Section 3 draft Order Limits, however approximately 30 ponds are located within the wider Survey Area. These are also considered to be of Local importance.

- 4.5.29 Survey work will continue through 2025, to characterise the aquatic habitat types which are present within the Section 3 Survey Area, their constituent flora and fauna; and to confirm the condition of relevant habitats. Survey findings will inform the details of appropriate mitigation and the assessment of impacts and effects to be reported within the ES.

#### **Water Framework Directive (WFD) waterbodies**

- 4.5.30 Within the Section 3 draft Order Limits, the Project crosses the following WFD waterbodies, both of which are hydrologically linked to the Wash SPA:
- i. Boygrift Drain (GB105029061720); and
  - ii. Woldgrift Drain (GB105029061750).
- 4.5.31 Further details of these WFD waterbodies are provided within **PEI Report Volume 2 Part B Section 3 Chapter 6 Water Environment and Flood Risk**.

#### **Protected and notable species**

- 4.5.32 Surveys are being undertaken following the methodology included within the **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. The extent of planned surveys is based upon the area within the Section 3 draft Order Limits and a wider zone of influence which is also described within this supporting Appendix. As previously stated, survey work for protected and notable species is currently incomplete and will continue through 2025.

#### **Terrestrial invertebrates**

- 4.5.33 The habitats within the Section 3 Survey Area largely comprise agricultural land which is of limited value to terrestrial invertebrates. However, hedgerow and woodland habitats also recorded within the Section 3 draft Order Limits provide potential for a more diverse assemblage of terrestrial invertebrates.
- 4.5.34 Any areas within the Section 3 Survey Area that are identified during the 2024/25 habitat surveys as potentially suitable to support species of conservation concern will be subject to a scoping survey in 2025 to assess their potential importance to invertebrates. Following on from this, targeted surveys would be undertaken if required, to inform the assessments reported in the ES, and any specific mitigation requirements.

#### **Great Crested Newt (GCN)**

- 4.5.35 The desk study records indicate a population of great crested newts (GCN) is present in Swinn Wood, located approximately 1.3 km south west of the new LCS A draft Order Limits.
- 4.5.36 GCN surveys to date have included various waterbodies across several locations within the Section 3 Survey Area, Surveys have specifically included Habitat Suitability Index (HSI) survey and analysing water samples for great crested newt eDNA<sup>1</sup> for ponds.

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<sup>1</sup> eDNA refers to tiny traces of genetic material shed by organisms in their environment. For great crested newts, this could be skin cells left in the water. By collecting water samples and analysing them for newt DNA, their presence or absence from a particular waterbody may be determined.

- 4.5.37 A total of 30 ponds are present within the Survey Area, of which 16 have been surveyed to date. Most ponds surveyed to date returned negative eDNA results, despite some ponds having good or average HSI ratings.
- 4.5.38 The pond at Saleby near St Margaret's Church (approximately 400 m north of the draft Order Limits) tested positive for eDNA, with an average HSI score.
- 4.5.39 No evidence of GCN was found within the remaining 15 ponds surveyed to date within the Survey Area, with the eDNA results returning negative results. One pond remains to be surveyed within the Survey Area at the New LCS B site, approximately 60 m from the draft Order Limits east of Sutton Road. The remaining ponds to be surveyed are located in the central part of Section 3 around Saleby.
- 4.5.40 Seasonal survey work will continue in 2025 to confirm the status of GCN, and the survey results will be used to inform the details of any appropriate mitigation and the assessment of impacts and effects to be presented within the ES.

### Reptiles

- 4.5.41 Desk study research has indicated that there are records for grass snake, located near Bilsby, and slow worm, in the Swinn Wood area, within the Section 3 Study Area.
- 4.5.42 The hedgerow and woodland habitats in the Section 3 Study Area have potential for common reptiles, however the general habitats within the remaining Study Area for Section 3 that are suitable for reptiles appear to be limited in extent, being confined to field boundaries and the margins of ditches. Therefore, as any use of these habitats by reptiles is likely to be localised, any communities within Section 3 are likely to be of no more than Local importance for common reptile species.
- 4.5.43 Survey work will continue in 2025 to inform the full assessment of impacts and effects and the details to be presented within the ES.

### Wintering birds

- 4.5.44 Surveys for wintering birds were carried out within the Section 3 Survey Area between November 2022 and March 2023. Surveys involved monthly vantage point (VP) surveys (November 2022 to March 2023), split walked/driven transects (December 2022 to March 2023), and driven transects (once in January 2023 and in March 2023). The nearest VP for Section 3 was VP13, located south-west of the New LCS B site, near Bilsby on the B1449, which overlapped the southern extent of this Section. Another VP (VP14) partially covered the northern extent of Section 3. Data relevant to Section 3 Order Limits were recorded, including a 500 m buffer to account for the mobility of birds and the limited coverage of survey extents.
- 4.5.45 Within the ornithological survey data for Section 3, the species found to be present in winter (noting limitations on survey coverage) are presented in **PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-24, Table 4A.1**. A range of target species were recorded comprising raptors, gulls and one wader species (lapwing (*Vanellus Vanellus*)). 37 common gull (*Larus canus*) were recorded on the ground, with most other records of species in flight. Three species are Amber listed (Ref 12), with only lapwing being a Section 41 species (Ref 13). As **PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-24, Table 4A.3** summarises, all other species recorded are considered to be of Local importance less.

- 4.5.46 Further avian work was undertaken during winter 2024/25 and will be analysed (along with all of the avian survey data) to inform the design of appropriate mitigation and the assessment of impacts within the ES.

#### Breeding birds

- 4.5.47 Surveys for breeding birds were carried out between March 2024 and July 2024. A total of two transects (Transect 5a and 5b) covered the Section 3 Survey Area.
- 4.5.48 For breeding bird data, the number of territories is derived from a standardised approach for assessing breeding status based upon proximity of observations (including acoustic records) and the distribution of suitable habitat. Data presented represent only those species of conservation concern, as defined by Red or Amber listed species (Ref 12), Section 41 species (Ref 13), and Schedule 1 species of the Wildlife and Countryside Act 1981.
- 4.5.49 Breeding season data showing the species and the numbers of territories recorded from Transects 5a and 5b in Section 3 are presented in **PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-24, Table 4A.2**. Skylark (*Alauda arvensis*) were the most common breeding bird recorded across the surveyed areas within the Section 3 Survey Area. Other farmland specialist species included linnet (*Linaria cannabina*), yellow wagtail (*Motacilla flava*) and yellowhammer (*Emberiza citrinella*). There were seven Amber listed and six Red listed species. Barn owl (*Tyto alba*) was the only Schedule 1 species recorded.
- 4.5.50 The majority of recorded species are considered to be of Local importance. The only species recorded as being of County importance or greater during the breeding season is oystercatcher (*Haemtopus ostralegus*), based upon a combination of survey records, local distribution and Birds of Conservation Concern (BoCC) status (see **PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-24**).
- 4.5.51 Upon assessment of the Year 1 breeding bird survey results, further survey work will be required in 2025. Therefore, the results presented in **PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2022-24** are incomplete. Once available, the full survey results will be presented and assessed within the ES.
- 4.5.52 It is important to note that this section considers the importance of a species in the context of the geographical extent of Section 3 only. An initial route-wide assessment is included in **PEI Report Volume 2 Part C Route-wide Assessment Chapter 3 Ecology and Biodiversity**.

#### Badger

- 4.5.53 Desk study survey records included over 100 records of badger within the Section 3 Study Area. These included recorded setts, and signs of badger activity and badger casualties on roads throughout the area.
- 4.5.54 Surveys for badger were conducted between November 2024 and March 2025 and incidental records of badger field signs have been recorded during other species and habitat surveys.
- 4.5.55 One potential main badger sett was recorded within the Section 3 Study Area. The results of the badger surveys (including the location of the setts) will be presented in a Confidential Appendix to the ES.



- 4.5.56 Given its common status and widespread distribution within the county, badger is assessed as being of Local importance.
- 4.5.57 Surveys are ongoing in 2025 to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

#### Bats

- 4.5.58 Local Records Centre data for the Section 3 Study Area included records of roosting brown long-eared bat (*Plecotus auritus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Natterer's roosts (*Myotis nattereri*) and of these records, only one falls within the Section 3 draft Order Limits (Natterer's).
- 4.5.59 There are no records for existing European Protected Species Mitigation Licences (EPSML) for bats within the Section 3 Study Area.
- 4.5.60 Initial surveys for bats were carried out between May and October 2024.
- 4.5.61 The field surveys completed to date have confirmed that bat species are present within the Section 3 Survey Area. Initial bat activity surveys at the New LCS A site have returned records of common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, *Myotis* sp., brown long-eared bat, Daubenton's (*Myotis daubentonii*), noctule (*Nyctalus noctula*), Nathusius pipistrelle (*Pipistrellus nathusii*) and barbastelle (*Barbastella barbastellus*). Initial bat activity surveys at the New LCS B site have returned records of myotis sp., common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, barbastelle, brown long-eared, noctule bat, Leisler's (*Nyctalus leisleri*) and Daubenton's bat. Initial bat activity surveys along the new overhead alignment between the New LCS A and the New LCS B have returned records of common pipistrelle, soprano pipistrelle, *Nyctalus* sp., Nathusius pipistrelle, Leisler's bat, *Myotis* sp., brown long-eared and barbastelle. These indicate that hedgerows and woodland edges at the New LCS A, the New LCS B and along the New overhead alignment are being utilised by foraging and commuting bats.
- 4.5.62 Survey work was also undertaken in winter 2024/25 and will continue in spring/summer 2025 to confirm the assemblage of foraging and commuting bats, bat roosts, and the status of bats. When planned surveys are complete, results will inform the design of appropriate mitigation and the assessment of impacts and effects will be presented within the ES. It should be noted that at the time of writing this PEI Report, results from the winter 2024/2025 surveys were not available.
- 4.5.63 At this stage no buildings or structures are known to be within the Section 3 draft Order Limits. If any buildings or structures are identified within the Section 3 draft Order Limits and potential impacts to bats are identified, these will be surveyed accordingly.

#### Otter

- 4.5.64 Desk study records included more than 50 records of otter within the Section 3 Study Area. These included sightings of individuals and signs of otter activity including spraints and footprints throughout the area.
- 4.5.65 Initial surveys for otter were carried out between March 2024 and October 2024.
- 4.5.66 Within the Section 3 Survey Area, no breeding or resting sites or field signs of otter were recorded.

- 4.5.67 Where suitable otter habitat exists, surveys will be completed to confirm presence/absence.
- 4.5.68 Given its recovering status and importance within the county, where otter is present, the species is assessed as being of County importance.
- 4.5.69 Survey work will continue in 2025 to inform the assessment of impacts and effects and the details of appropriate mitigation measures will be presented in the ES.

#### Fish

- 4.5.70 Desk study research has identified Environment Agency (EA) records of five notable fish species within the Section 3 Study Area. These are bullhead (*Cottus gobio*), brown/sea trout (*Salmo trutta*), European eel (*Anguilla anguilla*), grayling (*Thymallus thymallus*), and lamprey spp. (*Petromyzontidae*) as presented in **Table 4.4**.
- 4.5.71 Historic EA records of European eel have also been found within the WFD waterbody Woldgrift Drain (GB105029061750) which crosses Section 3.

**Table 4.4** Notable fish species identified within Section 3 Study Area

Common Name	Scientific name	Designation/Status	Importance
European eel	<i>Anguilla anguilla</i>	Global Red List Post 2001 – Critically Endangered, Annex II of the Habitats Directive, Appendix II of the Bonn Convention, UK Biodiversity Action Plan (BAP) 2007, Section 41 NERC Act 2006, Eels (England and Wales) Regulations 2009, Salmon and Freshwater Fishes Act (SAFFA) 1975, OSPAR, European Union and Trade in Wild Fauna and Flora-AB	County, due to the relative scarcity of this species and small population size likely to be affected.
Bullhead	<i>Cottus gobio</i>	Annex II of the Habitats Directive	Local, due to the wide distribution of this species and small population size likely to be affected.
Brown/Sea trout	<i>Salmo trutta</i>	UKBAP 2007, Section 41 NERC Act 2006	County, due to the species being migratory and records found within WFD waterbodies hydrologically linked to Humber Estuary SAC.
Grayling	<i>Thymallus thymallus</i>	Annex V of the Habitats Directive, Appendix III of the Bern Convention, Schedule 4 of Habitats Regulations [The Conservation of	County, due to the species not being scarce or migratory and records not found within WFD waterbodies



Common Name	Scientific name	Designation/Status	Importance
		Habitats & Species Regulations 2017 (as amended)]	hydrologically linked to Humber Estuary SAC
Lamprey spp.	<i>Lampetra spp.</i>	Appendix III of the Bern Convention, Annex II,V of the Habitats Directive, UKBAP 2007 and Section 41 NERC Act 2006 (if river lamprey)	National – migratory species that is a qualifying feature of the hydrologically linked Humber Estuary SAC

4.5.72 Survey work will be undertaken in 2025 to confirm the status of fish within the Section 3 Survey Area and inform the assessment of impacts and effects and the design of appropriate mitigation, which will be presented, with the survey results, in the ES.

#### Aquatic macroinvertebrates

4.5.73 Based upon desk study research (data search), one notable aquatic macroinvertebrate species was recorded within the Section 3 Study Area, the riffle beetle (*Riolus subviolaceus*) as presented in **Table 4.5**.

**Table 4.5** Notable aquatic macroinvertebrate species identified within the Section 3 Study Area

Common Name	Scientific name	Designation/Status	Importance
Riffle Beetle	<i>Riolus subviolaceus</i>	Global Red List Post 2001, Nationally scarce	County, due to relative scarcity of this species.

4.5.74 Survey work will be undertaken in 2025 to confirm the status of aquatic macroinvertebrates within the Section 3 Survey Area and to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented within the ES, along with the completed survey results.

#### Aquatic macrophytes

4.5.75 No notable aquatic macrophyte species have been identified within the Section 3 Study Area.

4.5.76 Survey work will be undertaken in 2025 to confirm the status of aquatic macrophytes within the Section 3 Survey Area and to inform the details of appropriate mitigation measures and the assessment of impacts and effects and the details of appropriate mitigation measures to be presented in the ES.

#### Water vole

4.5.77 Desk study records included over 475 records of water vole within the Section 3 Study Area. These included sightings of individuals and signs of water vole activity including droppings, feeding remains and burrows throughout the area.

- 4.5.78 Initial surveys for water vole were carried out between March 2024 and October 2024.
- 4.5.79 Within the Section 3 Survey Area, none of the surveys completed to date have indicated likely presence of water vole. The majority of ditches surveyed were identified as being unsuitable for water voles due to being dry at the time of survey.
- 4.5.80 Where suitable water vole habitat exists, surveys will be completed to confirm presence/absence. Given its declining status and importance within the county, where water vole is present, the species is assessed as being of County importance.
- 4.5.81 Survey work will continue in 2025 to confirm the status of water vole and to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented within the ES, along with the completed survey results.

#### Other protected and notable species

- 4.5.82 The desk study returned records for brown hare (*Lepus europaeus*) and hedgehog (*Erinaceus europaeus*) within the Section 3 Study Area.
- 4.5.83 Habitats within the Survey Area are suitable for SPI including brown hare, common toad and hedgehog, which are of Local importance.
- 4.5.84 Survey work will continue in 2025 to inform the design of appropriate mitigation and the assessment of impacts and effects presented within the ES.

#### Invasive non-native species

- 4.5.85 Desk study research has identified the presence of a total of 12 INNS plants within the Section 3 Study Area. These are: cotoneaster (*Cotoneaster horizontalis*), Canadian waterweed (*Elodea canadensis*), giant hogweed (*Heracleum mantegazzianum*), Himalayan balsam (*Impatiens glandulifera*), Himalayan cotoneaster (*C. simonsii*), Japanese knotweed (*Reynoutria japonica*), Nuttall's waterweed (*E. nuttallii*), New Zealand pigmyweed (*Crassula helmsii*), parrot's-feather (*Myriophyllum aquaticum*), Japanese rose (*Rosa rugosa*), variegated yellow archangel (*Lamium galeobdolon* subspecies *argenteum*) and Montbretia (*Crocodymia x crocosmiiflora*), all of which are listed under Schedule 9 of the Wildlife and Countryside Act 1981 with the exception of Nuttall's waterweed which is listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. Himalayan balsam, parrot's-feather and giant hogweed are additionally listed under the Invasive Alien Species Order 2019.
- 4.5.86 The desk study also identified the presence of 14 animal INNS within the Section 3 Study Area: ruddy duck (*Oxyura jamaicensis*), Egyptian goose (*Alopochen aegyptiaca*), grey squirrel (*Sciurus carolinensis*), Canada goose (*Branta canadensis*), barnacle goose (*C. leucopsis*), red-crested Pochard (*Netta rufina*), crane (*Grus grus*), Mandarin duck (*Aix galericulata*), snow goose (*Anser caerulescens*), ruddy shelduck (*Tadorna ferruginea*), American mink (*Mustela vison*), American slipper limpet (*Crepidula fornicata*), black rat (*Rattus rattus*) and Muntjac deer (*Muntiacus reevesi*). All of these species are listed on Schedule 9 of the Wildlife and Countryside Act; and Ruddy duck, Egyptian goose, grey squirrel and Muntjac deer are additionally listed on the Invasive Alien Species Order.
- 4.5.87 No specific INNS survey has been undertaken, however field observations have been made during other ecological surveys undertaken within the Survey Area. No INNS have been recorded within the Survey Area to date.

- 4.5.88 Further planned habitat and species surveys, such as those for aquatic habitats and invertebrates, will include the recording of invasive non-native species. The results of these surveys will be presented in the ES.

## Future Baseline

- 4.5.89 The future baseline relates to known or foreseeable changes to the current baseline in the future which will be assessed as part of the Project in the ES. Specifically, it accounts for anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 4.5.90 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information Annex I Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 4.5.91 Habitats within the Section 3 draft Order Limits and Study Area comprise mainly arable farmland currently under cultivation.
- 4.5.92 In addition to the main habitat coverage, field boundaries are commonly defined by hedgerows, ditches and farm tracks.
- 4.5.93 Existing ecological features are unlikely to materially change in the future e.g. cropland, field boundaries, and ditches. Those areas of known change will be assessed, where necessary, as part of the surveys in 2025.
- 4.5.94 Relative to the current baseline, the value of priority ecological features present within or close to the Section 3 draft Order Limits are not expected to change significantly by the end of the construction period. Management of the habitats is unlikely to change over this period, and consequently no significant degradation or improvement of habitat condition is expected.
- 4.5.95 Due to development pressure year on year within the wider landscape, protected and notable species and habitats are likely to remain priorities for conservation within future baseline scenarios.

## 4.6 Design, Control and Additional Mitigation Measures

- 4.6.1 As set out in **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information**, mitigation measures fall into one of three categories: embedded measures; control and management measures; and additional mitigation measures. Those measures relevant to the assessment of effects on important ecological features are set out below.

### Design Mitigation Measures

- 4.6.2 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 14) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 15) which

apply to design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 16) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.

- 4.6.3 The Section 3 draft Order Limits on which this assessment is based have been located to avoid designated sites, HPis and important receptors as far as practicable. This is in accordance with the Planning Inspectorate's Advice on Habitats Regulations Assessment relevant to nationally significant infrastructure projects, (September 2024) (Ref 17), the Habitats Regulations 2017 (Ref 18).
- 4.6.4 Following selection of the preferred route corridor, as outlined in the CPRSS, ecological specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential ecological impacts of the Project. Examples of such measures include the positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.
- 4.6.5 At sensitive crossing locations (e.g. rivers), existing access routes would be used as far as practicable and the width of any required working area minimised. If access upgrades are required, large or sensitive watercourses, for example those designated as main river, and those with WFD status, will be crossed using clear span bridges. Where culverts are unavoidable, these will either be arch culverts, leaving the natural bed undisturbed, or as far as reasonably practicable, they would be installed with the invert set below the natural bed level for a semi-natural bed to establish within the culvert.
- 4.6.6 Wherever practicable, areas of temporary habitat loss will be reinstated back to the type of baseline habitat affected or improved/enhanced. The ES will also include proposals for enhancing existing habitats. Areas of permanent habitat loss will be considered during the siting and design of measures required to achieve a net gain in biodiversity value.

## Control Mitigation Measures

### Construction

- 4.6.7 A Preliminary CoCP is included within **PEI Report Volume 3 Part A Appendix 5A Draft Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the Ecology and Biodiversity assessment are:
- i. GG01: The proposed Project will be compliant with all relevant legislation, consents and permits. (*i.e. The Conservation of Habitats and Species Regulations 2017 and The Wildlife and Countryside Act 1981. See **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** for more detail on relevant legislation, consents and permits*).
  - ii. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works (EnvCoW) will be available during the construction

phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.

- iii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
  - pollution prevention and pollution incident response;
  - dust management and control measures;
  - location and protection of sensitive environmental sites and features;
  - adherence to protected environmental areas around sensitive features;
  - working hours and noise and vibration reduction measures;
  - working with potentially contaminated materials;
  - waste management and storage;
  - flood risk response actions;
  - agreed traffic routes, access points, etc.;
  - soil management; and
  - drainage management.
- iv. GG05: A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities, prior to works commencing. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
- v. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP) and a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (OWSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), Drainage Management Plan (DrMP) along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans'.
- vi. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans
- vii. GG08: Land used temporarily will be reinstated where practicable to its pre-construction condition (including Agricultural Land Classification ((ALC)) grade) and use. Hedgerows, fences, and walls (including associated earthworks and



boundary features) will be reinstated to a similar style and quality to those that were removed, in consultation with the landowner.

- viii. GG09: Where sensitive features such as ancient woodland and protected habitats are to be retained within or immediately adjacent to the Order Limits, an appropriate protective area will be established using appropriate fencing and signage and will be inspected, repaired, and replaced as necessary. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.
- ix. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
- x. GG15: Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. Where practicable, they will be stored >15 m from watercourses, ponds and groundwater dependent terrestrial ecosystems. Where it is not practicable to maintain a >15 m distance, additional measures will be identified. All refuelling, oiling and greasing of construction plant and equipment will take place above drip trays and also away from drains as far as is reasonably practicable. Vehicles and plant will not be left unattended during refuelling. Appropriate spill kits will be made easily accessible for these activities. Potentially hazardous materials used during construction will be safely and securely stored including use of secondary containment where appropriate. Stored flammable liquids such as diesel will be protected either by double walled tanks or stored in a bunded area with a capacity of 110 per cent of the maximum stored volume. Spill kits will be located nearby.
- xi. GG16: Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There will be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of an emergency).
- xii. GG17: Wash down of vehicles and equipment will take place in designated areas within construction compounds. Wash water will be prevented from passing untreated into watercourses and groundwater. Appropriate measures will include use of sediment traps, daily checks and ongoing monitoring.
- xiii. GG19: Earthworks and stockpiled soil will be managed as per the SMP.

4.6.8 The topic specific control and management measures included within the Preliminary CoCP which are relevant to the assessment of effects upon Ecology and Biodiversity are:

- i. B01: The contractor(s) will comply with relevant protected species legislation. Appropriate licences will be obtained where necessary from Natural England for all works affecting protected species as identified by the ES and through pre-construction surveys. All applicable works will be undertaken in accordance with the relevant requirements and conditions set out in those licences.
- ii. B02: In the event that vegetation or any other feature with the potential to support breeding birds is required to be removed during the main breeding bird season (01 March to 31 August) or, in the case of Schedule 1 birds (e.g. barn owl), is likely to be disturbed, then works will be undertaken in the presence or

- supervised by an Ecological Clerk of Works (ECoWs). Appropriate protection measures will be put in place should active nests be found. These will include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the ECoWs. Active nests of wild birds are protected at all times and therefore the same measures will be put in place if an active nest is identified at any time of year.
- iii. B03: Where there will be a risk of animal entrapment, a means of escape will be installed into all excavations left open overnight.
  - iv. B04: To control the spread of invasive weeds in accordance with the Wildlife and Countryside Act 1981, any plant or machinery that has been used in areas contaminated or infested with invasive species (both terrestrial and aquatic), such as Japanese knotweed and Himalayan balsam, will be thoroughly cleaned. Water used to clean vehicles will be discharged or emptied into the contaminated area controlled to prevent the spread of the plant (through plant propagules, e.g. seeds, rhizomes, fragments, etc.). The area will be cordoned off to prevent any inadvertent spreading. Any plant material or soil contaminated with plant propagules if removed from a site is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with Section 34 of the Environmental Protection Act 1990. Further detail will be set out in a Biosecurity Management Plan.
  - v. B05: Subject to the location and scale of impact, suitable habitat for common reptiles will be subject to two-stage habitat manipulation that will take place between mid-March and mid-October. Firstly, vegetation will be cut to approximately 150 mm (with the arisings removed) under the supervision of an Ecological Clerk of Works (ECoW) and the site left for a minimum of two days to allow reptiles to naturally disperse from the area. Secondly, vegetation will be cleared down to ground level under the supervision of an ECoW. Vegetation will be cleared using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of mortality or injuring reptiles. Construction works could commence immediately after completion of the second stage. Reptile hibernacula will be retained and protected during construction where practicable. If unavoidable, the removal of vegetation and groundworks at hibernacula will be timed to avoid the hibernation season (late October to early March). Replacement hibernacula and refugia will be provided prior to clearance of any suitable habitat.
  - vi. B06: Alternative roost structures (bat boxes) will be installed, prior to felling of trees with bat roost potential (with landowner consent), on retained trees within the Order Limits or areas outside of the Order Limits agreed with landowners. Unless specified otherwise by the provisions of any protected species licence for bats, two boxes will be provided for each tree to be felled where Potential Roost Features (PRF) on that tree are classified as PRF-I bat roost potential. Five boxes will be provided for each tree with PRF-M bat roost potential to be felled.
  - vii. B07: Alternative barn owl breeding sites (barn owl boxes) will be installed, prior to removal of nesting sites, (with landowner consent) on retained trees or poles within the Order Limits or areas outside of the Order Limits agreed with landowners.
  - viii. B08: Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are



necessary, 'dead hedging' should be used, where practicable, in the interim periods to retain connectivity during construction. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.

- ix. B09: Habitat translocation or any species translocation (if required) that is not covered by protected species licences will be undertaken in accordance with a strict method statement. The method statement will be specific to the habitat type or species affected and will detail the appropriate construction methods, timing, management, receptor site preparation and post-construction habitat management and monitoring. The receptor site will be clearly identified and prepared in advance of translocation.
- x. B10: Where any in channel watercourse works are required, works will be completed outside of fish spawning season (16 March to 16 June inclusive) and fish migratory seasons (species specific, dependant on the waterbody) subject to likely fish presence confirmed through pre-construction fish surveys.
- xi. B11: Where works require dewatering of waterbodies known to contain fish, fish removal and relocation will be required (which will require appropriate permits such as an FR2 licence from the EA).
- xii. B12: A method statement to ensure works within watercourse crossings include suitable measures to allow the passage of otters, water vole and fish throughout construction (i.e., during fluctuating water levels).
- xiii. B13: In the first instance reasonable avoidance measures will be incorporated to avoid impacting known otter holts/couches, badger setts and/or trees identified as having bat roosting potential and suitable buffer zones implemented.
- xiv. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.
- xv. LV02: The contractor(s) will apply the relevant protective principles set out in British Standard (BS) 5837:2012: Trees in relation to design, demolition, and construction. This will be applied to trees within the Order Limits which will be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. An Arboricultural Clerk of Works (ACoW) will ensure the suitability of tree protection before and during the construction phase. All works to high grade trees, including trees under Tree Preservation Orders and veteran trees, will be undertaken, or supervised by a suitably qualified arboriculturist.
- xvi. LV03: A five-year aftercare period will be established for all reinstatement and mitigation planting, details of which will be set out in the LEMP.
- xvii. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.

- xviii. W01: All works affecting watercourses or within the relevant permitting stand-off distance from the top of bank or landward toe of a flood defence on main rivers and IDB-maintained watercourses will be in accordance with a method approved under consents issued under the Environmental Permitting Regulations 2016, Land Drainage Act 1991, IDB Byelaws (where relevant) or the protective provisions of the DCO for the benefit of the Environment Agency, LLFAs and IDBs . Where possible, a stand-off distance from the top of bank of all watercourses/waterbodies will be established (with the exception of crossings and where existing field access roads are already located adjacent to watercourses are to be utilised). To align with Environment Agency and IDB consenting requirements, it is proposed that this will be: 16 m for tidal main rivers; 8 m for non-tidal main rivers; and 9m for IDB-maintained watercourses. No statutory stand-off distances are specified for ordinary watercourses, but any works liable to cause an obstruction to flow would be subject to consent under the Land Drainage Act 1991. Appropriate stand-off distances should also be implemented where Project construction activities coincide with water supply and sewerage infrastructure. These are to be agreed on a case-by-case basis. For any instances where the stand-off distances stated above cannot be achieved between construction works and watercourses, these works would be subject to the appropriate consent by the relevant drainage authority (FRAP for main rivers, OWC for ordinary watercourses).
- xix. W02: For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will include but not be limited to, where practicable:
- reducing the working width for open cut crossings of a main or ordinary watercourse whilst still providing safe working;
  - installation of a pollution boom downstream of open cut works;
  - the use and maintenance of temporary lagoons, tanks, bunds, silt fences or silt screens as required;
  - have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident;
  - the use of all static plant such as pumps in appropriately sized spill trays;
  - prevent refuelling of any plant or vehicle within 15 m of a watercourse;
  - prevent storing of soil stockpiles within 15 m of a main river;
  - inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and
  - reinstating the riparian vegetation and natural bed of the watercourse, using the material removed when appropriate, on completion of the works and compacting as necessary. If additional material is required, appropriately sized material of similar composition will be used.
- xx. W03: Riverbank and in-channel vegetation will be retained where not directly affected by installation works. Natural substrate will be provided through temporary watercourse crossings culverts.
- xxi. W04: Where watercourses are to be crossed by construction traffic, measures to be applied include the use of temporary culverts or temporary spanned bridges.

Once the temporary culvert is installed, the area above the temporary culvert will be backfilled and construction mats placed over the backfilled area to permit the passage of plant, equipment, materials, and people. Temporary culverts will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge. Specific detailed designs for each watercourse crossing, consistent with these design principles, will be prepared by the construction contractor. These will be subject to the appropriate consent by the relevant drainage authority (Flood Risk Activities Permit from the EA for main rivers, Ordinary Watercourse Consent from the Lead Local Flood Authority or Internal Drainage Board for ordinary watercourses).

- xxii. W05: The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This will particularly be with regard not only to volumes and discharge rates, but also to water quality (particularly suspended solids, pH and hydrocarbons) and will include discharges to land, water bodies or third-party drains/sewers.
- xxiii. W10: Severance of existing land drainage routes, including agricultural field drainage systems would be managed during construction through provision of temporary alternative drainage routes, and these drainage systems would be permanently reinstated to ensure their existing function is maintained.
- xxiv. W11: Appropriate control of runoff from working areas will be achieved through implementation of a DrMP for the construction phase. The DrMP will use sustainable urban drainage systems (SuDS) principles, promoting infiltration of runoff wherever possible and specifying appropriate treatment and attenuation storage to ensure any discharges to watercourses are uncontaminated and limited to greenfield rates. The DrMP will cover all aspects of construction works and temporary infrastructure. Drainage measures will be phased to be completed before the commencement of earthwork operations, in a specific area, and will be retained until the drainage system of the completed Project is fully operational, or site restoration works are completed. This will include the temporary diversion of existing agricultural drainage around working areas, if required, followed by reinstatement on completion of works. At this stage of the design process, preliminary work has already been done to identify runoff treatment and attenuation requirements for temporary access tracks and working areas associated with overhead line construction, including defining potential locations of water treatment areas and discharge outfalls. Further work is required to develop drainage strategies for substations, considering arrangements for both construction and operational phases of the Project, which will be reported as part of the ES chapter and FWRA in submission with the DCO application.
- xxv. The CEMP will include other standard measures relating to ecology such as pre-construction surveys to validate and, where necessary, update the baseline survey findings. The purpose of these pre-construction surveys would be to ensure mitigation during the construction phase is based on the latest protected species information. This would also be required for any protected species licensing.

- 4.6.9 The CEMP will include other standard measures relating to ecology such as pre-construction surveys to validate and, where necessary, update the baseline survey findings. The purpose of these pre-construction surveys would be to ensure mitigation during the construction phase is based on the latest protected species information. This would also be required for any protected species licensing.

### **Operation and maintenance**

- 4.6.10 During the operation and maintenance of the Project, National Grid operatives will be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).
- 4.6.11 Key measures relevant to the control of potential impacts upon ecology and biodiversity during operation and maintenance include:
- i. Minimising pollution risks as far as practicable through the control of hazardous substances, including refuelling of plant and equipment away from drains or watercourses within dedicated areas and the use of secondary containment systems, such as bunds, drip trays and plant nappies;
  - ii. Consultation with the relevant regulatory body where works are required in, around, or that may impact watercourses, or there is a potential impact on local flora and fauna of works near controlled waters;
  - iii. Identifying and notifying the presence of invasive species within the operational areas of the site;
  - iv. Proactively seeking to avoid disturbance to birds during the breeding season, including the use of deterrent measures, acting as early as possible;
  - v. Reviewing the need for licenses, ensuring existing licenses adequately cover the operations and activities planned on sites and ensuring the correct use of and compliance with licenses; and
  - vi. Ensuring that tenancy and land use agreements include requirements to protect, preserve and enhance habitats, biodiversity and ecosystem services.
- 4.6.12 During the operation and maintenance of the Project, National Grid or their appointed Contractor will be required to appoint an ecologist during any maintenance or refurbishment works, to ensure that ecological constraints present at the time will be identified and mitigated accordingly.
- 4.6.13 Additionally, habitats created or enhanced by the Project and embedded within the design, will be managed in accordance with the LEMP.

### **Additional Mitigation**

- 4.6.14 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 4.6.15 Potential additional mitigation measures which may be required to reduce the effects of the Project upon Ecology and Biodiversity are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment.

- 4.6.16 As set out within **PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features**, initial measures within Section 3 include:
- i. Potential skylark mitigation areas (mitigation requirements to be confirmed following surveys); and
  - ii. Potential GCN mitigation areas (mitigation requirements to be confirmed following surveys).
- 4.6.17 Any mitigation or compensation measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with statutory consultees.
- 4.6.18 Finalised additional mitigation or compensation measures will be detailed within the ES.

## 4.7 Preliminary Assessment of Effects

- 4.7.1 The following section presents the findings of the preliminary assessment of effects upon the ecological receptors identified within the Section 3 Study Area, as a result of construction, operational and/or maintenance activities.
- 4.7.2 As discussed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**, only features of local importance and above, where there is the potential for the project to impact them directly or indirectly, have been taken forward to impact assessment. In addition, consideration is given to INNS where in the absence of mitigation there is potential for a legal offence.
- 4.7.3 The conclusions of the preliminary assessment are based upon surveys completed to date and professional judgement of the ecological receptors likely to be present within the Study Area and influenced by the construction, maintenance and/or operation of the Project. The precautionary principle has been applied, such that where information about a particular receptor is incomplete or uncertain, then it significant effects have not been excluded. Therefore, at this stage, most of the ecological receptors identified in the baseline of this PEI Report have been retained in the assessment. The significance of effects reported may be greater than that reported at the ES stage, once all survey data has been collated, the status of these receptors confirmed and all mitigation measures identified. An updated assessment will be included within the ES submitted with the DCO application.
- 4.7.4 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described. This assessment does not take into account the Additional Mitigation Measures at this stage as these are subject to further design refinement and will be informed by stakeholder engagement and the baseline survey findings.
- 4.7.5 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 4.6**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 4.7.6 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and



further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

#### Designated sites

- 4.7.7 The nearest international site is the Greater Wash SPA, located 5.9 km east of the Section 3 draft Order Limits at its closest point. The Humber Estuary SPA, SAC and Ramsar site is located 9 km north east and the Saltfleetby-Theddlethorpe Dunes (and Gibraltar Point) SAC is located 9 km north east of the Section 3 draft Order Limits at its closest point.
- 4.7.8 In addition, the internationally designated Gibraltar Point SPA and Ramsar site and the Wash SPA and Ramsar site (where bird species with large foraging ranges are qualifying features) are present 17.9 km south east and 19.91 km south east of the Section 3 draft Order Limits (respectively) at their closest points.
- 4.7.9 According to Natural England guidance (Ref 19), only those main component species of Internationally designated sites, which have an overlapping IRZ with Section 3 are considered to be functionally linked. 'Functionally linked land' (FLL) is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a Special Areas of Conservation (SAC)/Special Protection Area (SPA)/ Ramsar site has been designated. Given the distances of the draft Order Limits from the identified sites, no direct habitat loss within the designated areas is considered likely. However, impacts through habitat loss, degradation and displacement may occur within FLL, as a result of construction of the Project.
- 4.7.10 Species of the Greater Wash SPA are considered to be coastally dependent and located too far from the Section 3 draft Order Limits, to give rise to any significant effect from disturbance or habitat loss to species associated with FLL. Further assessment is however required, once surveys are completed and data assessed. Therefore, on a precautionary basis, significant effects due to potential disturbance and/or loss of functionally linked habitat cannot be excluded at this stage of the assessment. The potential for likely significant effects (LSE) upon these sites will be assessed within the Report to inform HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.11 The Humber Estuary SPA and Ramsar site include birds as qualifying features and are located approximately 9 km north-east of the draft Order Limits. The IRZ for the SPA and Ramsar site overlaps with the Section 3 draft Order Limits, in relation to primarily wintering pink-footed geese and Bewick's and whooper swan. Further assessment is required once bird surveys are completed and data assessed, to consider potential impacts upon the qualifying species and the waterbird assemblage of these Internationally designated sites. The potential for LSE upon these sites will be assessed within the Report to inform the HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.12 The Humber Estuary SAC and Ramsar site lists river lamprey and sea lamprey as qualifying features which undertake upstream migrations to reach suitable spawning

habitats. Works within or adjacent to watercourses which are hydrologically linked to the Humber Estuary could therefore impact lamprey species, therefore significant effects cannot be excluded at this stage in the assessment.

- 4.7.13 Saltfleetby-Theddlethorpe Dunes (including Gibraltar Point) SAC is designated for its dune habitats. Potential pathways of effect include changes in water quantity, level and flow. The potential for LSE upon these sites will be assessed within the Report to inform HRA, and significant effects cannot be excluded at this stage in the assessment.
- 4.7.14 The Gibraltar Point SPA and Ramsar site include birds as qualifying features. The Project falls beyond the core foraging ranges of all qualifying species, many of which are also more tightly associated with coastal rather than inland FLL and no LSE are anticipated. The potential for changes in hydrology to impact functionally linked habitats will be assessed within the Report to inform the HRA and significant effects cannot be excluded at this stage in the assessment.
- 4.7.15 The Wash SPA and Ramsar site includes birds as qualifying features. Pathways of effect include loss of FLL, noise and visual disturbance in FLL, changes in water quantity, level and flow. The potential for LSE upon these sites will be assessed within the Report to inform the HRA, and significant effects cannot be excluded at this stage in the assessment.
- 4.7.16 The Impact Risk Zones (IRZ's) for the nationally designated Calceby Marsh SSSI (designated for its base-rich marsh), Swaby Valley SSSI (designated for its lime-rich marsh and unimproved chalk turf) and Saltfleetby - Theddlethorpe Dunes SSSI (designated for its flats, dunes, salt and freshwater marsh and rich flora and fauna (including breeding birds)) partially overlap with the Section 3 draft Order Limits.
- 4.7.17 Saltfleetby - Theddlethorpe Dunes SSSI is located 9 km east of Section 3. There are potential hydrological links between the Project and this SSSI, however given the separation distances and the pollution prevention measures secured by the Preliminary CoCP, no effects upon habitats are predicted. The bird assemblage of the SSSI may use habitats within the wider area for foraging and there is potential for some of the land to be functionally linked. Potential impacts upon the bird assemblage will be assessed once all baseline surveys are complete and will be reported within the ES. Therefore, on a precautionary basis, significant effects cannot be excluded at this stage of the assessment.
- 4.7.18 Taking into account the pollution prevention measures (such as GG15, GG16, GG17) significant impacts are not anticipated within the remaining nationally designated sites within the Section 3 Study Area (these include: Calceby Marsh SSSI, Hoplands Wood SSSI, Swaby Valley SSSI, Willoughby Meadow SSSI, South Thoresby Warren LNR and Willoughby Branch Line LNR) and are included within **Table 4.6**.
- 4.7.19 Mother and Greenfield Woods LWS is located directly adjacent to the Section 3 draft Order Limits. There is a risk of adverse effects (e.g. through water pollution and/or air quality deposition) as well as potentially on any fauna (e.g. bats and birds) associated with this site. Standard pollution control measures will be implemented and secured by the Preliminary CoCP (GG15, GG16, GG17 and W01 to W11). However, further survey work will establish the nature and importance of any receptors associated with this LWS that may be affected by the works. On a precautionary basis, significant effects cannot be excluded at this stage of the assessment.



- 4.7.20 Due to the distance from the Section 3 draft Order Limits and control measures set out within the Preliminary CoCP, no significant effects are anticipated for the remaining 12 LWS's located within 2 km of the Section 3 draft Order Limits and these are included in **Table 4.6** below.

## Habitats

### Terrestrial habitats

- 4.7.21 Initial habitat results indicate that the majority of Section 3 is cultivated cropland with negligible biodiversity importance. Areas of this habitat will be lost during construction of the substations; proposed pylons; stringing areas; and to create the haul road for construction.
- 4.7.22 It is not anticipated that any areas of Ancient Woodland or broadleaved woodland (including HPI Lowland mixed deciduous woodland) will be directly affected by the proposed works, assuming a suitable buffer can be implemented around these habitats in accordance with control measure GG09. There is potential for indirect effects on these receptors, for example due to release of pollutants during construction. However standard pollution control measures will be implemented as included within the Preliminary CoCP (e.g. GG15, GG16 and W01 to W11). Further investigation into the potential indirect impacts of changes in air quality will be undertaken to assess any potential effects on these receptors and will be reported within the ES.
- 4.7.23 Hedgerows, scrub and small woodland parcels will be crossed by the proposed overhead line. Temporary severance of hedgerows will occur during construction, where the haul road route and access routes are proposed. Wherever possible, habitats will be reinstated post construction (Preliminary CoCP measure LV01). Existing tracks and roads will be utilised where possible however these may require widening.
- 4.7.24 Survey work will continue through to 2025 to characterise the terrestrial habitat types, and their constituent flora and fauna, within the Survey Area. These surveys will confirm the condition of relevant habitats, in order to inform the design of appropriate mitigation or compensation measures and the assessment of impacts and effects, which will be developed fully in the ES.
- 4.7.25 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects on terrestrial habitats within the Section 3 Study Area cannot be excluded at this stage of the assessment.

### Aquatic Habitats

- 4.7.26 The Woldgrift Drain Main River crosses the Section 3 draft Order Limits. There are also a number of other watercourses, ditches and ponds located within or close to the draft Order Limits.
- 4.7.27 Direct impacts upon aquatic habitats within the Section 3 Study Area will include those associated with overhead line watercourse crossings. However, these have been minimised through the setting back of pylons from the channel and marginal habitats. The stringing of the proposed overhead line could potentially result in temporary loss or damage to watercourses and ditches within the draft Order Limits, however the stringing methodology will seek to minimise any potential direct impacts to watercourses during construction and any impacts are likely to be temporary.

- 4.7.28 Within Section 3, the construction of approximately 10 temporary access crossings could result in direct impacts upon watercourses. The design of these elements will seek to minimise impacts through reducing the footprint of these works as far as practicable. However, with the best practice construction methods and reinstatement of these habitats post-construction, these effects are likely to be temporary (see Preliminary CoCP measures W01 to W11).
- 4.7.29 Drainage installations for any Sustainable Drainage Systems (SuDS) features have the potential to adversely affect the river system, both directly and indirectly, if not designed appropriately. However, the design of drainage features within Section 3 includes SuDS basins to allow settlement before discharge into any river system. Further assessment of potential indirect impacts due to construction activities, including changes in water quality, will be undertaken and reported within the ES.
- 4.7.30 Survey work will continue through to 2025 to characterise the terrestrial and aquatic habitat types, and their constituent flora and fauna, within and adjacent to Section 3 draft Order Limits and to confirm the condition of relevant habitats, in order to inform the design of appropriate mitigation or compensation measures and the assessment of impacts and effects, which will be developed fully in the ES.
- 4.7.31 On a precautionary basis, significant effects on aquatic habitats cannot be excluded at this stage of the assessment.

### **Terrestrial invertebrates**

- 4.7.32 Survey results to date indicate that the majority of habitats (i.e. cropland) within the Section 3 draft Order Limits have limited value to terrestrial invertebrates. However, hedgerow and woodland habitats also recorded within the draft Order Limits provide potential habitat for terrestrial invertebrates.
- 4.7.33 Potential impacts upon terrestrial invertebrates include habitat loss, habitat fragmentation and death/injury through the loss of woodland habitats and severance of hedgerows.
- 4.7.34 Relevant measures within the Preliminary CoCP which would reduce potential impacts include implementation of Management Plans (GG06), reinstatement of hedgerows (GG08), establishment of protective areas (GG09) and maintenance of hedgerow connectivity (B08).
- 4.7.35 A scoping survey will be undertaken in 2025 to assess the habitats recorded in 2024/25 potential importance to invertebrates and to assess their potential importance. Following on from this, targeted surveys would be undertaken if required, to inform the assessment of impacts, design of appropriate mitigation, which will be fully reported within the ES.
- 4.7.36 On a precautionary basis, significant effects on terrestrial invertebrates cannot be excluded at this stage of the assessment.

### **Great Crested Newt**

- 4.7.37 No evidence of GCN has been found within the draft Order Limits to date, with the nearest confirmed evidence approximately 400 m north of the middle of Section 3.
- 4.7.38 No ponds will be lost during construction, however potentially suitable terrestrial habitat for GCN up to 500 m away from ponds including hedgerows and grassland will be directly impacted through temporary habitat loss/severance during

construction, and smaller areas of permanent habitat loss where the substation accesses are located. Additionally, there is a risk of machinery and traffic killing or injuring GCN if they are present within the draft Order Limits during construction activities.

- 4.7.39 Where impacts upon GCN cannot be avoided, a licence from Natural England will be required to permit derogation (as outlined in management measure B01). Indicative locations for mitigation are provided on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operation Features**.
- 4.7.40 Additional relevant management measures to reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W1 to W11), implementation of Management Plans (GG06), reinstatement of hedgerows (GG08), establishment of protective areas (GG09), maintenance of hedgerow connectivity (B08) and directional and minimised lighting (LV04).
- 4.7.41 Survey work will continue in 2025 to inform the assessment of impacts and effects and the design of appropriate mitigation to be presented in the ES. Further survey findings will also be used to confirm any licencing and enhancement requirements.
- 4.7.42 On a precautionary basis, significant effects on great crested cannot be excluded at this stage of the assessment.

### **Reptiles**

- 4.7.43 The majority of habitats within the Section 3 draft Order Limits that are suitable for reptiles are limited in extent, being confined to field boundaries and the margins of ditches. However, modified grassland, hedgerow and woodland habitats in this area have potential for common reptiles.
- 4.7.44 There are potential impacts through habitat loss and risk of killing and/or injury of reptiles during construction.
- 4.7.45 Where impacts upon reptiles cannot be avoided, measures will be implemented to prevent a breach of legislation. These measures are outlined in B05 are likely to include two stage habitat manipulation of suitable habitats with an ECoW appointed to oversee works (05). Any species translocation (if required) will be undertaken in accordance with a strict method statement (B09).
- 4.7.46 Additional relevant measures within the Preliminary CoCP which would reduce potential impacts include implementation of Management Plans (GG06), reinstatement of hedgerows (GG08), establishment of protective areas (GG09), and maintenance of hedgerow connectivity (B08).
- 4.7.47 Seasonal survey work will continue in 2025 to confirm the status of reptiles. The survey results will be used to inform the assessment of impacts and effect and any appropriate mitigation and enhancement will be presented within the ES.
- 4.7.48 On a precautionary basis, significant effects on reptiles cannot be excluded at this stage of the assessment.

### **Birds: breeding and wintering**

- 4.7.49 Surveys for wintering birds carried out between November 2022 and March 2023 indicate that habitats within the Section 3 Survey Area are used by a range of wintering birds.

- 4.7.50 In addition, surveys for breeding birds, carried out between March 2024 and July 2024, also indicated use of the area by a range of farmland specialist species, as well as one Schedule 1 species (barn owl) (see **PEI Report Volume 3 Part B Section 3 Appendix 4A Bird Survey Data 2023, Table 4A.2 and Table 4A.3**). Oystercatcher (*Haemtopus ostalegus*) was identified as a species of County importance due in part to the scarcity of inland breeding records in the county.
- 4.7.51 Although measure B02 in the Preliminary CoCP would ensure the impacts of construction works upon active nests would be mitigated, the construction works within the Section 3 draft Order Limits are likely to result in a loss of breeding and wintering habitat and disturbance to birds through noise, construction traffic movements and increased human presence on-site.
- 4.7.52 Additional relevant management measures within the Preliminary CoCP which would reduce potential impacts include the implementation of Management Plans (GG06), reinstatement of hedgerows (GG08), establishment of protective areas (GG09), maintenance of hedgerow connectivity (B08) and lighting restrictions to (LV04).
- 4.7.53 It should be noted that bird surveys are incomplete, and survey work has continued over the winter of 2024/2025 and will be undertaken in spring/summer of 2025 to confirm the status of wintering and breeding birds respectively, and to inform the assessment of impacts and the design of appropriate mitigation and enhancement, which will be further developed and presented within the ES.
- 4.7.54 On a precautionary basis, significant effects on wintering and breeding birds e.g. through habitat loss and disturbance cannot be excluded at this stage of the assessment.

### **Badger**

- 4.7.55 One potential main badger sett was recorded within the Section 3 Survey Area and there is the potential for direct impacts through the loss of this sett. Specifically, hedgerow and areas of woodland habitats will potentially require clearance during construction during the establishment of on-site accesses and within the footprint of proposed pylons.
- 4.7.56 There is also potential for general disturbance impacts during construction from noise and vibration, temporary site lighting, human presence and potentially an increased risk of vehicle animal collisions. In addition, there are legal restrictions regarding certain construction works (e.g. piling) which could take place close to active setts. Specifically, hedgerow and areas of woodland habitats will require clearance during construction during the establishment of on-site accesses and within the footprint of proposed pylons.
- 4.7.57 As outlined in the Preliminary CoCP measure B13, in the first instance, reasonable avoidance measures will be incorporated to avoid impacting known badger setts. If, however direct impacts on badger setts cannot be avoided, a licence from Natural England will be sought to permit derogation (as outlined in the Preliminary CoCP measure B01). Mitigation measures may include the provision of artificial setts within the Order Limits where main setts will be closed.
- 4.7.58 Additional relevant management measures within the Preliminary CoCP which would reduce potential impacts include the implementation of Management Plans (GG06), reinstatement of hedgerows (GG08), establishment of protective areas (GG09),

maintenance of hedgerow connectivity (B08), lighting restrictions (LV04) and closing of excavations overnight to avoid entrapment (B03).

- 4.7.59 Survey work continued during winter 2024/2025 and spring 2025 to confirm the status of badger and will be used to inform the assessment of impacts and any appropriate mitigation and enhancement measures, which will be developed fully and presented within the ES.
- 4.7.60 On a precautionary basis, significant effects on badger cannot be excluded at this stage of the assessment.

### **Bats**

- 4.7.61 Surveys in 2024 confirmed that the bats were foraging and commuting in the vicinity of the Section 3 Survey Area and indicated that bats were associated with hedgerows and woodland edges along the proposed overhead line.
- 4.7.62 There is potential for both permanent and temporary loss of roosting, foraging and commuting habitat for bats and severance of commuting routes, given that the proposed sites of the New LCS A and the New CS B and the interconnecting overhead line will sever existing hedgerows along field boundaries and necessitate vegetation clearance. There is likely to be impacts from disturbance such as noise, vibration and lighting during construction. Specifically, hedgerows and areas of woodland habitats will require clearance during construction during the establishment of on-site accesses and within the footprint of proposed two substations and pylons.
- 4.7.63 As outlined in the Preliminary CoCP measure B13, in the first instance, reasonable avoidance measures will be incorporated to avoid impacting known bat roosts. Where impacts upon bat roosts cannot be avoided, a licence from Natural England will be required to permit derogation (as outlined in management measure B01).
- 4.7.64 Additional relevant management measures within in the Preliminary CoCP which would reduce potential impacts include the implementation of Management Plans (GG06), reinstatement of hedgerows (GG08), establishment of protective areas (GG09), maintenance of hedgerow connectivity (B08) and lighting restrictions to (LV04).
- 4.7.65 The survey work in 2024 and 2025 will be used to confirm presence of foraging and commuting bats and bat roosts, particularly the presence of any bat roosts within or close to the Section 3 draft Order Limits. The outputs of these surveys will be used to confirm the status of bats and the assessment reported within the ES.
- 4.7.66 On a precautionary basis, significant effects on bats cannot be excluded at this stage of the assessment.

### **Otter**

- 4.7.67 No field signs of otter have been identified within the Section 3 Survey Area and no breeding or resting sites were recorded. Although no evidence of otter has been recorded, otter may use ditches and watercourses for foraging and commuting.
- 4.7.68 Where suitable habitat for otter is present, there is the potential for disturbance through noise, vibration, increased human presence and site lighting. Habitat degradation could potentially occur through pollution of habitats and there is also a risk of machinery and traffic killing or injuring otters if they are present during construction activities.



- 4.7.69 As outlined in the Preliminary CoCP measure B13, in the first instance, works would be located to avoid the loss of any otter holts or resting places. If it is not possible to avoid impacts on otter holts, a licence from Natural England will be sought to permit derogation from legislation (as outlined in the Preliminary CoCP measure B01).
- 4.7.70 Additional relevant management measures within the Preliminary CoCP which would reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W01 to W11), implementation of Management Plans (GG06), establishment of protective areas (GG09), lighting restrictions (LV04) and closing of excavations overnight to avoid entrapment (B03). Preliminary CoCP measure B12 requires a method statement to be in place to ensure works within watercourse crossings include suitable measures to allow the passage of otters.
- 4.7.71 Survey work will continue in 2025 to confirm the status of otter and will be used to inform the assessment of impacts and effects, and the details of any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.72 On a precautionary basis, significant effects on otter cannot be excluded at this stage of the assessment.

### **Fish**

- 4.7.73 Notable fish species have been recorded within the Section 3 Survey Area.
- 4.7.74 There is a risk that habitats supporting protected and notable fish species will potentially be impacted during construction and maintenance by transmission line infrastructure, supporting structures and associated haul roads and maintenance routes. Short-term impact on habitat connectivity, fragmentation, degradation and disturbance cannot be discounted at this stage as well as the risk of incidental mortality of protected fish species during construction works.
- 4.7.75 As outlined in Preliminary CoCP measure B10, where any in channel watercourse work are required, works will be completed outside of fish spawning season (16 March – 16 June inclusive) and fish migratory seasons (species specific, dependant on the waterbody). Where impacts upon notable fish species cannot be avoided, appropriate permits may be required, such as an FR2 licence from the EA (B11).
- 4.7.76 Additional relevant management measures set out in the Preliminary CoCP which would reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W01 to W11), implementation of Management Plans (GG06), establishment of protective areas (GG09) and lighting restrictions (LV04). Preliminary CoCP measure B12 requires a method statement to be in place which would ensure works within watercourse crossings include suitable measures to allow the passage of fish.
- 4.7.77 Survey work in 2025 will be used to confirm the status of species present and inform the assessment of impacts and effects, and any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.78 A precautionary approach has therefore been taken and significant effects on fish cannot be excluded at this stage of the assessment.

### **Aquatic macroinvertebrates**

- 4.7.79 Notable aquatic macroinvertebrates were identified within Section 3 Study Area.



- 4.7.80 There is a risk that habitats suitable for protected and notable aquatic macroinvertebrate species are impacted by proposed construction works (e.g. habitat loss, fragmentation and disturbance) and a risk of incidental mortality of aquatic macroinvertebrates.
- 4.7.81 Relevant management measures set out in the Preliminary CoCP to reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W01 to W11), implementation of Management Plans (GG06), establishment of protective areas (GG09) and lighting restrictions (LV04).
- 4.7.82 Survey work will be carried out in 2025 to confirm the status of this taxon and inform assessment of construction related effects and design of appropriate mitigation plans if required. Survey site selection has been based on crossing point locations where culverts, bridges and/or outfalls have the potential to influence macroinvertebrate populations.
- 4.7.83 Survey work will be used to confirm the status of species and inform the assessment of impacts and effects, and any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.84 A precautionary approach has been taken and significant effects on aquatic macroinvertebrates cannot be excluded at this stage of the assessment.

#### **Aquatic macrophytes**

- 4.7.85 There are no records of notable and/or protected aquatic macrophyte species within the Section 3 Study Area. There is a risk of construction works impacting watercourses and associated aquatic macrophytes causing incidental mortality of protected species.
- 4.7.86 Relevant management measures set out in the Preliminary CoCP to reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W1 to W11), implementation of Management Plans (GG06) and establishment of protective areas (GG09).
- 4.7.87 Survey work will be carried out in 2025 to confirm the status of aquatic macrophytes and inform the assessment of impacts and effects, any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.88 On a precautionary basis, significant effects on aquatic macrophytes cannot be excluded at this stage of the assessment.

#### **Water vole**

- 4.7.89 Initial surveys for water vole indicated that water vole to be absent from the Section 3 Survey Area
- 4.7.90 Where suitable habitat for water voles is present, there is a risk of construction works impacting watercourses and associated riparian habitat causing incidental mortality of water voles. Furthermore, there may be suitable habitats within and/or adjacent to the draft Order Limits that could be impacted by proposed works (e.g. through habitat loss, disturbance and fragmentation).
- 4.7.91 If impacts to water vole burrows cannot be avoided, a licence from Natural England will be sought to permit derogation (as outlined in the Preliminary CoCP measure B01).

- 4.7.92 Additional relevant management measures set out in the Preliminary CoCP which would reduce potential impacts include pollution control measures (GG15, GG16, GG17), implementation of Management Plans (GG06), establishment of protective areas (GG09) and lighting restrictions (LV04). In addition, the Preliminary CoCP measure B12 requires a method statement to be in place to ensure works within watercourse crossings include suitable measures to allow the passage of water vole.
- 4.7.93 Survey work will continue in 2025 to confirm the status of water vole and will be used to inform the assessment of impacts and effects and any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.94 On a precautionary basis, significant effects on water vole cannot be excluded at this stage of the assessment.

## 4.8 Operation and Maintenance

### Designated sites

- 4.8.1 The Greater Wash SPA, Humber Estuary SPA and Ramsar site, The Wash SPA, Ramsar site and Saltfleetby - Theddlethorpe Dunes SSSI are designated (or partially designated) for their bird interest. There is potential for collision mortality to occur during the operational phase of the Project. This will be assessed once baseline surveys are complete and the results presented within the ES and the Report to inform HRA.
- 4.8.2 Therefore, on a precautionary basis, significant effects upon these designated sites, associated with collision risk and subsequent killing/injury of bird species which are qualifying features, cannot be excluded at this stage.
- 4.8.3 European designated sites within the Zol of the Project are sensitive to changes in flow regimes, including the volume of water supplied, water depth and water flow rates. In SACs, the potential impact of altered flow regimes can directly affect the qualifying habitats and hydrological changes may impact SAC/SPA species indirectly. The potential for LSE upon these sites will be assessed within the Report to inform HRA, and significant effects cannot be excluded at this stage in the assessment.

### Protected and Notable Species

#### Birds: breeding and wintering

- 4.8.4 As noted above in relation to designated sites, the collision risk with the overhead line within the Section 3 Study Area will need to be fully assessed once all of the winter and breeding bird data have been collected.
- 4.8.5 Therefore, on a precautionary basis, significant effects upon breeding and wintering birds associated with collision risk cannot be excluded at this stage of the assessment.

### Likely Non-Significant Effects

- 4.8.6 For completeness, **Table 4.6** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Ecology and Biodiversity effects.

Table 4.6 Preliminary summary of non-significant Ecology and Biodiversity effects – Section 3

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
<b>Construction</b>					
Calceby Marsh SSSI; Hoplands Wood SSSI; Swaby Valley SSSI; Willoughby Meadow SSSI; South Thoresby Warren LNR; and Willoughby Branch Line LNR	Habitat loss	National	Permanent or Temporary	Due to the distance of these sites from the Section 3 draft Order Limits there would be no habitat loss within these nationally designated sites.	Not significant
	Habitat degradation as a result of contamination during construction, changes in air quality, dust and/or changes in water quality	National	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management (such as the Preliminary CoCP pollution prevention measures GG15, GG16 and GG17).	Not significant
Disused Railway North of Swinn Wood LWS; Grange Pavillion Aby LWS; Great Eau LWS; Hoppers Holt LWS; Moors Wood, Aby LWS; Oak Plantation Woodthorpe LWS; Rigsby Wood LWS; Swinn Woods LWS; Swinn Wood RNR; Swinn Wood Road Verges LWS; The Browse LWS; and Withern Wood LWS	No impact	County	Permanent or Temporary	Due to the distances between these receptors and the Section 3 draft Order Limits, and also the lack of ecological or hydrological connectivity, there is not considered to be a pathway to effects. Therefore, no mitigation would be required.	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Hedgehog, brown hare	Habitat loss, incidental harm or mortality	Local	Temporary or Permanent	The following control measures detailed within the Preliminary CoCP would prevent harm to hedgehog, harvest mouse and brown hare during construction: G06, B01, B03. Habitats impacted temporarily during construction would will be reinstated post construction in accordance with Preliminary CoCP measure GG08.	Not significant
Invasive Non-Native Species (INNS)	Spread of INNS during construction activities	N/A	Permanent	Control measure B04 detailed within the Preliminary CoCP would ensure that the construction works do not result in the spreading or mishandling of any invasive non-native species.	Not significant
<b>Operation/Maintenance</b>					
Calceby Marsh SSSI; Hoplands Wood SSSI; Swaby Valley SSSI; Willoughby Meadow SSSI; South Thoresby Warren LNR; and Willoughby Branch Line LNR	No impact	National	Temporary	Due to the distances between these sites and the Section 3 draft Order limits and also the lack of ecological or hydrological connectivity, there are not considered to be pathways to effects. Therefore no mitigation would be required.	Not significant
Mother and Greenfield Woods LWS	Contamination during maintenance works	County	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National	Not Significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, haul roads).	
Disused Railway North of Swinn Wood LWS; Grange Pavillion Aby LWS; Great Eau LWS; Hoppers Holt LWS; Moors Wood, Aby LWS; Oak Plantation Woodthorpe LWS; Rigsby Wood LWS; Swinn Woods LWS; The Browse LWS; and Withern Wood LWS	No pathways of effect	County	Temporary or Permanent	Due to the distances between these sites and the Section 3 draft Order Limits, and also limited ecological or hydrological connectivity, there are not considered to be pathways to effects. Therefore no mitigation would be required.	Not significant
Habitats: Ancient Woodland	Contamination during maintenance works	National	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, haul roads).	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Habitats: Broad-leaved Woodland HPI	Contamination during maintenance works	County	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, haul roads).	Not significant
Habitats - arable field margins, hedgerows, ditches/drains	Contamination during maintenance works	Local	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, haul roads).	Not significant
Terrestrial invertebrates	Habitat loss or fragmentation	TBC (following surveys (if necessary))	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and mitigated accordingly.	Not significant



Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
	Contamination of habitats during maintenance works	TBC (following surveys (if necessary)	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).	Not significant
Great crested newt	Habitat loss, killing or injury	County	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and mitigated accordingly.	Not significant
	Contamination of habitats during maintenance works	County	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Reptiles	Killing or injury during maintenance	Local	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and mitigated accordingly.	Not significant
Wintering birds	Disturbance (e.g. noise, vibration) during maintenance activities	TBC following baseline surveys – species recorded to date - Local	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
Breeding birds	Loss of nests	TBC following baseline surveys – species recorded to date - Local	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and potential impacts mitigated accordingly.	Not significant
	Disturbance (e.g. noise, vibration) during maintenance activities	TBC following baseline surveys – species recorded to date - Local	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
Badger	Loss of setts, killing or injury	County	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				present at the time would be identified and potential impacts mitigated accordingly.	
	Disturbance (e.g. noise, vibration) during maintenance works	County	Temporary	The nature of maintenance works (involving inspections and maintenance of overhead line infrastructure) are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
Bats	Habitat loss (including loss of roosts if tree felling is required)	TBC following baseline surveys	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and potential impacts mitigated accordingly.	Not significant
	Disturbance of roosts (e.g. noise, vibration) during maintenance works	TBC following baseline surveys	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
Otter	Loss of holts, killing or injury	County	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				present at the time would be identified and mitigated accordingly.	
	Disturbance (e.g. noise, vibration) during maintenance works	County	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
	Contamination of habitats during maintenance works	County	Temporary	<p>The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).</p> <p>National Grid would consult with the relevant regulatory body where works are required in, around, or that may impact watercourses, or there is a potential impact on local flora and fauna of works near controlled waters.</p>	Not significant
Fish	Disturbance (e.g. noise, vibration) during maintenance works	TBC following baseline surveys	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
	Contamination of habitats during maintenance works	TBC following baseline surveys	Temporary	<p>The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).</p> <p>National Grid would consult with the relevant regulatory body where works are required in, around, or that may impact watercourses, or there is a potential impact on local flora and fauna of works near controlled waters.</p>	Not significant
Aquatic macroinvertebrates	Disturbance (e.g. noise, vibration) during maintenance works	TBC following baseline surveys	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
	Contamination of habitats during maintenance works	TBC following baseline surveys	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				<p>activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).</p> <p>National Grid would consult with the relevant regulatory body where works are required in, around, or that may impact watercourses, or there is a potential impact on local flora and fauna of works near controlled waters.</p>	
Aquatic macrophytes	Contamination of habitats during maintenance works	TBC following baseline surveys	Temporary	<p>The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).</p> <p>National Grid would consult with the relevant regulatory body where works are required in, around, or that may impact watercourses, or there is a potential impact on local flora and fauna of works near controlled waters.</p>	Not significant



Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Water vole	Habitat loss, killing or injury	County	Permanent or Temporary	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and potential impacts mitigated accordingly.	Not significant
	Disturbance (e.g. noise, vibration) during maintenance works	County	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
	Contamination of habitats during maintenance works	County	Temporary	<p>The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).</p> <p>National Grid would consult with the relevant regulatory body where works are required in, around, or that may impact watercourses, or there is a</p>	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				potential impact on local flora and fauna of works near controlled waters.	
Brown hare, hedgehog	Disturbance (e.g. noise, vibration) during maintenance works	Local	Temporary	The nature of maintenance works are anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not significant
Invasive Non-Native Species (INNS)	Spread of INNS during maintenance activities	N/A	Invasive Non-Native Species (INNS)	National Grid would identify and notify the presence of invasive species within the operational areas of the site. National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and mitigated accordingly.	Not significant

## **4.9 Monitoring**

- 4.9.1 Monitoring requirements, that may be required for the Project following the implementation of mitigation to ensure mitigation is successful and meets the requirements or permits/licences, will be described in detail and presented in the ES once the on-going surveys are complete (and a detailed data set obtained), and mitigation and enhancement measures have been developed.

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# 5. Historic Environment



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## 5. Historic Environment

### 5.1 Introduction

- 5.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Historic Environment assessment for the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 5.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 5.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and subsequent scope (section 5.3) relevant to the Historic Environment assessment in Section 3. Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high level summary of the methodology of the Historic Environment assessment within Section 3 (section 5.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Historic Environment assessment (section 5.5);
  - vi. A description of mitigation measures included for the purposes of the Historic Environment assessment reported within the PEI Report (section 5.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Historic Environment effects arising during construction and operation of the Project within the Section 3 Study Area (section 5.7), based upon the assessment completed to date; and
  - viii. An outline of the proposed monitoring requirements in relation to Historic Environment (section 5.8).
- 5.1.2 Further supporting information is set out in **Table 5.1** below, including figures and technical appendices.

Table 5.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	Figure 5.1 Designated Heritage Assets Figure 5.2 Non-designated Heritage Assets
PEI Report Volume 3 Part B Section 3 Appendix 5A Known Heritage Assets	A list of all identified heritage assets with the assessment Study Area. This will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part B Section 3 Appendix 5B Preliminary Summary of Likely Non-Significant effects	A table summarising the preliminary assessment of likely non-significant effects on heritage assets within the assessment Study Areas. The assessment of likely non-significant effects will be updated and amended as required for the ES.
PEI Report Volume 3 Part B Section 3 Appendix 5C Detailed Gradiometer Survey Report	A technical report detailing the results of geophysical survey (detailed gradiometer) completed for the proposed New Lincolnshire Connection Substation A (LCS A) and the New Lincolnshire Connection Substation B (LCS B) sites.
<b>Project Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the ES.
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part B Appendix 2Ci Local Plan Policy: Section Specific Policy	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part B Appendix 2Cii Local Plan Policy: Route-Wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	A summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.

Supporting Information	Description
<b>PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information</b>	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
<b>PEI Report Volume 2 Part A Chapter 5 Project Description</b>	An overarching description of the Project and its key components, including available construction information.
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 5.1.3 There are also interrelationships between the potential effects on the historic environment and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B**:
- i. **Section 3 Chapter 2 Landscape** to assist in the identification and assessment of the impact of the Project within the historic landscape and potential impacts to individual historic landscape features and assets such as Registered Parks and Gardens;
  - i. **Section 3 Chapter 3 Visual** to inform the understanding of the extent to which the Project is visible in the landscape which may result in visual changes to the settings of heritage assets and their values;
  - ii. **Section 3 Chapter 10 Noise and Vibration** to inform the understanding of the extent to which noise and vibration impacts arising from the Project may extend, which could result in changes to the settings of heritage assets and their values.
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** which provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment; and
  - iv. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 5.2 Legislation and Policy Framework

### Legislation and National Policy

- 5.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, detailed in **Table 5.1**.

## Regional and Local Policy

- 5.2.2 Regional and local plans or policies relevant to this assessment are summarised as follows.
- i. East Lindsey Local Plan Core Strategy (Ref 1):
    - Strategic Policy 11 Historic Environment: proposals that will be supported are those which are able to preserve and enhance heritage assets and their settings.
  - ii. Alford Neighbourhood Plan 2018 – 2031 (Ref 2):
    - Policy 10: Heritage and Design, sets out the need to maintain Alford’s distinctive character and historic heritage, support quality design and to protect and enhance buildings considered to be community assets.
  - iii. Alford Conservation Area Appraisal 2008 (Ref 3):
    - provides a comprehensive overview of the heritage of the town, and recommendations for the protection of the historic environment in event of future development.

## 5.3 Scope of Assessment

- 5.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 4) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 5). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Historic Environment chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 5.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 5.3.3 The scope of the construction assessment covers the following heritage assets:
- i. Designated heritage assets (scheduled monuments, listed buildings, conservation areas and registered parks and gardens, noting that no World Heritage Sites or registered battlefields are located within the Section 3 Study Areas); and
  - ii. Non-designated heritage assets (e.g. buried archaeological remains, earthwork remains, non-designated historic buildings and structures, non-designated historic parks and gardens, tracks/routeways and artefact scatters).
- 5.3.4 The scope of the operation assessment covers the following heritage assets:
- i. Designated heritage assets (scheduled monuments, listed buildings, conservation areas and registered parks and gardens, noting that no World Heritage Sites or registered battlefields are located within the Section 3 Study Areas); and

- ii. Non-designated heritage assets (e.g. earthwork remains, non-designated historic buildings and structures, non-designated historic parks and gardens and tracks/routeways).

## 5.4 Assessment Methodology

- 5.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Historic Environment assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. It includes a description of how heritage value, magnitude of impact and significance of effects are all defined and assigned to the assessment. A summary of the key components are outlined below.
- 5.4.2 Designated and non-designated heritage assets identified from the baseline data as having the potential to be impacted by the Project have been selected for inclusion in the preliminary assessment. The preliminary assessment follows four key stages:
  - i. The assessment of an asset's value (heritage significance) using the criteria set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** and taking into account the asset's designated status, heritage interest (e.g. archaeological, architectural, artistic) as defined by paragraph 5.9.3 of EN-1 (Ref 6) with reference to the National Planning Policy Framework (NPPF) Annex 2 Glossary (Ref 7), consultation, regional variation and individual qualities;
  - ii. Identification of the magnitude of impacts arising from the construction of the New LCS A and the New LCS B and connecting overhead line, and operation of the Project. Impacts can affect the physical fabric of a heritage asset or affect its setting and can be temporary or permanent. The degree of impact is expressed in terms of a four-point scale set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** and takes into account any Project design mitigation (embedded mitigation);
  - iii. The classification of the significance of the effects arising from the Project on each heritage asset. The significance of effect is determined using the matrix provided in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Effects can be neutral, adverse, or beneficial; and
  - iv. Finally, the application of additional mitigation measures identified at this preliminary stage, to reduce likely significant adverse effects on heritage assets is used to determine the residual effects arising from the Project.
- 5.4.3 The preliminary assessment reports on the significance of effect in accordance with EIA methodology. Major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. Professional judgement will be applied in reaching conclusions as to the significance of effects.

## Assessment Assumptions and Limitations

- 5.4.4 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 3.



- 5.4.5 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 5.5 Baseline Conditions

### Study Area

- 5.5.1 The preliminary assessment for the Historic Environment utilises the following Study Areas, comprising the area directly affected by the Project and a buffer around the draft Order Limits, as detailed further in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**:
- i. 1 km from the draft Order Limits for non-designated heritage assets;
  - ii. 3 km from the draft Order Limits for all designated heritage assets; and
  - iii. 3-5 km from the draft Order Limits for designated heritage assets of high value (World Heritage Sites, scheduled monuments, grade I and II\* listed buildings and grade I and II\* registered parks and gardens) where setting is a key factor in their value and where this setting extends over a large area.
- 5.5.2 In addition, designated high value heritage assets located beyond the 5 km Study Area have been assessed where their setting has the potential to be impacted by the Project. The selection of designated heritage assets beyond the 5 km Study Area has been undertaken using professional judgement and in consideration of heritage assets highlighted by stakeholders.

### Data collection

- 5.5.3 The following data has been used to inform assessment of the baseline conditions:
- i. The National Heritage List for England (NHLE), held by Historic England, for designated assets;
  - ii. Lincolnshire Historic Environment Record (HER) for non-designated heritage assets;
  - iii. Historic Landscape Characterisation (HLC) mapping undertaken for the Lincolnshire Historic Landscape Characterisation Project;
  - iv. Geological mapping held by the British Geological Survey (BGS);
  - v. The detailed magnetometer survey report for the New LCS A and the New LCS B sites provided at **PEI Report Volume 3 Part B Section 3 Appendix 5C Detailed Gradiometer Survey Report**; and
  - vi. Various online sources including:
    - Historic Ordnance Survey maps held by the National Library of Scotland (which also covers the whole of England);
    - Historic England's Aerial Archaeology Mapping Explorer; and



- local authority conservation area appraisal and management documents and their mapping.

## Existing Baseline

- 5.5.4 The following section outlines the Historic Environment baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2 and Volume 3** respectively:
- PEI Report Volume 2 Part B Section 3 Figure 5.1 Designated Heritage Assets;**
  - PEI Report Volume 2 Part B Section 3 Figure 5.2 Non-designated Heritage Assets;**
  - PEI Report Volume 3 Part B Section 3 Appendix 5A Known Heritage Assets;** and
  - PEI Report Volume 3 Part B Section 3 Appendix 5C Detailed Gradiometer Survey Report.**
- 5.5.5 Designated heritage assets are referenced with their NHLE reference number (e.g. NHLE 1010947).
- 5.5.6 Non-designated assets are referenced using the Lincolnshire HER unique identifier number (e.g. MLI42524).
- 5.5.7 Non-designated heritage assets identified by the preliminary assessment that are not yet recorded on the county HER (e.g. possible archaeological remains identified by geophysical survey), have been assigned a unique identifier using an AEC prefix (e.g. AEC300).

## Geology and topography

- 5.5.8 Section 3 is located in National Character Area 42 Lincolnshire Coast and Marshes. The Study Area lies on the higher ground of the Middle Marsh with a pattern of mixed arable farmland and nucleated villages (Ref 8). The topography of the Study Area is essentially flat, typically lying at approximately 10 m Above Ordnance Datum (AOD), with low undulations between localised highpoints in the landscape at Galley Hill (17 m AOD), immediately north east of the proposed New LCS A, and the villages of Saleby (18 m AOD) and Thoresthorpe (15 m AOD) in the centre of Section 3. The location of the proposed New LCS B at the southern end of Section 3 lies at approximately 10 m AOD.
- 5.5.9 The bedrock of Section 3 comprises the Cretaceous Chalk of the Burnham and Welton Formations, to the north east of the draft Order Limits, Ferriby Chalk Formation in the west, overlain by superficial deposits of Devensian Till with pockets of glaciofluvial sand and gravel formed between 116 and 11.8 thousand years ago during the Quaternary period. Localised superficial clay and silt Tidal Flat deposits are also recorded where the draft Order Limits cross watercourses draining eastward into the North Sea such as the Wold Drift Drain and Boy Grift Drain (Ref 9).

## Designated heritage assets

- 5.5.10 There are no World Heritage Sites, Registered Battlefields or Registered Parks and Gardens within the 3 km or 5 km Section 3 Study Areas.

- 5.5.11 Located within the 3 km Study Area, there are 82 designated heritage assets summarised in **Table 5.2** with none located within the draft Order Limits. Of the 78 listed buildings in this Study Area, two Grade I, two Grade II\* and 42 Grade II listed buildings are all located within the Alford Conservation Area. The remaining 32 grade II listed buildings are predominantly located within the villages of Saleby, Thoresthorpe, Bilsby, Beesby and Markby, comprising occasional isolated farms and former manors.

**Table 5.2** Designated heritage assets within the 3 km Study Area

<b>Designation</b>	<b>Number of assets within Study Area</b>	<b>Number of assets within the draft Order Limits</b>
Scheduled monument	4	0
Conservation area	1	0
Grade I listed building	3	0
Grade II* listed building	6	0
Grade II listed building	68	0
Grade I registered park and garden	0	0
Grade II* registered park and garden	0	0
Grade II registered park and garden	0	0

- 5.5.12 Two designated heritage assets of high value have been identified located within the 3-5 km Section 3 Study Area and their designations are listed in **Table 5.3**. The Well Hall grade II registered park and garden (NHLE 1000992) is illustrated on **the PEI Report Volume 2 Part B Section 3 Figure 5.1 Designated Heritage Assets** as it extends into the Section 3, 3-5 km study area, with the majority of this asset located in Section 4 where it is assessed.

**Table 5.3** Designated heritage assets of high value within the 3-5 km Study Area

<b>Designation</b>	<b>Number of assets within Study Area</b>
Scheduled monument	1
Grade I listed building	1
Grade II* listed building	0
Grade I registered park and garden	0
Grade II* registered park and garden	0

- 5.5.13 No designated heritage assets of high value located beyond 5 km have been identified by the preliminary assessment as potentially being impacted by the Project. Potential impacts to designated heritage assets of high value located beyond the 5 km Study Area will be considered further in the assessment presented in the ES.

### Non-designated Heritage Assets

- 5.5.14 A total of 64 non-designated heritage assets and find spots have been identified within the draft Order Limits and 1 km Study Area surrounding Section 3. This includes 59 non-designated heritage assets and find spots recorded by the Lincolnshire HER records and a further five previously unknown non-designated archaeological assets have been identified by geophysical survey. as presented in **PEI Report Volume 3 Part B Section 3 Appendix 5C Detailed Gradiometer Survey Report**. A total of 23 non-designated buildings have been identified which remain extant within the 1 km Section 3 Study Area, with a further three buildings identified where they are no longer extant. Of the total 64 non-designated heritage assets, 11 are located within, or overlap with, the draft Order limits. A summary of the types of non-designated heritage assets identified is provided in **Table 5.4** and discussed where appropriate in the archaeological and historical background below.

Table 5.4 Non-designated heritage assets within the 1 km Study Area

Asset Type	Number of assets within the 1 km Study Area	Number of assets within the draft Order Limits
Cropmarks	2	0
Earthworks (including roddons and sea defences)	1	1
Saltern Site	0	0
Settlement site	3	0
Deserted/Shrunken medieval village	1	2
Moated Site	3	0
Ridge and Furrow	3	1
Parkland	1	0
Farmstead or buildings extant	23	0
Farmstead or buildings demolished	3	0
Military Remains	1	0
Roads/trackways	1	0
Woodland/Covert	0	1

Asset Type	Number of assets within the 1 km Study Area	Number of assets within the draft Order Limits
Ecclesiastical sites	1	0
Transport and Modern	0	1
Find spot	10	0
Geophysical Anomalies – possible archaeology	0	5

- 5.5.15 It should be noted that find spots are locations where artefacts have generally been removed from their primary archaeological context and often represent residual material in later contexts. As such, their archaeological and historical value is limited, although their presence can be indicative of an area's past uses and can contribute to an understanding of the area's archaeological potential. They are not heritage assets as defined by the NPPF and, as the archaeological finds have been removed from their location, they would not be impacted by the Project, resulting in no effect to their value.

### Archaeological and historic background

- 5.5.16 Evidence of Palaeolithic (500,000 to 10,000 BC) activity is rare nationally, with in situ remains particularly rare and the slightly more frequent find spots of stone tools providing most of the evidence for a human presence during the period.
- 5.5.17 Whilst evidence for prehistoric activity and occupation has been recorded across the wider area of the Lincolnshire coast and marshes, no heritage assets dating to the prehistoric period have been recorded within the 1 km Study Area of Section 3.
- 5.5.18 Roman settlement and occupation is recorded across the Lincolnshire Wolds and coastal marshes area, however, occupational evidence within the 1 km Study Area is relatively scarce. A group of cremations dating to the Roman period were identified close to the settlement of Thoresthorpe (MLI42526), approximately 160 m south of the draft Order Limits, and evidence for a potential small settlement, comprising enclosures and a boundary ditch, has been identified from cropmarks approximately 440 m west of the draft Order Limits at Bilsby (MLI90878).
- 5.5.19 Further evidence for Roman activity is limited to several lone find spots within the 1 km Study Area, including pottery recorded near Alford (MLI41135 and MLI42545), Saleby (MLI42521) and Bilsby (MLI41472 and MLI41474).
- 5.5.20 The settlement pattern within the Study Areas was largely formed in the early medieval period, with a linear pattern of nucleated villages developing along the higher ground of the eastern side of the Middle Marsh, with several of the villages including Alford, Bilsby, Saleby, Thoresthorpe and Markby recorded in the Domesday Book of 1086.
- 5.5.21 Each village would have been supported by large communally farmed 'open fields' and common grazing land and evidence for medieval agriculture is recorded at several locations within the 1 km Study Area. Ridge and furrow earthworks have been recorded within the draft Order Limits in fields surrounding the proposed New LCS A, providing fragmentary evidence for the former open fields associated with the settlement of Saleby (MLI88742) and a late medieval field system (MLI90885) recorded north east of Bilsby.

- 5.5.22 Aerial photographs have provided evidence for former ridge and furrow cultivation at the southern end of the 1 km Study Area, close to the settlement of Alford (MLI87463, MLI87464, and MLI87465) and evidence for a late medieval field system, comprising ploughed out ridge and furrow and a field boundary, are also recorded immediately north east of the proposed LCS B close to Bilsby (MLI87954).
- 5.5.23 The medieval farming communities grew in size and population until the 14<sup>th</sup> century, when worsening climate, crop failures and the Black Death combined with economic decline and population movements, the latter caused by the decline of the salt making industry across Lincolnshire, led to the reduction in the rural population. This ultimately resulted in several of the medieval settlements either being abandoned or shrinking in size. The site of a deserted medieval village (DMV) is recorded within the 1 km Study Area at Bilsby (MLI41489), with two shrunken medieval villages, the former extent of which extend into the draft Order Limits, at Saleby (MLI41489) and Thoresthorpe (MLI42527).
- 5.5.24 Extant buildings of medieval date are predominantly religious and include the parish churches of St Wilfrid, Alford (grade I listed; NHLE 1063026), Church of the Holy Trinity, Bilsby (grade II\* listed; NHLE 1360007) and St Andrew, Beesby (grade II\* listed; NHLE 1308650) all within the 3 km Study Area. The medieval Church of St Leonard (grade I listed; NHLE 1168562) and Church of All Saints (grade II\* listed; NHLE 1146990) are also located within the 3 – 5 km Study Area. The churchyard of the Church of the Holy Trinity (MLI125128) and a scheduled churchyard cross (NHLE 1014425) have also been recorded within the 3 - 5 km Study Area.
- 5.5.25 Monastic sites also formed an important part of the rural landscape and economy of the medieval period often established on isolated or marginal land. The sites of two priories, both scheduled monuments, are recorded within the 3 km Study Area. St Mary's Priory (NHLE 1008687), located next to Greenfield Wood approximately 430 m west of the draft Order Limits, was a Cistercian nunnery founded by 1153. The nunnery was in use until the dissolution of the monasteries in 1536. The remains comprise earthworks, buried archaeological remains and a moat. Evidence of a post-medieval wall and two ditches (MLI116099) were recorded during archaeological monitoring at the priory. A second scheduled monument, Markby Priory (NHLE 1004987), is located approximately 1.8 km north east of the draft Order Limits. The priory was founded by the Augustinian Order by the early 13<sup>th</sup> century and remained with the order until its dissolution in 1536. The priory survives as earthworks and buried archaeological remains, and its stonework was also reused in the Grade II\* listed Church of St Peter, Markby (NHLE 1063009), built in the mid-16<sup>th</sup> century.
- 5.5.26 A third monastic site, Hagnaby Abbey, now a scheduled monument (NHLE 1011454), is located approximately 3.2 km north east of the draft Order Limits. The monument comprises the remains of a Premonstratensian abbey, overlain by a post-medieval house and formal garden constructed on the site following the abbey's dissolution. The abbey dates from 1175 as a dependent of Welbeck Abbey. Remains of the abbey largely consist of buried archaeological remains, with some extant earthworks at the centre of a raised platform area, likely the foundations of the abbey structure, surrounded by a large, ditched enclosure. Further earthworks related to the scheduled monument include fishponds and water management features. A number of medieval moated sites are recorded within the Study Areas, associated with manors and homesteads, such as the earthwork remains of the medieval moated site at Bilsby (MLI41481), the moated manorial site (MLI41485) surrounding Moat Farm (NHLE 1360008) in Bilsby, a moated enclosure at Saleby (MLI42525) surrounding the Grade II listed Manor Farmhouse (NHLE 1063012) and the moated enclosure alongside the



Grade II listed Tothby Manor House (NHLE 1063040), providing evidence of the former medieval lost hamlet of Tothby.

- 5.5.27 A grade II listed house with possible 15<sup>th</sup> century origins, Manor House (NHLE 1308599), is located in the historic village of Thoresthorpe and is situated on the site of an earlier building, with remains of 13<sup>th</sup> century moulded stones in the garden.
- 5.5.28 Several small finds dating to the medieval period have also been recorded within the 1 km Study Area, including sherds of medieval pottery (MLI41475) and a Silver Penny of Edward I (MLI41473) recorded close to Bilsby.
- 5.5.29 During the post-medieval period, the landscape remained rural with small, nucleated settlements. The settlements present in the medieval period continued, with surviving Grade II listed post-medieval houses recorded in the 3 km Study Area. These include early houses such as the 16<sup>th</sup> century Manor House in Alford (NHLE 1063001) and The Priory (NHLE 1147252) in Markby. There are also numerous listed buildings from the 17<sup>th</sup> – 19<sup>th</sup> centuries, mainly focused in the nucleated villages, most notably in Alford, consisting of houses and shops built in a diverse range of styles, concentrated along High Street and Church Street.
- 5.5.30 Other extant post-medieval buildings include churches, such as the Grade I listed mid-18<sup>th</sup> century Church of St Andrew in Hannah cum Hagnaby (NHLE 1147204), the Grade II listed late 17<sup>th</sup> century former Baptist chapel (NHLE 1146955) and 19<sup>th</sup> century Church of St Margaret, Beesby (NHLE 1063011), the Church of St James, Rigsby (NHLE 1168596) and a Methodist chapel in Alford (NHLE 1308675). Two non-designated 19<sup>th</sup> century Methodist chapels (MLI98900; MLI99057) have also been recorded at Bilsby and at Saleby.
- 5.5.31 The agricultural industry of the landscape during this period is also highlighted through extant farmsteads. There are several Grade II listed farmhouses and agricultural buildings dating from the 17<sup>th</sup> century (NHLE 1360008; 1063040; 1168579; 1063010), and 18<sup>th</sup> century (NHLE 1063012; 1063013; 1308602). There are also numerous 19<sup>th</sup> century, non-designated farmsteads in the 1 km Study Area, with varying degrees of survival (e.g. MLI118534; MLI116907; MLI116911).
- 5.5.32 Evidence of increasing industrialisation across Lincolnshire is present, with the Sutton on Sea to Alford Tramway (MLI43675) located within the draft Order Limits. The tramway was opened in 1884 and found limited success, with the route found to be difficult for the tram to traverse and, as such, it became slow and unreliable. It was closed in 1889 once the Great Northern Railway was built.
- 5.5.33 Other industries evidenced through extant buildings include an early 19<sup>th</sup> century forge in Bilsby (NHLE 1063006), and two surviving windmills. The first of these is the Grade I listed 19<sup>th</sup> century Windmill in Alford (NHLE 1146936), which is the only surviving example of Alford's four original tower mills. The windmill is over 30 m tall, with six storeys, surviving wooden sails and ogee cap, although these are currently removed from the building due to restoration, and once was capable of grinding 4 - 5 tonnes of corn a day. It is described by Pevsner (Ref.) as one of Lincolnshire's finest windmills. Within the grounds of the mill complex are three grade II listed buildings comprising pigsties and an engine shed (NHLE 1063030), a sail store and outbuildings (NHLE 1146943) and the Mill Offices (NHLE 1063029). The second mill is an early 19<sup>th</sup> century tower mill in Bilsby (NHLE 1063005), comprising a four storey tower, with the sails and cap removed.
- 5.5.34 Parkland (MLI41480) associated with Bilsby Hall (MLI124959) has been recorded on the First Edition 1880 Ordnance Survey mapping, within the 1 km Study Area. Areas

of woodland, dating to the 19<sup>th</sup> century, named as Hornby, Mother and Greenfield Woods, Greenfield (MLI43037), is also recorded extending within the draft Order Limits.

- 5.5.35 Examples of 20<sup>th</sup> century listed heritage assets within the 3 km Study Area are the Grade II listed Barclays Bank (NHLE 1308705) built in 1906, and a First World War Memorial unveiled in 1919 (NHLE 1359977), both located in Alford. Another grade II listed First World War Memorial is located in Bilsby (NHLE 1435370).
- 5.5.36 An undated tumulus was recorded close to Saleby (MLI42523), within the 1 km Study Area.

### Historic Landscape Character

- 5.5.37 Section 3 is located within a single broad historic landscape Regional Character Area, 8 - The Grazing Marshes and a single historic landscape character zone (HLCZ) GRM1: The Middle Marsh, within the Grazing Marshes, defined by the Lincolnshire Historic Landscape Characterisation project (Ref 10 and Ref 11).
- 5.5.38 Section 3 extends through the southern part of the GRM1: The Middle Marsh, within the Grazing Marshes HLCZ, from North Thorsby, to the north of Louth, southwards to Thorpe St Peter and the Lincolnshire Fens. To the east lies the low-lying Outer Marsh and Lincolnshire coast, with the Lincolnshire Wolds to the west. This HLCZ is broadly characterised by settlement patterns of nucleated villages located north to south along the 10 m contour line and scattered isolated farmsteads, notably on the lower lying drained marshes in the east of the character zone. The agricultural landscape is characterised by a mix of field types which include early enclosure of the medieval open field system around the historic villages, although the area surrounding St Mary's Priory scheduled monument (NHLE 1008687) may have developed from clearance and early enclosure of ancient woodland. There is good survival of planned 18<sup>th</sup> and 19<sup>th</sup> century enclosure landscapes. The large modern fields, resulting from 20<sup>th</sup> century consolidation and boundary loss, form the predominant field type across the character zone but retain much of the earlier rectilinear character of the planned enclosure landscape (Ref 11).
- 5.5.39 The assessment of the impact of the Project on the historic landscape will be informed by a detailed historic map regression, further research and consultation with historic environment stakeholders, with the results of the assessment being presented in the ES.

### Future Baseline

- 5.5.40 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 5.5.41 At this preliminary stage, a full assessment of the implications of any committed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information Annex I Developments for Consideration Within the Future Baseline**. This will be



reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.

- 5.5.42 The baseline details as presented above (including changes to settings of the assets) are not anticipated to change in the absence of the Project. Any change to archaeological remains, historic buildings and structures and historic landscape features would be limited to the existing and ongoing degradation of their fabric over time through processes such as erosion, desiccation, corrosion or decay.

## 5.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 5.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 12) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 13) which apply to design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 14) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 5.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- the proposed New LCS B has been located to avoid significant impacts to buried archaeological remains identified during geophysical surveys undertaken for the Project; and
  - potentially significant impacts on the setting of heritage assets, brought about by the construction of the Project, may be lessened or avoided through consideration of the detailed design and micro-siting of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the Historic Environment chapter of the ES submitted with the DCO application.

### Control Mitigation Measures

#### Construction

- 5.6.3 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. General measures included within the Preliminary CoCP relevant to the Historic Environment assessment of Section 3 include:
- GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works (EnvCoW(s)) will be available during the construction phase to advise, supervise and report on the delivery of the

mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.

- ii. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP), Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (OWSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), DrMP along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans'.
- iii. GG09: Where sensitive features such as ancient woodland and protected habitats are to be retained within or immediately adjacent to the Order Limits, an appropriate protective area will be established using appropriate fencing and signage and will be inspected, repaired, and replaced as necessary. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.

5.6.4 In addition, measures that relate to the historic environment either directly or through measures applied for landscape and visual, and noise and vibration include:

- i. H01: Known heritage assets and locations known archaeological interest will have been identified by a programme of desk-based assessment and field evaluation prior to construction. Wherever possible identified heritage assets and archaeological remains will be avoided by the Project design. Where avoidance has not been possible, archaeological mitigation measures comprising the preservation of archaeological remains, or a programme of archaeological investigation will be implemented. Areas of archaeological preservation, or where archaeological work is planned, will be demarcated using appropriate fencing and signage to prevent unintentional damage. The fencing and condition of the areas will be inspected, repaired, and replaced as necessary. The areas of archaeological preservation or investigation will be identified on plans within the OWSI and CEMP.
- ii. H02: Where a previously unknown heritage asset is discovered, or a known heritage asset proves to be more significant than foreseen at the time of application, the Project will inform the relevant authorities and will agree a solution that protects the significance of the new discovery, so far as is practicable, within the Project parameters.
- iii. H03: An outline process for dealing with the unexpected discovery of archaeological remains including human remains and Treasure during construction will be set out in the OWSI and detailed CEMP.
- iv. H04: Where practicable, the Project will maintain elements within the historic landscape such as vegetation and hedgerows (including re-instating hedgerows and fences).
- v. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions

associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.

- vi. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.
- vii. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the CEMP.

5.6.5 The requirements for, and scope of, archaeological control measures and additional mitigation will be set out in the OWSI and the CEMP submitted as part of the DCO application setting out how the requirements for archaeological control measures at each stage of construction will be implemented.

5.6.6 The archaeological and historic environment control measures required for the Project will be informed by the results of the forthcoming desk-based assessment, aerial photographic and LiDAR assessment, geoarchaeological desk study and the programme of pre-application archaeological evaluation comprising geophysical survey and archaeological trial trenching and geoarchaeological borehole survey. The results of the programme of archaeological evaluation will identify the presence/absence of buried archaeological assets within Section 3 and characterise their extent, depth, date, state of preservation and significance. As such, specific control measures for individual heritage assets will be included in the ES and OWSI submitted as part of the DCO application.

5.6.7 The strategy and approach for appropriate archaeological and historic environment control measures to reduce or offset the identified impacts from construction and operation of the Project upon heritage assets, will be determined (where possible) in consultation with the heritage stakeholders from the respective local planning authorities and, where required, Historic England.

## Additional Mitigation Measures

5.6.8 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.

5.6.9 Potential additional mitigation measures which may be required to reduce the effects of the Project upon Historic Environment are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. These typically include additional measures which specifically serve a mitigation function, to reduce the scale of potential impacts.

5.6.10 As set out within **PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operation Features** the preliminary additional mitigation measures embedded into the design of Section 3 for Historic Environment includes relocation of the proposed New LCS B to avoid buried

archaeological remains identified by geophysical survey and landscape screening vegetation to reduce the visual impact of the proposed substations within the landscape.

- 5.6.11 Where it is not possible to implement embedded mitigation, or to avoid impacts to earthwork remains or buried archaeological deposits, measures to reduce or offset those impacts would be required to manage the historic environment resource and may include (but not be limited to):
- i. An appropriate programme of archaeological investigation and recording with the objective of advancing the understanding of the significance of archaeological remains within the draft Order Limits that may be disturbed or either wholly or partially lost, in accordance with the guidance provided by the Overarching NPS for Energy (EN-1) (Ref 6, section 5.9.17).
  - ii. Appropriate archaeological and geoarchaeological investigation and recording will be undertaken prior to the commencement of construction works wherever possible but may also include archaeological monitoring and recording (watching brief) works during construction.
  - iii. Establishing an outline process for dealing with the unexpected discovery of archaeological remains including human remains and Treasure during construction within the OWSI and detailed CEMP.
- 5.6.12 Opportunities for further additional mitigation or enhancement will be reviewed as the Project develops and the results of the site walkover surveys and archaeological surveys become available and will be included in the assessment presented in the ES and OWSI submitted with the DCO application.
- 5.6.13 Any measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 5.6.14 Finalised additional mitigation measures will be detailed within the ES

## 5.7 Preliminary Assessment of Effects

- 5.7.1 The following section presents the findings of the preliminary assessment of effects of the Project upon the heritage assets identified within the Section 3 Study Area, as a result of construction and/or operational activities.
- 5.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described.
- 5.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 5.5**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 5.7.4 A full table summarising the preliminary assessment of likely non-significant effects on individual heritage assets is provided within **PEI Report Volume 3 Part B Section 3 Appendix 5B Preliminary Summary of Likely Non-Significant Effects**.
- 5.7.5 Unless stated otherwise all likely significant and non-significant effects reported below are adverse in nature.

- 5.7.6 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

- 5.7.7 The preliminary assessment of the effects arising from construction of Section 3 of the Project is described in this section. The preliminary assessment considers the design, control and additional mitigation measures described in section 5.6.
- 5.7.8 Potential impacts identified during the construction phase include direct physical impacts on heritage assets, within the Section 3 draft Order Limits, resulting from construction works e.g. topsoil stripping and groundworks for the New LCS A and the New LCS B, access routes, pylon working areas, construction compounds, associated drainage and ecological and landscape mitigation.
- 5.7.9 Setting impacts arising from the construction phase on heritage assets may arise due to:
- Temporary short-term impacts from construction activities which can be incremental until construction is completed, caused by the movement of mechanical plant, light, noise pollution and dust; and
  - Permanent long-term impacts as a result of the introduction of the physical form and appearance of the built infrastructure into the landscape during the construction stage and continuing for the operational duration of the Project.

### Designated heritage assets

- 5.7.10 The preliminary assessment has identified seven designated heritage assets, within the 3 km Section 3 Study Area, that have the potential to experience temporary or permanent significant effects. These include two scheduled monuments, one grade II\* listed building and four grade II listed buildings. Some assets may experience significant effects from construction activities and non-significant effects from the permanency of the infrastructure in the landscape, or vice versa. Where this is the case, the assessment for both effects is set out together for the asset in the Likely Significant Effects section, with the significant effects summarised in **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** and the non-significant effects summarised in **PEI Report Volume 3 Part B Section 1 Appendix 5B Preliminary Summary of Likely Non-Significant Effects**.

#### Scheduled Monuments within the 3 km Study Area

- 5.7.11 The Site of St Mary's Priory (NHLE 1008687) is located approximately 480 m south west of the Section 3 draft Order Limits and comprises a mixture of below ground archaeological remains and surviving earthworks. An earthwork moat, approximately 10 m in width, encloses a rectangular mound, with a 19<sup>th</sup> century farmhouse and ancillary buildings currently located within the moat. During repairs and alterations to the farmhouse, foundations for the original nunnery were discovered, indicating the current farmhouse is built upon the foundations of the earlier structure. There are several depressions and mounds within the moated platform and further buried



remains of the priory are expected to survive within the site, including associated structures, linear features, and fishponds. The setting of the asset, which contributes to its high value, includes the scheduled remains of the priory and the surrounding fields which would have formed agricultural land holdings that would have surrounded and supported the monastic house, possibly cleared and enclosed from ancient woodland, of which Greenfield Woods survives. Greenfield Woods provides screening, between the asset and the draft Order Limits, to the east of the asset, with no views between the asset and the proposed New LCS A. The Project does form part of the agricultural setting of the asset. Construction of the Project may temporarily alter the setting of the monument through construction traffic and noise. These temporary and reversible impacts would have a small magnitude of impact and a moderate adverse effect which would be significant. Permanent changes to the setting of the monument arising from the presence of new pylons and associated overhead line infrastructure within the setting of the scheduled monument, which would be visible against the skyline to the south east of the scheduled monument, would have a small magnitude of impact, resulting in a moderate adverse effect which is significant.

- 5.7.12 Markby Priory (NHLE 1004987) is located approximately 1.8 km north east of the Section 3 draft Order Limits. The asset dates to the medieval period and comprises a moat that encloses the buried remains of buildings associated with Markby Priory. An archaeological watching brief identified the remains of the northern edge of the now infilled moat. Depressions and mounds identified within the enclosed area have been identified as likely remains of ancillary structures of the priory and fishponds. The setting of the asset comprises the scheduled remains of the priory, the non-designated remains of the deserted medieval village of Markby (MLI90886), within fields immediately to the south and west of the priory, the surrounding fields which would have formed agricultural land holdings, that would have surrounded and supported the priory, and the wider landscape with open views westwards towards the Wolds. There is inter-visibility between the asset and the Section 3 draft Order Limits which is within the wider agricultural setting of the asset. Construction of the Project may temporarily alter the setting of the monument through construction traffic, cranes and plant movement. These temporary and reversible impacts would have a small magnitude of impact on this high value heritage asset resulting in a moderate adverse effect which would be significant. Permanent changes to the setting of the monument, arising from the presence of new substations, pylons and associated overhead line infrastructure within the setting of the monument and visible against the skyline to the west of the scheduled monument, would have a small magnitude of impact, resulting in a moderate adverse effect which is significant.

#### Listed buildings or structures within the 3 km Study Area

- 5.7.13 The grade II\* listed Church of St Andrew (NHLE 1308650) is located approximately 1.6 km north east of the New LCS A substation, at the western end of Section 3, and the same distance from the overhead lines and pylons proposed to the south. The church is set back from Pinfold Lane with views southwards relatively unobstructed across the flat open countryside. The church dates to the 13<sup>th</sup> century and is a modest building of brick and stone in a tranquil rural village setting. Construction of the Project may temporarily alter the setting of the church affecting the ability to appreciate and experience the value of the asset due to construction traffic, noise and the introduction of additional temporary infrastructure to the skyline to the south west and south. These temporary impacts would have a small magnitude of impact resulting in a moderate adverse effect on an asset of high value which would be

significant. Permanent changes to the setting of the church arising from views across the landscape due to the New LCS A and pylons against the skyline slightly altering the setting would have a small magnitude of impact, resulting in a moderate adverse effect on an asset of high value which is significant.

- 5.7.14 The grade II listed Manor Farmhouse (NHLE 1063012) is located 100 m north of the Project, between pylons LB10 and LB11. The building is situated within a large, moated enclosure (MLI42525), within the shrunken medieval village of Saleby (MLI42524) (both non-designated heritage assets are assessed separately). The moat forms the boundary of the south facing garden of the property and forms its immediate setting, with large modern sheds to the north screened from the farmhouse by dense mature trees. The farmhouse dates to the 18<sup>th</sup> century and is named Saleby Manor on 19<sup>th</sup> century Ordnance Survey maps. The agricultural fields surrounding the property form part of its wider setting and contribute to its heritage value. Both temporary construction works and the permanency of the infrastructure in the landscape from construction and during the operational duration of the Project, within close proximity of the asset, will have a medium magnitude of impact noticeably altering the setting. On an asset of medium value this would result in a moderate adverse effect which is significant.
- 5.7.15 Within 300 m, south of the proposed overhead line and opposite proposed pylon LB11, are a group of grade II listed buildings, namely, Manor House (NHLE 1308599), Stable Block at Thoresthorpe Manor House (NHLE 1063013) and Barn at Thoresthorpe Manor House (NHLE 1308602). The Manor House dates to the 15<sup>th</sup> century and, on the 19<sup>th</sup> century Ordnance Survey maps, it is named 'The Cottage', and it is recorded as a non-designated asset (MLI118535). The listed Barn and Stable Block date to the late 18<sup>th</sup> century. These would have been farm outbuildings for the 18<sup>th</sup> century farmstead, Manor Barn (Thoresthorpe Manor) (MLI125715), located across the road just to the south west. These assets, listed and non-designated, collectively have group value, with their historic relationships and close proximity contributing significantly to their immediate setting and value. Additionally, all these assets are located within the recorded Thoresthorpe Shrunken Medieval Village (MLI42527). The three listed buildings are screened from the Project to the north west by trees, but views of the Project in the landscape would be possible to the north and north east which would alter their setting. Both temporary construction works and the permanency of the infrastructure in the landscape, during the operational duration of the Project, within close proximity of these medium value listed assets, will have a noticeable change to their settings. On assets of medium value, this would have a medium magnitude of impact resulting in a moderate adverse effect which is significant.

#### Non-designated heritage assets

- 5.7.16 Some non-designated heritage assets may experience significant effects from construction activities and non-significant effects from the permanency of the infrastructure in the landscape, or vice versa. Where this is the case, the assessment for both effects is set out together for the asset in the Likely Significant Effects section, with the significant effects summarised in **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** and the non-significant effects summarised in **Table 5.5**.



## Non-designated assets within the draft Order Limits

- 5.7.17 The shrunken medieval village of Saleby (MLI42524) is an asset of medium value, the southern mapped extent of which extends partially within the draft Order Limits. The asset is comprised of a mixture of extant earthworks and buried archaeological remains, visible through aerial imagery. The setting of the asset is the local medieval agricultural landscape in which it is situated. This includes the remains of the former medieval open field system evidenced by former ridge and furrow (MLI88742) and the nearby settlements, including the Thoresthorpe Shrunken Village (MLI42527).
- 5.7.18 The Section 3 draft Order Limits extend through an approximately 125 m section of the southern extent of the shrunken medieval village of Saleby, located in arable fields west of the A1104. Further archaeological evaluation is required to confirm the presence/absence and significance of buried archaeological remains that may be present within the draft Order Limits. However, ground works associated with the construction of the access road, and bellmouth, is considered to have the potential to result in a small magnitude of impact on this medium value asset, resulting in a permanent minor adverse effect. Additional mitigation measures comprising a programme of archaeological investigation and recording, would reduce this to a permanent negligible adverse effect, which would not be significant.
- 5.7.19 Construction of the Project may temporarily alter the setting of the shrunken medieval village of Saleby remains through construction traffic, noise, plant movement and scaffolds in views east from the asset. These temporary and reversible impacts would have a small magnitude of impact and minor adverse effect, which would not be significant. Permanent changes to the setting of this heritage asset, arising from the presence of new pylons and substation infrastructure within the agricultural landscape to the east and south of the shrunken medieval village, and between the asset and nearby shrunken medieval village of Thoresthorpe, are assessed as a medium magnitude of impact, resulting in a moderate adverse effect, which is significant.
- 5.7.20 Thoresthorpe Shrunken Village (MLI42527) is an asset of medium value and partially extends within the Section 3 draft Order Limits. The asset survives as both extant earthworks and buried archaeological remains. Aerial imagery has identified likely surviving archaeological features within the site, including remains of tofts, trackways, house platforms and enclosures. The asset is part of a wider medieval landscape, with evidence of nearby agricultural ridge and furrow (MLI88742 and MLI87465) and other settlements, including the shrunken medieval village of Saleby (MLI42524), as well as Bilsby deserted medieval village (MLI41489). The setting of the asset is considered to be the nearby medieval settlements and the wider agricultural landscape the asset is located within. The Project is located within the setting of the asset.
- 5.7.21 Ground works associated with the construction of the temporary construction drainage system, within the Thoresthorpe Shrunken Village (MLI42527), will result in a small magnitude of impact on this heritage asset of medium value, resulting in a permanent minor adverse effect, which is not significant. Additional mitigation measures comprising a programme of archaeological investigation and recording, would reduce this to a permanent negligible adverse effect, which would not be significant.
- 5.7.22 Construction of the Project may temporarily alter the setting of the Thoresthorpe Shrunken Village through construction traffic, noise, plant movement and scaffolds in views east from the asset. These temporary and reversible impacts would have a

small magnitude of impact and minor adverse effect, which would not be significant. Permanent changes to the setting of this asset, arising from the presence of new pylons and substation infrastructure in the landscape north and east of the medieval village and between the asset and nearby shrunken and deserted medieval villages, are assessed as a medium magnitude of impact, resulting in a moderate adverse effect, which is significant.

- 5.7.23 Geophysical survey undertaken within the proposed New LCS A and New LCS B sites has identified five groups of previously unknown anomalies, interpreted as possibly of archaeological origin, as former field boundaries or former ridge and furrow cultivation within the draft Order Limits. Of these anomalies a small rectilinear enclosure and linear feature (AEC301) have been identified through geophysical survey to the west of asset (AEC300). Further archaeological evaluation is required to confirm the extent, date and value of the buried archaeological remains. The enclosure may date to the prehistoric, Roman or medieval period and may represent either rural settlement remains or agricultural enclosures. Based on the form of the enclosure and comparison with other known examples in the wider region, the asset is assessed as being of medium value, having potential to contribute to regional research objectives relating to rural settlement remains or agricultural practices. There is potential for topsoil stripping and ground works, associated with the construction of the proposed New LCS B to remove this asset. This would result in a high magnitude of impact, and a major adverse effect, which would be significant, prior to the implementation of additional mitigation measures. Additional mitigation measures comprising a programme of archaeological investigation and recording, would reduce this to a permanent moderate adverse effect, which would be significant.

#### Non-designated assets within the 1 km Study Area

- 5.7.24 The redeveloped 19<sup>th</sup> century farmstead, Galley Hill (MLI116907), is located directly north east of the proposed New LCS A substation. The property is screened from views to the south but intervisibility with the proposed infrastructure may be possible depending on the season. The construction and presence of the proposed New LCS A, pylons and overhead lines will potentially impact upon views and the setting of this asset, affecting the way in which it is appreciated and experienced. The temporary construction works may have a large magnitude of impact on this heritage asset of low value, resulting in a moderate adverse effect that is significant. The permanent presence of the Project infrastructure (the New LCS A and multiple pylons) within the agricultural setting of the asset may also have a large magnitude of impact, resulting in a moderate adverse effect which would be significant.
- 5.7.25 Bilsby deserted medieval village (MLI41489) is an asset of medium value, located approximately 180 m south west of the draft Order Limits. The asset was previously a scheduled monument but was de-scheduled in 1989. The asset comprises a mixture of surviving earthworks and buried archaeological remains. Aerial photography has identified the buried remains of tofts, house platforms, and trackways. Within the settlement is Bilsby Hall Camp, a rectangular shaped enclosure, with a surviving and extant complex of earthwork banks up to 1.5 m in height. The asset is part of the wider medieval landscape and is located in close proximity to other medieval settlements, including the shrunken medieval village of Saleby (MLI42524) and Thoresthorpe Shrunken Village (MLI42527). The asset is also located in close proximity to areas of surviving medieval ridge and furrow (MLI80625 and MLI98708). The setting of the asset is considered to be the nearby medieval settlements and the

agricultural landscape that would have formed the open field system and holdings surrounding the former medieval settlement and contributes to the value of the asset. The Project is situated within the setting of the asset.

- 5.7.26 Construction of the New LCS B, the proposed overhead line and associated construction access haul road, may temporarily alter the setting of the medieval settlement remains which comprise the Bilsby deserted medieval village through construction traffic, noise, plant movement and scaffolds. These temporary impacts would have a small magnitude of impact and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset, arising from the presence of the New LCS B, pylons and overhead line infrastructure, in the landscape east of the medieval village and between the asset and nearby deserted medieval villages, is assessed as a medium magnitude of impact, resulting in a moderate adverse effect which is significant.
- 5.7.27 The moated site in Saleby medieval shrunken medieval village (MLI42525), is located approximately 40 m north of the Section 3 draft Order Limits and is an asset of medium value. The asset is comprised of a large moat that encloses a raised platform. Within the central platform, a mixture of surviving earthworks and buried archaeological remains are present. Situated within the centre of the platform is the grade II listed Manor Farmhouse (NHLE 1063012; assessed separately in this PEI Report chapter). Historic Ordnance Survey mapping from the late 19<sup>th</sup> century identifies potential surviving linear earthworks close to the manor house, with further potential for the survival of the buried foundations of the manor house, ancillary structures and ponds to also survive.
- 5.7.28 The setting of the asset is the wider medieval agricultural landscape which the moated site is situated within and would have served, and the nearby shrunken medieval settlement of Saleby. There is some light screening by a tree line between the asset and the Project, however, there would still be some intervisibility. The Project is situated within the setting of the asset.
- 5.7.29 Construction of the Project may temporarily alter the setting of the asset through construction traffic, noise, plant movement and scaffolds in views south from the asset. These temporary impacts would have a medium magnitude of impact resulting in a moderate adverse effect which would be significant. Permanent changes to the setting of this heritage asset, arising from the presence of new pylons and overhead line infrastructure in the landscape south of the asset, is assessed as a medium magnitude of impact, resulting in a moderate adverse effect which is significant.

### **Operation**

- 5.7.30 Impacts during the operation of the Project that may affect heritage assets include:
- i. security lighting with motion detectors;
  - ii. operational noise; and
  - iii. restrictions on accessibility to heritage assets.
- 5.7.31 In accordance with the PINS Scoping Response (Ref 4; section 3.4, ID. 3.4.2), the assessment of physical impacts to, or changes to the settings of heritage assets, as a result of maintenance activities and traffic, have been scoped out of the preliminary assessment as they are unlikely to result in significant effects.

- 5.7.32 Although no additional significant effects are considered likely through operation, over and above those already identified relating to the long-term presence of the Project in the landscape assessed under the construction phase, further assessment of these operational elements will be undertaken in the ES.

## Likely Non-Significant Effects

### Construction

#### Designated heritage assets

- 5.7.33 A number of designated heritage assets which may experience non-significant effects have been identified warranting further explanation of their assessment due to particular sensitivities, such as their high value, designed views, historic setting or their proximity to works proposed within the draft Order Limits. For completeness, **Table 5.5** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant effects with further detail on specific assets provided within **PEI Report Volume 3 Part B Section 3 Appendix 5B Preliminary Summary of Likely Non-Significant Effects**.

#### Listed buildings or structures within the 3 km Section 3 Study Area

- 5.7.34 The historic core of the agricultural market town of Alford, at the foot of the East Lincolnshire Wolds, was designated a conservation area in 1970. The northern extent of the Alford Conservation Area is located approximately 1.2 km to the south of the Project and at the eastern end of Section 3. The conservation area includes a concentration of listed heritage assets, with four of exceptional or more than special interest, comprising two grade I listed buildings (NHLE 1146936 and NHLE 103026) and two grade II\* listed buildings (NHLE 1308757 and NHLE 1063001), which all contribute to the distinctive character of the town. The Conservation Area Appraisal notes that the approach from Miles Cross Hill provides the best view of the town looking eastwards out towards the Lincolnshire marshes. To the west of East Street, at the intersection with Bilsby Road, the grade I listed Windmill (NHLE 1146936) built in 1837 acts as a key gateway building glimpsed in the approach to the town at the northern end of the conservation area. The windmill also reflects the strong association with the agricultural history of the town, with fields to the north and west within the parish forming the wider agricultural setting of the conservation area. From the Windmill, the conservation area extends away from the Project southwards along the town's linear plan. The three other high value listed buildings are located within the heart of the historic town, which is largely screened from the surrounding landscape by various infill and modern urbanisation and mature trees. Any impacts as a result of the Project would be limited to the northern end of the conservation area, with potential temporary impacts on its character and surrounding setting within the parish. However, there would be no permanent change to its setting, nor would views be altered into or out of the conservation area. Given the dense concentration of listed buildings, including four of high value, the conservation area is of demonstrable importance and is considered a designated asset of high value. The temporary magnitude of impact on an asset of high value would be negligible resulting in a minor adverse effect, which is not significant. The permanent presence of the Project for its construction and throughout its operational duration would not alter the setting of Alford Conservation Area, which also applies to the listed buildings contained within it. This would result in a magnitude of impact of 'no change' which



would have a neutral effect that is not significant. The Windmill is discussed separately below due to its location and high value as the nearest listed building to the Project within the conservation area.

- 5.7.35 The immediate setting of the grade I listed Windmill (NHLE 1146936) contributes strongly to its heritage value, situated in close proximity to three other grade II listed buildings which are contemporaneous with it and have a group value (NHLE 1146943, NHLE 1063029 and NHLE 1063030). Its heritage value is also derived from its historic relationship with the town of Alford, which forms part of its wider setting, as well as the agricultural fields within the historic parish of Alford to the north and west. The Project infrastructure would not impact upon the setting of the asset, nor views towards or from the Windmill, with the infrastructure over 1 km away. However, there is a potential for temporary impacts upon the setting of the windmill during construction, for example due to noise or construction traffic, that could have a negligible magnitude of impact on an asset of high value resulting in a minor adverse effect which is not significant.
- 5.7.36 Within Thoresthorpe, is the grade II listed The Cottage (NHLE 1063014). The building is located approximately 100 m to the south of the draft Order Limits between pylons LB11 and LB12. Built around 1830, the property is heavily screened from views to the north by dense trees and vegetation, as well as the presence of buildings to its east for a garden nursery centre. Its setting includes its proximity to other properties in the hamlet and the lane, towards which the building's principal elevation faces with views southwards. Temporary construction works will have a small magnitude of impact resulting in a minor adverse effect on an asset of medium value, which is not significant. The permanency of the infrastructure in the landscape, from the time of construction and throughout its operational duration, will have no change upon its setting or value which would result in a neutral effect which is not significant.
- 5.7.37 Approximately 1.5 km to the north east of proposed pylon LB18 and the proposed New LCS B, is the grade II listed The Priory (NHLE 1147252) which is surrounded by the scheduled Markby Priory (NHLE 1004987) earthworks. The farmhouse dates to the 16<sup>th</sup> century and faces southwards across an open agricultural landscape which forms part of its wider setting. Both temporary construction works and the permanency of the infrastructure in the landscape, during the operational duration of the Project, potentially within views and altering the setting of the asset, will have a small magnitude of impact which, on an asset of medium value, would result in minor adverse effects that are not significant.

### Non-designated Heritage Assets

Non-designated Heritage Assets within Section 3 draft Order Limits and the 1 km Study Area

- 5.7.38 The preliminary assessment has identified non-designated heritage assets within the Section 3 draft Order Limits and the 1 km Study Area that have the potential to experience temporary or permanent non-significant effects. A number of these assets have been identified setting out further explanation of their assessment due to particular sensitivities, such as their historic setting or their proximity to works proposed within the draft Order Limits. The preliminary assessment for these non-designated assets is provided in **Table 5.5**.
- 5.7.39 Within the proposed New LCS A site a number of anomalies of potential archaeological origin have been identified by geophysical survey. These include a

small undated curvilinear feature, possibly representing a ring ditch and a north south aligned linear feature (AEC302), alongside a series of linear anomalies (AEC303) and parallel curvilinear anomalies, representing the ploughed out remains of ridge and furrow cultivation and linear former field boundaries (AEC304). These correspond with HER record (MLI88742). Further archaeological evaluation is required to confirm the extent, date and value of buried archaeological remains, however, the preliminary assessment has not identified any significant effects to these assets.

- 5.7.40 Within the proposed New LCS B site, several likely intercutting and overlying rectilinear enclosures, linear features and discrete features, possibly representing pits and postholes (AEC300), have been identified extending into the draft Order Limits. Further archaeological evaluation is required to confirm the extent, date and value of buried archaeological remains, to confirm whether this is a 'ladder settlement' or series of agricultural enclosures. Based upon their form and layout, the enclosures are likely to be Iron Age or Romano-British in date and would hold medium value. Ground works associated with the construction of the proposed New LCS B may truncate the western edge of the asset, and may result in a small magnitude of impact, resulting in a permanent minor adverse effect, which is not significant. Additional mitigation measures, comprising a programme of appropriate archaeological investigation and recording, would reduce this to a permanent negligible adverse effect, which would not be significant.

### **Operation**

- 5.7.41 No additional non-significant effects are considered likely through operation, over and above those already identified relating to the long-term presence of the Project in the landscape assessed under the construction phase, further assessment of these operational elements will be undertaken in the ES.



Table 5.5 Preliminary overview of non-significant Historic Environment effects – Section 3

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
				Minor Adverse (Not significant)	Negligible Adverse (Not significant)	Neutral (Not Significant)	
Designated Assets within the 3 km Study Area							
Scheduled Monuments	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change	0	0	2	Temporary changes to the setting of scheduled monuments arising from construction of the Project have the potential to result in no change to the value of these assets or how they are appreciated, resulting in neutral effects to these assets of high value. These effects would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change	0	0	2	The permanency of the infrastructure in the landscape within the wider setting of the scheduled monuments has the potential to result in no change to the value of these assets or how they are appreciated, resulting in neutral effects to these assets of high value. The neutral effects would not be significant.
Grade I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change or Negligible	1	0	1	Temporary changes to the setting of grade I listed buildings arising from construction of the project have the potential to either have little effect, or to result in no change to the value of these assets or how they are appreciated, resulting in minor adverse effects or neutral effects to these assets of high value. These effects would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change	0	0	2	The permanency of the infrastructure in the landscape within the wider setting of the grade I listed buildings has the potential to result in no change to the value of these assets or how they are appreciated, resulting in neutral effects to these assets of high value. These effects would not be significant.
Grade II* listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible	3	0	0	Temporary changes to the setting of grade II* listed buildings arising from construction of the project have the potential to have a slight change to the value of these assets or how they are appreciated, resulting in minor adverse effects to these assets of high value. These effect would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction	No Change or Negligible	1	0	2	The permanency of the infrastructure in the landscape within the wider setting of the grade II* listed buildings has the potential to either have a

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
				Minor Adverse (Not significant)	Negligible Adverse (Not significant)	Neutral (Not Significant)	
		of the Project and throughout its operational duration.					slight effect, or to result in no change to the value of these assets or how they are appreciated, resulting in a minor adverse or neutral effect to these assets of high value. The minor adverse or neutral effects would not be significant.
Conservation Area	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible	1	0	0	Temporary changes to the setting of the conservation area arising from construction of the project have the potential to have a slight change to the value of the conservation area or how it is appreciated. The resulting minor adverse effects to these assets of high value would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change	0	0	1	The permanency of the infrastructure in the landscape within the wider setting of the conservation area has the potential to result in no change to the value of these asset or how it is appreciated. The resulting neutral effect to this asset of high value would not be significant.
Grade II listed buildings	Medium	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change, Negligible, or Small	5	10	7	Temporary changes to the setting of grade II listed buildings arising from construction of the project have the potential to have a slight effect, little effect, or to result in no change to the value of these assets or how they are appreciated. This would result in minor adverse, negligible adverse or neutral effects to these assets of medium value. These effects would not be significant.
	Medium	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change, Negligible, or Small	1	3	18	The permanency of the infrastructure in the landscape within the wider setting of these grade II listed buildings has the potential to have a slight or little effect, or to result in no change, to the value of these assets or how they are appreciated, resulting in a minor adverse, negligible adverse and neutral effect to these assets of medium value. These effects would not be significant.
High Value Designated Assets within the 3 - 5 km Study Area							
Scheduled Monuments	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change	0	0	1	Temporary effects arising from construction of the Project will not alter the value of the scheduled monument or the way in which it is appreciated or understood. This would result in a neutral effect that is not significant.
	High	Potential permanent change to setting or value of the assets arising from construction	No Change	0	0	1	The permanency of the infrastructure in the landscape within the wider setting of the scheduled monument will result in no change to

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
				Minor Adverse (Not significant)	Negligible Adverse (Not significant)	Neutral (Not Significant)	
		of the Project and throughout its operational duration.					the value of these assets or how it is appreciated, resulting in a neutral effect to this asset of high value. The neutral effect would not be significant.
Grade I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change	0	0	1	The Project does not form part of the setting of the grade I listed building and will not alter their value or the way in which they are appreciated or understood. This would result in a neutral effect that is not significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change	0	0	1	The Project does not form part of the setting of the grade I listed building and will not alter their value or the way in which they are appreciated or understood. This would result in a neutral effect that is not significant.
Non-designated heritage assets within the draft Order Limits							
Non-designated heritage assets	Medium or Low	Permanent physical construction impacts resulting in the partial loss or disturbance of the asset.	Small	0	7	0	The partial loss or disturbance of non-designated heritage assets of medium or low value, resulting in negligible adverse effects that are not significant. Archaeological mitigation measures i.e. appropriate archaeological investigation and recording would off-set the significance of the effects to not significant.
	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	Small	2	0	5	Temporary effects arising from construction of the Project have potential to slightly change the value of the non-designated heritage assets or the way in which they are appreciated or understood. This would result in minor adverse or neutral effects that would not be significant.
Non-designated heritage assets within the 1 km Study Area							
Non-designated heritage assets	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change, Negligible, Small or Medium	6	18	0	Temporary changes to the setting of non-designated heritage assets arising from construction of the Project have the potential to cause slight or little change, or to result in no change to the value of these assets or the way in which they are appreciated. This would result in minor adverse or negligible adverse effects to these assets of medium and low value. These effects would not be significant.
	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change, Negligible,	4	11	9	The permanency of the infrastructure in the landscape within the wider setting of these non-designated heritage assets has the potential to cause slight or little change, or to result in no change, to the value of these assets or how they

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
				Minor Adverse (Not significant)	Negligible Adverse (Not significant)	Neutral (Not Significant)	
			Small or Medium				are appreciated. This would result in a minor adverse, negligible adverse and neutral effect to these assets of medium and low value. These effects would not be significant.

## **5.8 Monitoring**

- 5.8.1 The control measures set out in section 5.6 of this chapter include provision for monitoring of the programme of archaeological control and mitigation measures, by the Environmental Manager or Archaeological Clerk of Works (ACoW), in consultation with the Local Planning Authority. As such, no further requirement for monitoring the historic environment is anticipated at this time.

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# **6. Water Environment and Flood Risk**

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# 6. Water Environment and Flood Risk

## 6.1 Introduction

- 6.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Water Environment and Flood Risk assessment of the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 6.1)
  - ii. Identification of key local and regional policy relevant to the assessment (section 6.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** and supporting appendices.
  - iii. A summary of the assessment scoping process and the subsequent scope of the Water Environment and Flood Risk assessment (section 6.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**.
  - iv. A high level summary of the methodology of the Water Environment and Flood Risk assessment for Section 3 (section 6.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Water Environment and Flood Risk assessment (section 6.5).
  - vi. A description of mitigation measures included for the purposes of the Water Environment and Flood Risk assessment reported within the PEI Report (section 6.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Water Environment and Flood Risk effects arising during construction and operation of the Project within Section 3, based upon the assessment completed to date (section 6.7); and
  - viii. An outline of the likely monitoring requirements in relation to Water Environment and Flood Risk (section 6.8).
- 6.1.2 Further supporting information is set out in **Table 6.1** below, including supporting figures and technical appendices.

Table 6.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
<b>PEI Report Volume 2 Part B Section 3 Figures</b>	<b>Figure 6.1 Water Environment Receptors and Study Area</b> <b>Figure 6.2 Principal Local Water Environment Regulators</b> <b>Figure 6.3 Surface Water Flood Risk</b> <b>Figure 6.4 Water Framework Directive Water Body Catchments</b>
<b>PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment</b>	Preliminary assessment of the potential flood risk in relation to the Project, which sets out further assessment to be completed in support of the Environmental Statement (ES) and Development Consent Order (DCO) application. The emerging outcomes of ongoing pre-application consultation with key flood risk stakeholders are referenced as appropriate.
<b>PEIR Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Screening Assessment</b>	Preliminary assessment of the potential implications of the Project with respect to compliance with the Water Framework Directive (WFD). Provides further details on the Water Framework Directive (WFD) water body status and ecological and chemical characteristics for those waterbodies relevant to the Section 3 assessment.
<b>Project Supporting Information</b>	
<b>PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project</b>	A summary of the works within Section 3, including the design and overview, construction and operation of the Section.
<b>PEI Report Volume 3 Part A Appendix 2A Key Legislation</b>	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform the ES.
<b>PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy</b>	A list of national and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
<b>PEI Report Volume 3 Part B Appendix 2Ci Local Plan Policy: Section Specific Policy</b>	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
<b>PEI Report Volume 3 Part B Appendix 2Cii Local Plan Policy: Route-wide</b>	Details of planning policies applicable route-wide within the relevant Local Authority areas.
<b>PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered</b>	Provides a summary of the main alternatives considered in relation to the Project during the

Supporting Information	Description
	design development process, including the main reasons for selecting the chosen option.
<b>PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information</b>	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
<b>PEI Report Volume 2 Part A Chapter 5 Project Description</b>	An overarching description of the Project and its key components, including available construction information. A summary of the works within Section 3 is also provided within <b>PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project</b> .
<b>PEI Report Volume 3 Part A Appendix 5A Draft Outline Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent.

- 6.1.3 There are interrelationships between the potential effects on the Water Environment and Flood Risk and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** considers the effects identified by the surface water environment assessment that may affect ecological receptors, including aquatic flora and fauna.
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology** considers the effects identified by the surface water environment assessment that may affect hydrogeological receptors.
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
  - iv. **PEI Report Volume 2 Part C Route-wide Chapter 5 Water Environment** presents a summary of the route-wide preliminary impacts and likely significant effects of the Project upon the water environment.
  - v. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 6.2 Legislation and Policy Framework

### Legislation and National Policy

- 6.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning**



**Policy Context** and supporting appendices, the details of which are set out in **Table 6.1**.

## Regional and Local Policy

- 6.2.2 Regional and local plans, policies and byelaws relevant to this assessment are as follows:
- i. Lincolnshire Minerals and Waste Local Plan (2016) (Ref 1):
  - ii. Joint Lincolnshire Flood Risk and Water Management Strategy 2019-2050 (2019) (Ref 2);
  - iii. East Lindsey Local Plan Core Strategy (2018) (Ref 3):
    - Strategic Policy 16 – Inland Flood Risk: which amongst other policy, states that all new development must show how they propose to provide adequate surface water disposal, including avoiding impacting on surface water flow routes or ordinary watercourses. Development in areas of inland flood risk must incorporate flood mitigation measures in their design.
  - iv. Lindsey Marsh Internal Drainage Board Byelaws (2018) (Ref 4):
    - These documents set out local byelaws governing watercourse maintenance and water level management within the IDB district.

## 6.3 Scope of Assessment

- 6.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 6). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Water Environment and Flood Risk chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 6.3.2 Non-statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 6.3.3 Aspects of the Water Environment and Flood Risk which are included within the scope of the assessment are summarised in **Table 6.2**.
- 6.3.4 It should be noted that operational phase impacts on aquatic environment and water resources receptors arising from overhead line aspects of the project were scoped out of the assessment at scoping stage and are therefore not considered further in this chapter in accordance with the Scoping Opinion.

Table 6.2 Water Environment and Flood Risk effects scoped in for further assessment

Receptor	Relevant Assessment Criteria	Potential Effects Considered
<b>Construction Phase</b>		
<b>Aquatic environment receptors</b> , comprising: - Main rivers - WFD river and transitional waterbodies - IDB-maintained watercourses - Ordinary watercourses  <b>Water resource receptors</b> , comprising: - Licensed surface water abstractions - Unlicensed surface water abstractions for private water supply - Discharges to surface waters	WFD and WFD (Standards and Classification) Directions (England and Wales) 2015 (Ref 7).	<ul style="list-style-type: none"> <li>• Deterioration in the water quality of aquatic environment receptors via generation of sediment laden run-off as a result of construction activities, e.g. watercourse crossings and excavations.</li> <li>• Potential effects on the hydromorphology and flow conveyance as a result of increased sediment inputs or direct watercourse disturbance (including from new watercourse crossings).</li> <li>• Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants from contaminated soil, or accidental spillage of pollutants (e.g. fuel or oil).</li> <li>• The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.</li> </ul>
<b>Flood risk receptors</b> (property and infrastructure at risk of flooding)	NPPF (Ref 8)	<ul style="list-style-type: none"> <li>• Changes to watercourse flow conveyance arising from the presence of new or modified temporary watercourse crossings. This has the potential not only to affect the morphology of aquatic environment receptors, but to increase the risk of flooding to flood risk receptors.</li> <li>• Changes to surface water flood risk due to changes in runoff rates resulting from ground disturbance and creation of impermeable surfaces, and to changes in surface water runoff pathways due to changes in ground surface levels.</li> <li>• Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance.</li> </ul>

Receptor	Relevant Assessment Criteria	Potential Effects Considered
		<ul style="list-style-type: none"> <li>Changes to fluvial flood risk associated with compartmentalisation of the floodplain.</li> <li>Impacts on the integrity of flood defence and land drainage infrastructure as a result of physical impingement of Project infrastructure.</li> </ul>
<b>Operational Phase</b>		
<b>Aquatic environment receptors</b> , comprising: <ul style="list-style-type: none"> <li>- Main rivers</li> <li>- WFD river and transitional waterbodies</li> <li>- IDB-maintained watercourses</li> <li>- Ordinary watercourses</li> </ul> <b>Water resource receptors</b> , comprising: <ul style="list-style-type: none"> <li>- Licensed surface water abstractions</li> <li>- Unlicensed surface water abstractions for private water supply</li> <li>- Discharges to surface waters</li> </ul>	WFD and WFD (Standards and Classification) Directions (England and Wales) 2015 (Ref 7).	<ul style="list-style-type: none"> <li>Deterioration in the water quality of aquatic environment receptors due to a spill or leakage of fuels/chemicals during periodic maintenance and refurb activities. These activities are unlikely to require heavy plant, or excavations or the need to construct new temporary access roads.</li> <li>The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.</li> </ul>
<b>Flood risk receptors</b> (property and infrastructure at risk of flooding)	NPPF (Ref 8)	<ul style="list-style-type: none"> <li>Changes to surface water flood risk due to changes in runoff rates resulting creation of impermeable surfaces, and to changes in surface water runoff pathways due to changes in ground surface levels.</li> <li>Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance.</li> </ul>

6.3.5 The receptor types identified in **Table 6.2** are briefly introduced below. Further detail on the definition of these receptor types is provided in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Features in these three classes are only identified as receptors where they intersect with the Section 3 Study Area for Water Environment and Flood Risk, as defined in section 6.5.

## Aquatic Environment Receptors

- 6.3.6 The basic unit for identification of aquatic environment receptors is WFD surface water bodies, as defined in the Environment Agency (EA) Cycle 3 River Basin Management Plans (RBMPs) (Ref 9) or water-dependent designated nature conservation sites. This is to allow alignment of the EIA with the WFD assessment for the Project. However, other classes of watercourse (main river, IDB-maintained watercourse, ordinary watercourse) are also identified as receptors where appropriate.

## Water Resource Receptors

- 6.3.7 Water resources receptors are defined within this assessment as surface water abstractions including their associated upstream catchment. The potential for impacts on water quality and water balance/flow regime in the catchments upstream of abstraction locations have been assessed in order to determine potential effects on the abstractions themselves. The assessment of abstractions in the Water Environment and Flood Risk topic is restricted to those from surface water sources. The potential for effects on groundwater abstractions is considered in **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology**.
- 6.3.8 Discharges to surface water from other parties have been considered as receptors, although there is little scope for effects of the Project on discharges, apart from direct physical impingement, which will be avoided through imposition of suitable stand-off distances between working areas and discharge infrastructure.

## Flood Risk Receptors

- 6.3.9 Flood risk receptors are defined within this assessment as property and infrastructure that could be at risk of flooding. Their sensitivity is defined in terms of the flood risk vulnerability classification set out in Table 2 of the Planning Practice Guidance (PPG) on Flood Risk and Coastal Change (Ref 10) that supports the National Planning Policy Framework (NPPF) (Ref 7). It is recognised that the primary purpose of the NPPF flood vulnerability classification is to guide Flood Risk Assessment (FRA) requirements for new development, but it is also considered to be a useful tool for assessing the relative sensitivity of external receptors for flood risk effects from new development.
- 6.3.10 The preliminary assessment for flood risk reported in this chapter only considers the impacts of the Project on flood risk to external receptors. An appraisal of the risks of flooding to proposed project infrastructure and activities and proposed mitigation of these risks is provided in the **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**.

## 6.4 Assessment Methodology

- 6.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Water Environment and Flood Risk assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components is outlined below.

- 6.4.2 This section presents a summary of the approach to the assessment of impacts arising from the Project on the surface water environment and flood risk, for the purposes of the PEI Report. The methodology has been applied to the construction and operational phases of the Project, to provide a preliminary assessment of impacts. The final approach to the assessment reported in the ES which accompanies the DCO application will be kept under review, subject to further consultation with relevant statutory bodies.
- 6.4.3 The assessment methodology is consistent with guidance set out in LA113 from the Design Manual for Roads and Bridges (DMRB) (Ref 11). Whilst primarily intended for use in assessing the impacts of highways projects on the water environment, the methodology is widely accepted for assessing the effects of other types of linear infrastructure. However, the specific details of the methodology, particularly with regard to defining the value of receptors, also draws on experience from previous electricity transmission projects, as well as having regard for the specific characteristics of the water environment in the Project Study Area.
- 6.4.4 A supporting FRA is being developed in accordance with the requirements of the Energy National Policy Statements EN-1 and EN-5, the NPPF relevant local planning policy and local flood risk management guidelines published by the Lead Local Flood Authorities (LLFAs) and Internal Drainage Boards (IDBs). The final FRA will be included within the ES. A preliminary FRA (PFRA) is included in **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**.
- 6.4.5 An assessment of compliance with the Water Framework Directive (WFD) will be produced in line with Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Ref 12) and included in the ES. A summary of assessment approach and Stage 1 Screening assessment is included within the PEI Report as an appendix to the Water Environment and Flood Risk chapter of the Route-wide Assessment in **PEI Report Volume 3 Part C Appendix 5B Preliminary WFD Assessment**.
- 6.4.6 Relevant technical guidance and standards that have informed the methodology are listed in full in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.

## Assessment Assumptions and Limitations

- 6.4.7 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 6.4.8 These key parameters and assumptions will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 6.5 Baseline Conditions

### Study Area

- 6.5.1 The Section 3 Study Area for Water Environment and Flood Risk includes the area within the draft Order Limits and extends to a 500 m buffer around the draft Order

Limits. This is in accordance with the Scoping Report (Ref 6) and is considered an appropriate Study Area based on the nature of the Project construction and operation (and maintenance) activities, technical knowledge of similar schemes, and an understanding of source-pathway-receptor linkages for Water Environment and Flood Risk. Beyond the 500 m buffer, effects resulting from the Project are unlikely and have therefore been scoped out. This was accepted by the Planning Inspectorate (PINS) in their Scoping Opinion (Ref 5). The Section 3 Study Area is presented in **PEI Report Volume 2 Part B Section 3 Figure 6.1 Water Environment Receptors and Study Area**.

6.5.2 The following sections provide a description of the baseline environment relevant to the Section 3 Study Area.

Data Collection

- 6.5.3 At this stage, the Water Environment and Flood Risk baseline has been developed on the basis of a desk-based assessment of existing data. A site walkover will be undertaken in 2025 to supplement the data described in **Table 6.3** and inform the assessment reported in the ES. Additionally, the understanding obtained from the baseline data will also be supplemented by further consultation with relevant water and flood risk stakeholders. The baseline characterisation will therefore be refined where appropriate as data becomes available and as the details of the design are developed.
- 6.5.4 Environment Agency flood model outputs (including flood extent and flood depth data) for the floodplains that are proposed to be crossed by the Project infrastructure within Section 3 include:
- i. Woldgrift Drain Model and Report (Ref 13);
  - ii. Main East Coast Breach Model and Report (Ref 14); and
  - iii. Northern Area Tidal Modelling (NTM) East Coast Overtopping Model (Ref 15).
- 6.5.5 The known or predicted current and future baseline environment described in this section has been informed by the following data sources listed in **Table 6.3**.
- 6.5.6 The Flood Map for Planning was pdated in March 2025 to represent the latest available data arising from the Environment Agency’s updated National Flood Risk Assessment (NaFRA2) (Ref 16). This is not reflected within this PEI Report and the screening exercise presented in **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**, but will inform the updated assessment reported in the ES, including the FRA submitted in support of the DCO application for the Project.

Table 6.3 Data sources used to inform baseline conditions

Data topic	Sources of information
Climate	Met Office UK Climate averages at Manby (Ref 17)
Topography	Ordnance Survey Mapping (Ref 18)
Geology	British Geological Survey (BGS) Geology of Britain Viewer (Ref 19)



Data topic	Sources of information
Soils and land use	Department for Environment, Food and Rural Affairs (DEFRA) Multi-Agency Geographic Information for the Countryside (Magic Map) online GIS portal (Ref 20); National Soil Research Institute Soilscales map viewer (Ref 21)
Hydrology	Environment Agency Statutory Main River Map for England (Ref 22) Flood Estimation Handbook Web Service (Ref 23)
Flood risk	Environment Agency Flood Map for Planning (Ref 24) Environment Agency Risk of Flooding from Surface Water (RoFSW) (Ref 25) National Flood Risk Assessment (NAFRA) Dataset (Ref 16) Environment Agency Risk of Flooding from Reservoirs (Ref 26) Environment Agency Flood Defence Asset database (Ref 27) National River Flow Archive (NRFA) (Ref 28)
Water quality and Water Framework Directive status	Catchment Data Explorer database (Ref 29) of Cycle 2 and 3 WFD information
Water abstractions and discharge consents	Environment Agency abstraction and discharge consent data including active discharge locations, abstraction licence strategies and local authority private water supply datasets (Ref 30) (Ref 31)

## Survey Work

- 6.5.7 While a Water Environment and Flood Risk walkover survey was not undertaken to inform the PEI Report, this will be undertaken in 2025 with a view to informing the ES. The objective of this walkover survey will be to conduct visual inspections to characterise watercourses in terms of morphology, depth of water, depth of movement and water quality.
- 6.5.8 The following data was not available at the time of writing this PEI Report but will be available to inform the ES:
- i. Field notes and photographs collected during watercourse surveys; and
  - ii. Aquatic ecology surveys, including:
    - General characteristics of watercourses to be crossed, including physical features such as length, depth, width, flow, water level, bed and bank substrate and bankside and in-channel vegetation cover;
    - Aquatic habitat appraisal surveys and assessments; and
    - Appraisal of potential presence of protected and notable species typically associated with watercourse habitats.

## Further Data Requests

- 6.5.9 To inform the Water Environment and Flood Risk assessment reported in the ES, further data requests will be made with the LLFAs and IDBs to provide information on the following:
- Baseline flood risk data, including available modelled flood data and local flood risk data from commissioned studies.
  - Further information on the location and characteristics of IDB-maintained watercourses and operation of water level management assets.
  - Information on local flood risk from LLFAs (e.g. specific watercourse characteristics, local flood history, Section 19 reports, asset information and maintenance regimes).
- 6.5.10 Further information received from stakeholders will be incorporated into future stages of the assessment.

## Existing baseline

- 6.5.11 The following section outlines the Water Environment and Flood Risk baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:
- PEI Report Volume 2 Part B Section 3 Figure 6.1 Water Environment Receptors and Study Area;**
  - PEI Report Volume 2 Part B Section 3 Figure 6.2 Principal Local Water Environment Regulators;**
  - PEI Report Volume 2 Part B Section 3 Figure 6.3 Flooding from Surface Water;**
  - PEI Report Volume 2 Part B Section 3 Figure 6.4 Water Framework Directive Water Body Catchments;**
  - PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment;** and
  - PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Assessment.**
- 6.5.12 The draft Order Limits in Section 3 cover the New Lincolnshire Connection Substation A and the New Lincolnshire Connection Substation B and the proposed overhead line between them, spanning approximately 5.1 km. Section 3 is approximately 1.7 km north east of the town of Alford. The Section 3 draft Order Limits and Study Area are located entirely within the East Lindsey District Council local authority area. Lincolnshire County Council operate as the LLFA in the area where the New LCS A is located. Although the proposed area for the New LCS A is not located within an internal drainage district, the proposed area for the New LCS B and part of the proposed overhead line connecting the New LCS A and the New LCS B is located within the Lindsey Marsh IDB area, as shown on **PEI Report Volume 2 Part B Section 3 Figure 6.2 Principal Local Water Environment Regulators**. Infrastructure included within the Section 3 Study Area is further discussed in **Chapter 1 Overview of the Section and Description of the Project**.

- 6.5.13 At this stage, baseline conditions have been assessed based upon desk-based information and will be reviewed and updated as required within the ES, based upon further field survey and data collection.

### Climate

- 6.5.14 Average annual rainfall estimates for the period 1991-2020 were taken from the Met Office website (Ref 16). This demonstrates the average annual total rainfall in the locality of Section 3 was approximately 635 mm, based on the Manby station record (National Grid Reference (NGR) TF397869) located approximately 13 km from the Study Area for Section 3. This is lower than the Eastern and North Eastern England district average (1991-2020) of 793 mm.
- 6.5.15 The distribution of rainfall throughout the year varies based on the Manby 1991-2020 record. The highest monthly average precipitation was recorded during June (97 mm) followed by November (88 mm). The driest months were March (51 mm) and February (52 mm).
- 6.5.16 Average monthly maximum and minimum temperature estimates for the period of 1991-2020 demonstrate that the summer months (June - August) featured the highest monthly maximum temperatures, and the winter months (December - February) featured the lowest monthly minimum temperatures. The temperature profile is consistent with the range to be expected for the East and North Eastern district of England.
- 6.5.17 Across the Eastern and North Eastern England districts there has been minimal increase in annual rainfall between 1991-2020. The average annual maximum temperatures and average annual minimum temperatures both exhibit an increasing trend for the same period.

### Topography and land use

- 6.5.18 A review of Ordnance Survey (OS) mapping shows the topography within the Section 3 Study Area ranges from approximately 5 m above ordnance datum (AOD) to 15 m AOD. This illustrates that the land is low lying with minimal variation in topography.
- 6.5.19 The Section 3 Study Area consists of varying land uses. The majority of land within this boundary is in agricultural use, with scattered residential dwellings across the Study Area associated with agricultural holdings. A number of small villages are also present, including Saleby, Thorethorpe and Bilsby. Major roads within the Section 3 Study Area include the A1104 and A1111. Mother Wood and Greenfield Wood Local Wildlife Site and Ancient Woodland is located at the north western extent of the Section 3 Study Area.

### Hydrology and surface water features

- 6.5.20 The hydrology of the Section 3 Study Area is characterised by a network of heavily modified watercourses that is typical of this part of lowland Lincolnshire, as shown in **PEI Report Volume 2 Part B Section 3 Figure 6.1 Water Environment Receptors and Study Area**. Arterial drainage in this area is provided by two principal watercourses, the Wold Grift Drain and the Boy Grift Drain. Both these watercourses flow through the draft Order Limits in a broadly north easterly direction towards the coast, before discharging to the North Sea via pumped outfalls at Thrushorpe and Sandilands respectively.

- 6.5.21 The Wold Grift Drain is designated by the Environment Agency as a main river. It flows through the Section 3 Study Area at two locations, firstly to the west of Saleby where it flows in a south easterly direction towards Alford. At Alford, the watercourse turns to flow north eastwards and re-enters the Section 3 Study Area to the east of Bilsby, before continuing to flow in a north easterly direction towards the coast. It appears that smaller ordinary watercourses within the western and central parts of the Section 3 Study Area drain towards the Wold Grift Drain, including the area around the proposed New LCS A.
- 6.5.22 The Boy Grift Drain is designated as an IDB-maintained watercourse which originates to the south of Alford and flows in a north easterly direction through the draft Order Limits towards the coast. The Boygrift Drain itself is actually within Section 4 of the draft Order Limits, approximately 500 m to the east of the section break between Sections 3 and 4. However, it appears that the smaller watercourses in the eastern part of Section 3 drain towards it, including the area around the proposed New LCS B.
- 6.5.23 There are few Lindsey Marsh IDB-maintained watercourses within the Section 3 Study Area as shown in **PEI Report Volume 2 Part B Section 3 Figure 6.1 Water Environment Receptors and Study Area**. This includes a watercourse to the west of Saleby draining to the Wold Grift Drain, as well as others in the vicinity of Bilsby in the south east of the Study Area that drain to the Boy Grift Drain. Further consultation with Lindsey Marsh IDB will allow for improved understanding of the workings of IDB maintained watercourses and any infrastructure intersected by the draft Order Limits.
- 6.5.24 **Table 6.4** summarises the receptors considered in the preliminary assessment. The value of each receptor has been determined in accordance with **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information** and **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.

Table 6.4 Identified surface water receptors and associated value

Receptor	Value	Rationale
Woldgrift Drain (GB10502906 1750)	High	<ul style="list-style-type: none"> <li>A main river and WFD designated 'blue line' river water body supporting moderate status in the Cycle 3 classifications.</li> <li>Potential for direct effects from two watercourse crossings proposed (LB-WCX-3 and LB-WCX-11).</li> <li>Potential for indirect effects as a result of construction of the New LCS A and pylons in the water body catchment.</li> </ul>
Boygrift Drain (GB10502906 1720)	High	<ul style="list-style-type: none"> <li>An IDB-maintained watercourse and WFD designated 'blue line' river water body supporting moderate status in the Cycle 3 classifications.</li> <li>Outside of Section 3, so no potential for direct effects from Section 3 works.</li> <li>Potential for indirect effects as a result of construction of the New LCS B and pylons in the water body catchment.</li> </ul>

Receptor	Value	Rationale
Other IDB-maintained watercourses	Medium	<ul style="list-style-type: none"> <li>One IDB watercourse (part of Wold Grift Drain) present in Section 3 in the vicinity of the new LCS A and two IDB watercourses south of the new LCS B (Bilsby Village Sewer and Bilsby Village Sewer Branch), outside the draft Order Limits but within the Section 3 Study Area. The network largely discharges into the overall catchment of the Woldgrift Drain water body in the north whereas Bilsby Village Sewer IDBs discharge into the Boygrift Drain overall catchment as shown on <b>PEI Report Volume 2 Part B Section 3 Figure 6.4 Water Framework Directive Water Body Catchments</b>.</li> <li>Approximately 652 m length of Wold Grift Drain is an IDB maintained watercourse. Watercourse crossing LB-WCX-3 proposed on this watercourse.</li> </ul>
Ordinary watercourses	Low	<ul style="list-style-type: none"> <li>Network of heavily modified or artificial drainage channels mainly in the form of field drains along arable field boundaries. Surrounding the New LCS A the network discharges into the Wold Grift Drain. In the east of Section 3 around the New LCS B, the network discharges towards the Boygrift Drain.</li> <li>Potential for watercourse diversions on two ordinary watercourses where the New LCS A is proposed.</li> <li>Potential for watercourse diversions on one ordinary watercourse where the New LCS B is proposed.</li> <li>Nine temporary watercourse crossings on ordinary watercourses within Woldgrift Drain water body</li> <li>Two temporary watercourse crossings on ordinary watercourses within Boygrift Drain water body.</li> <li>One new access track watercourse crossing over one ordinary watercourse which is linked to the wider Woldgrift Drain catchment.</li> </ul>

6.5.25 There are no Environment Agency gauging stations on any of the watercourses traversing Section 3 which are reported to the National River Flow Archive (NRFA). The closest NRFA flow gauge to Section 3 is on Great Eau located approximately 1.7 km north of the Section 3 Study Area. The high baseflow index for Great Eau (shown in **Table 6.5**), is indicative of a major contribution to flow from groundwater sources, as this watercourse flows off the underlying chalk aquifer. Wold Grift Drain is considered likely to have similar characteristics.

Table 6.5 Summary of river flows (Ref 28 - Data from the UK National River Flow Archive)

Gauge Ref, Name and NGR	Watercourse	Catchment Area (km2)	Mean Flow (m3/s)	Q10* (m3/s)	Q95** (m3/s)	BFI***	Period of Record
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29002: Great Eau at Claythorpe Mill, TF416793	Great Eau	77.4	0.64	1.15	0.25	0.88	1962-2022
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\*Q10: the flow that is equalled or exceeded 10% of the time – an index of high flow

\*\*Q95: the flow that is equalled or exceeded 95% of the time – an index of low flow.

\*\*\*BFI: the Base Flow Index (BFI) is a measure of the proportion of the river runoff that is derived from stored sources; the more permeable the rock, superficial deposits and soils in a catchment, the higher the baseflow and the more sustained the river's flow during periods of dry weather. Thus, the BFI is an effective means of indexing catchment geology.

## Water quality and Water Framework Directive status

- 6.5.26 The Section 3 Study Area is located within the catchments of Woldgrift Drain and Boygrift Drain WFD river water bodies, as shown in **PEI Report Volume 2 Part B Section 3 Figure 6.4 Water Framework Directive Water Body Catchments**. These are, in turn, located within the Steeping and Eaus Operational Catchment, the Witham Management Catchment and the Anglian River Basin District (RBD).
- 6.5.27 The WFD classifications for the water bodies are informed by monitoring a range of parameters that are indicators of water quality from the Environment Agency monitoring sites. As **Table 6.6** shows, the waterbodies share similar quality characteristics. The surface waterbodies currently achieve moderate status due to sewage discharge, poor nutrient management and poor livestock management and have artificial hydromorphological designations. The waterbodies in Section 3 both have a chemical status of 'fail' due to exceedance of priority hazardous substances, in particular dissolved oxygen, phosphate, mercury and its compounds, and Polybrominated diphenyl ethers (PBDE).
- 6.5.28 Summary details of the current status for the WFD river waterbodies relevant to Section 3 are provided in **Table 6.6**, with further detail regarding reasons for not achieving good status (RNAG) and WFD objective provided in **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Assessment**. Information on groundwater waterbodies is included in **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology**.

Table 6.6 WFD water bodies in direct connectivity with Section 3

Water Body (ID)	Water Body Type (Cycle 3)	Overall Water Body status (Cycle 3) (2022) <sup>1</sup>
Woldgrift Drain (GB105029061750)	Artificial	Moderate
Boygrift Drain (GB105029061720)	Artificial	Moderate

<sup>1</sup> These are the 2022 statuses as obtained from the Catchment Data Explorer

- 6.5.29 The Section 3 Study Area is not located within a surface water Drinking Water Protected Area or Safeguarding Zone. Information on groundwater Safeguard Zones is included in **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology**.



## Surface Water-Dependent Nature Conservation Sites

- 6.5.30 No statutory or non-statutory nature conservation sites that are dependent on surface water have been identified within the Section 3 Study Area. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) will be addressed separately in the ES.

## Water Resources

- 6.5.31 Data to characterise existing water interests has been collected from the Environment Agency, which indicates there are no licensed surface water abstractions and two consented surface water discharges within the Section 3 Study Area, discharging into Wold Grift Drain. Preliminary assessment of Local Authority data indicates no surface water-sourced private water supply abstractions in the Section 3 Study Area either.
- 6.5.32 The two surface water discharges are located outside of the draft Order Limits, but within the wider Section 3 Study Area. The northern discharge (NGR TF447790) is located on Wold Grift Drain (in the vicinity of Rye Lane) held by Anglian Water. The outfall is discharging at a daily rate of 145m<sup>3</sup> from the Strubby Sewage Treatment Works east of the LCS A. The second surface water discharge consent (EPRYB3590A) is located from a domestic property at Asserby Turn (NGR TF479774). The daily discharge at this location is 0.75m<sup>3</sup> into the Wold Grift Drain.
- 6.5.33 An assessment of effects upon any identified groundwater abstractions, including private water supplies, is provided in **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology**.
- 6.5.34 The Steeping, Great Eau and Long Eau Abstraction Management Strategy (ALS, Ref 31) indicates the Section 3 Study Area is located in an area where water is available for licensing 365 days a year subject to the Minimum Residual Flow (MRF) that protects very low flows (Assessment Point 4, Bilsby (Wold Grift Drain)).

## Flood Risk and Land Drainage

- 6.5.35 The Environment Agency's Flood Map for Planning (Ref 24) provides an indication of the likelihood of flooding from fluvial and tidal sources, with Flood Zones 1, 2 and 3 indicating a Low, Medium and High (Ref 24) likelihood of flooding respectively. Flood Zone 2 and 3 extents are shown on **PEI Report Volume 2 Part B Section 3 Figure 6.1 Water Environment Receptors and Study Area**.
- 6.5.36 The proposed locations for the new LCS A and the new LCS B are both located within Flood Zone 1 (low risk) which is equivalent to an annual chance of flooding from rivers and the sea of less than 1 in 1,000 (0.1 per cent). However, there are extents of Flood Zone 2 and 3 (high risk) that cross the Section 3 draft Order Limits associated with Wold Grift Drain and Boy Grift Drain, equivalent to an annual chance of flooding from rivers of 1 in 100 (1 per cent) or greater.
- 6.5.37 According to the Environment Agency Asset Information and Maintenance (AIMS) database (Ref 32), there are flood defences present along Wold Grift Drain including natural high ground.
- 6.5.38 There are a number of areas at risk of surface water flooding within the Section 3 Study Area, according to the Environment Agency's RoFSW mapping (Ref 25), as shown on **PEI Report Volume 2 Part B Section 3 Figure 6.3 Surface Water Flood Risk**. Areas of surface water accumulations/ponding are located in and around Mother Wood, Greenfield Wood and at topographic low points. Small areas of low

risk ponding are located within the new LCS A and the new LCS B sites with some areas of high risk ponding (more than 3.3 per cent chance each year) largely attributed to the land drains crossing the draft Order Limits.

- 6.5.39 Risk of flooding from sewers is not considered as a significant source of flooding in Section 3, due to the predominantly rural setting of the Project.
- 6.5.40 The Environment Agency's on-line reservoir flood risk mapping (Ref 26) shows that there is no risk of flooding from reservoir failure identified within the Section 3 Study Area.
- 6.5.41 A number of external receptors for flood risk effects from the Project have been identified within the Section 3 Study Area. The receptors identified and their associated sensitivities are listed in **Table 6.7** below:

**Table 6.7** Identified flood risk receptors and associated value

Receptor	Value	Rationale
Agricultural land and undeveloped land	Low	Water compatible development.
Agricultural premises and commercial property designated as 'Less Vulnerable'. This includes Strubby Sewage Treatment Works	Medium	Less vulnerable development.
Residential properties and other 'Highly Vulnerable' development types in villages such as Galley Hill, properties along Rye Lane, Saleby, Thoresthorpe, Asserby Turn and Bilsby plus rural residential properties.	High	More vulnerable development.
Flood defence embankments along Wold Grift Drain, other essential infrastructure that is vulnerable to flooding, such as major highways and existing electricity substations.	Very High	Essential infrastructure or highly vulnerable development.

## Future Baseline

- 6.5.42 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction, operation and maintenance can be assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 6.5.43 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information Annex A Developments for Consideration Within the Future Baseline**. This will be

reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.

## Climate and flood risk

- 6.5.44 Climate change is likely to lead to significant changes in hydrological conditions within the Section 3 Study Area over the lifetime of the Project. Outputs from UKCP18 (Ref 33) and the Future Flows and Groundwater Levels (FFGWL) Project (Ref 34) have been used to assess likely changes in ambient conditions for the purposes of the future baseline.
- 6.5.45 The FFGWL project is the first of its kind to conduct a consistent assessment of the impact of climate change on river flows and groundwater levels across Great Britain. The project modelled a total of 282 river catchments and 24 boreholes to capture the range of climate, land use, geological and geographical characteristics found in England, Wales and Scotland. The outputs aid the study of the impact of climate change on water availability and allows river basin management plans to be tested for robustness (Ref 35). Analysis of the impact of climate change on transient flows for watercourses traversing the Section 3 Study Area has not been conducted due to the lack of location specific data. It is also not expected that this data will be available to inform the ES. However, a nearby datapoint on the Louth Canal (crossed by the Section 2 draft Order Limits) indicates that transient flows are projected to decrease at all flow percentiles across all models. For the Q30 flow percentile, a decrease of up to 20 percent by 2080 is predicted by most models. At the Q90 flow percentile, decreases in transient flows range between 30 and 10 per cent by 2080, depending on the model used (Ref 36). An assessment of seasonal average changes within the region of the Section 3 Study Area indicates that in the 2050s winter flows will increase up to 20 per cent or even 40 per cent in some scenarios, spring flows will decrease by up to 20 per cent in most scenarios, summer flows will decrease up to 40 per cent in most scenarios and autumn flows will decrease by up to 20 per cent in most cases (Ref 37).
- 6.5.46 For the FRA to be completed in support of the ES, the impacts of climate change on future flood risk will be assessed in line with current Environment Agency guidance (Ref 38). Current Environment Agency recommendations for climate change factors to be applied to extreme rainfall and river flows for the Project area are summarised in **Table 6.8**, **Table 6.9** and **Table 6.10** below. These factors are based on analysis of UKCP18 climate model outputs for rainfall and from hydrological models driven by UKCP18 rainfall outputs.

**Table 6.8** Peak river flow climate change allowances for the Witham Management Catchment (Ref 39).

Allowance Category	Potential Change Anticipated for the 2020s	Potential Change Anticipated for the 2050s	Potential Change Anticipated for 2080s
Upper	27%	32%	57%
Higher	14%	15%	32%
Central	9%	8%	21%

Table 6.9 3.3 per cent Annual exceedance probability peak rainfall climate change allowances for the Witham Management Catchment (Ref 39).

Allowance Category	Potential Change Anticipated for the 2050s	Potential Change Anticipated for the 2070s
Upper	35%	35%
Central	20%	25%

Table 6.10 1 per cent Annual exceedance probability peak rainfall climate change allowances for the Witham Management Catchment (Ref 39).

Allowance Category	Potential Change Anticipated for the 2050s	Potential Change Anticipated for the 2070s
Upper	40%	40%
Central	20%	25%

6.5.47 Net sea level rise in northern England will be lower than in the south due to glacial isostatic adjustment<sup>1</sup>, which causes the northern parts of the UK to rise slowly. In the Humber region, net sea level rise from the year 2000 is projected to increase by 1.15m to 1.55 m by 2125, based on higher central and upper end allowances (Ref 38). In the Anglian region, net sea level rise from the year 2000 is expected to increase by 1.20 m to 1.60 m by 2125, according to the same allowances (Ref 38).

### Topography and land use

6.5.48 Land use change can affect the permeability of the ground, which can affect surface water run-off. Given that most of the land within the Section 3 Study Area is productive agricultural land outside of established settlement boundaries, it is unlikely that the run-off regime will change significantly. The Section 3 Study Area impinges on the suburban fringe of Alford, which could make urban creep a factor in the future. However, developers will be obliged to meet the requirements of the NPPF to ensure that surface runoff is managed within developments, so as not to increase flood risk to others.

### Water quality and Water Framework Directive status

6.5.49 Given the current status of the WFD waterbodies within the Section 3 Study Area is moderate, it is anticipated the future status will improve, ultimately to good, as required by the WFD. Improvements to WFD water body status associated with

<sup>1</sup> **Glacial Isostatic Adjustment (GIA):** During the last Ice Age, massive ice sheets covered much of northern Europe, including parts of the UK. The weight of these ice sheets caused the Earth's crust to depress.

1. **Post-Glacial Rebound:** After the ice sheets melted, the crust began to slowly rebound or rise. This process is still ongoing today. In northern England, the land is rising more significantly due to this rebound effect.
2. **Relative Sea Level Changes:** Because the land in northern England is rising, the relative sea level rise is lower compared to the south. In southern England, the land is not rising as much, and in some areas, it might even be subsiding slightly. This makes the relative sea level rise appear higher in the south.

This difference in land movement due to GIA is why you see varying rates of sea level rise across different parts of the UK.

improvements to individual quality elements (i.e., PBDE) would result in higher-quality aquatic environments in these waterbodies. Given that the sensitivity of WFD waterbodies is not determined by their status, this does not influence the assessment relative to the existing or future baseline.

- 6.5.50 The WFD reasons for not achieving good status within the Section 3 Study Area are included in **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Assessment**.

### **Water resources**

- 6.5.51 The location and rate of surface water abstractions in the area could vary over time. The Steeping, Great Eau and Long Eau ALS (Ref 31) suggests some water is available for new abstractions, but any new licences would be subject to volume, hands-off flow and/or minimum residual flow restrictions, to ensure sufficient flow remains for environmental support purposes.

## **6.6 Design, Control and Additional Mitigation Measures**

### **Design Mitigation Measures**

- 6.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 41) applicable to routing of new OHLs and the 'Horlock Rules' (Ref 42) which apply to design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 43) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 6.6.2 The Section 3 draft Order Limits have been located to avoid sensitive Water Environment and Flood Risk receptors, where practicable. This is consistent with the sequential approach to management of flood risk advocated in NPS EN-1 (Ref 40); and NPPF (Ref 8).
- 6.6.3 As part of the process of ongoing Project design, the Water Environment and Flood Risk team will work alongside other environmental disciplines and the design team to ensure that appropriate mitigation is incorporated into the final design for permanent infrastructure to minimise effects on Water Environment and Flood Risk receptors. These include, but are not limited to, the following:
- i. Any flood protection measures required for the substations will be designed in accordance with National Grid Electricity Transmission plc (National Grid) internal guidance on substation flood resilience and consistent with planning policy requirements to ensure no increased flood risk to third parties.
  - ii. Substation surface water drainage systems will provide attenuation of runoff from impermeable surfaces to greenfield rates and incorporate appropriate pollution prevention measures, incorporating the use of Sustainable Urban Drainage Systems (SuDS) as far as practicable.



- iii. If watercourse diversions are required to provide sufficient space for the substation platforms, then these will be designed to provide an equivalent conveyance capacity to the existing watercourses and will incorporate morphological features to promote aquatic biodiversity to a level that is consistent with maintaining effective land drainage. Culverting will be avoided as far as practicable.
- iv. Any requirements for water supply and foul water treatment and disposal for office and welfare facilities at substations will be designed to minimise impacts on water resources and receiving water quality.

6.6.4 The preliminary assessment of effects presented herein assumes that the additional design mitigation set out above will be implemented. The specific details of these measures will be developed for the ES for the DCO application.

## Control Mitigation Measures

### Construction

6.6.5 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. General measures included within the Preliminary CoCP relevant to the Water Environment and Flood Risk assessment of Section 7 include:

- i. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerks of Works (EnvCoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
- ii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
  - pollution prevention and pollution incident response;
  - dust management and control measures;
  - location and protection of sensitive environmental sites and features;
  - adherence to protected environmental areas around sensitive features;
  - working hours and noise and vibration reduction measures;
  - working with potentially contaminated materials;
  - waste management and storage;
  - flood risk response actions;
  - agreed traffic routes, access points, etc.;
  - soil management; and



- drainage management.
- iii. GG05: A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities, prior to works commencing. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
- iv. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP) and a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (WSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), DrMP along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans.'
- v. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans.
- vi. GG15: Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. Where practicable, they will be stored >15 m from watercourses, ponds and groundwater dependent terrestrial ecosystems. Where it is not practicable to maintain a >15 m distance, additional measures will be identified. All refuelling, oiling and greasing of construction plant and equipment will take place above drip trays or other suitable controls and also away from drains as far as is reasonably practicable. Vehicles and plant will not be left unattended during refuelling. Appropriate spill kits will be made easily accessible for these activities. Potentially hazardous materials used during construction will be safely and securely stored including use of secondary containment where appropriate. Stored flammable liquids such as diesel will be protected either by double walled tanks or stored in a bunded area with a capacity of 110% of the maximum stored volume. Spill kits will be located nearby.
- vii. GG16: Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There will be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of an emergency).
- viii. GG17: Wash down of vehicles and equipment will take place in designated areas within construction compounds. Wash water will be prevented from passing untreated into watercourses and groundwater. Appropriate measures will include use of sediment traps, daily checks and ongoing monitoring.
- ix. GG23: Stone pads or similar will be installed in areas where heavy equipment, such as cranes and piling rigs, are to be used. The stone pads will provide stable working areas and will reduce disturbance to the ground. The stone pad area will be stripped of the topsoil, which will be stored and reinstated in accordance with the Soil Management Plan.

6.6.6 The control and management measures included within the Preliminary CoCP specific to the Water Environment and Flood Risk include:

- i. W01: All works affecting watercourses or within the relevant permitting stand-off distance from the top of bank or landward toe of a flood defence on main rivers and IDB-maintained watercourses will be in accordance with a method approved under consents issued under the Environmental Permitting Regulations 2016, Land Drainage Act 1991, IDB Byelaws (where relevant) or the protective provisions of the DCO for the benefit of the Environment Agency, LLFAs and IDBs. Where possible, a stand-off distance from the top of bank of all watercourses/waterbodies will be established (with the exception of crossings and where existing field access roads are already located adjacent to watercourses are to be utilised). To align with Environment Agency and IDB consenting requirements, it is proposed that this will be: 16m for tidal main rivers; 8m for non-tidal main rivers; and 9m for IDB-maintained watercourses. No statutory stand-off distances are specified for ordinary watercourses, but any works liable to cause an obstruction to flow would be subject to consent under the Land Drainage Act 1991. Appropriate stand-off distances should also be implemented where Project construction activities coincide with water supply and sewerage infrastructure. These are to be agreed on a case-by-case basis. For any instances where the stand-off distances stated above cannot be achieved between construction works and watercourses, these works would be subject to the appropriate consent by the relevant drainage authority (Flood Risk Activity Permit (FRAP) for main rivers, Ordinary Watercourse Consent (OWC) for ordinary watercourses).
- ii. W02: For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will include but not be limited to, where practicable:
  - reducing the working width for open cut crossings of a main or ordinary watercourse whilst still providing safe working;
  - installation of a pollution boom downstream of open cut works;
  - the use and maintenance of temporary lagoons, tanks, bunds, silt fences or silt screens as required;
  - have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident;
  - the use of all static plant such as pumps in appropriately sized spill trays;
  - prevent refuelling of any plant or vehicle within 15 m of a watercourse;
  - prevent storing of soil stockpiles within 15 m of a main river;
  - inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and
  - reinstating the riparian vegetation and natural bed of the watercourse, using the material removed when appropriate, on completion of the works and compacting as necessary. If additional material is required, appropriately sized material of similar composition will be used.
- iii. W03: Riverbank and in-channel vegetation will be retained where not directly affected by installation works. As far as possible, natural substrate will be provided through temporary watercourse crossing culverts.

- iv. W04: Where watercourses are to be crossed by construction traffic, measures to be applied include the use of temporary culverts or temporary clear span bridges. Once the temporary culvert is installed, the area above the temporary culvert will be backfilled and construction mats placed over the backfilled area to permit the passage of plant, equipment, materials, and people. Temporary culverts will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge. Where flood defences are present, crossing design should ensure that their integrity and standard of protection are preserved. Watercourse bed, banks and any flood defences will be subject to full reinstatement on removal of temporary watercourse crossings on completion of construction works. Specific detailed designs for each watercourse crossing, consistent with these design principles, will be prepared by the construction contractor. These will be subject to the appropriate consent by the relevant drainage authority (FRAP from the Environment Agency for main rivers; OWC from the LLFA or IDB for ordinary watercourses).
- v. W05: The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This will particularly be with regard not only to volumes and discharge rates, but also to water quality (particularly suspended solids, pH and hydrocarbons) and will include discharges to land, water bodies or third-party drains/sewers.
- vi. W06: The Project will incorporate appropriate surface water drainage measures into its final design for the haul roads, access tracks, works compounds and laydown areas so that they do not lead to a significant increase in flood risk. Access roads (and working areas) in the floodplain are to be as close to ground level as possible (a slight raised surface, relative to the adjacent land, is often required to allow for drainage). This is to minimise the loss of floodplain storage volumes associated with raised structures such as raised access roads, working areas and associated topsoil stockpiles. Cross drainage would be provided as necessary at topographic low points. Stockpiles would be located outside of the floodplain as far as reasonably practicable. Approaches to bridges and culverts in Flood Zones would minimise ramping up to the bridge deck so as not to impede flood flow conveyance.
- vii. W07: The contractor(s) will subscribe to the EA's Floodline service, which provides advance warning of potential local flooding events, and subscribe to the Met Office's Weather Warnings email alerts system and any other relevant flood warning information. The contractor(s) will implement a suitable flood risk action plan, which would form part of the Emergency Action Plan, and will include appropriate evacuation procedures should a flood occur or be forecast.
- viii. W08: Active private water supplies will be identified with landowners through the landowner discussions. Appropriate measures would be considered during construction to prevent any water quality deterioration from pollution. In the event of a landowner or tenant reporting that installation activities have affected their private water supplies, an initial response will be provided within 24 hours. Where the installation works have affected a private water supply, an alternative water supply will be provided, as appropriate.

- ix. W09: In the event of a significant spill during construction, all relevant landowners/tenants will be contacted within 24 hours, within 250 m of the spill, to determine if there are any private water supplies that might be affected; an assessment of the likelihood of groundwater contamination reaching identified private water supplies will be undertaken, and where a private water supply is judged likely to be affected, an alternative water supply will be provided, as appropriate.
- x. W10: Severance of existing land drainage routes, including agricultural field drainage systems would be managed during construction through provision of temporary alternative drainage routes, and these drainage systems would be permanently reinstated to ensure their existing function is maintained.
- xi. W11: Appropriate control of runoff from working areas will be achieved through implementation of a DrMP for the construction phase. The DrMP will use sustainable urban drainage systems (SuDS) principles, promoting infiltration of runoff wherever possible and specifying appropriate treatment and attenuation storage to ensure any discharges to watercourses are uncontaminated and limited to greenfield rates. The DrMP will cover all aspects of construction works and temporary infrastructure. Drainage measures will be phased to be completed before the commencement of earthwork operations, in a specific area, and will be retained until the drainage system of the completed Project is fully operational, or site restoration works are completed. This will include the temporary diversion of existing agricultural drainage around working areas, if required, followed by reinstatement on completion of works. At this stage of the design process, preliminary work has already been done to identify runoff treatment and attenuation requirements for temporary access tracks and working areas associated with overhead line construction, including defining potential locations of water treatment areas and discharge outfalls. Further work is required to develop drainage strategies for substations, considering arrangements for both construction and operational phases of the Project, which will be reported as part of the ES chapter and FWRA in submission with the DCO application.

## Additional Mitigation Measures

- 6.6.7 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 6.6.8 Based upon the preliminary assessment, additional mitigation measures are not anticipated to be required within Section 3 in relation to Water Environment and Flood Risk effects. However, this will remain under review during the completion of further assessment and development of the ES.
- 6.6.9 No additional mitigation measures have been assumed within the Preliminary Assessment of Effects reported in the following sections.

## 6.7 Preliminary Assessment of Effects

- 6.7.1 The following section presents the findings of the preliminary assessment of effects upon the Water Environment and Flood Risk receptors, identified within the Section 3 Study Area, as a result of construction, operational and/or maintenance activities.

- 6.7.2 The preliminary assessment of effects reported below take into account the Design and Control mitigation measures, as previously described.
- 6.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 6.11**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 6.7.4 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

## Infrastructure Overview

- 6.7.5 The receptors listed in section 6.5 have the potential to be directly or indirectly impacted due to the construction and permanent presence of new pylon, the New LCS A and the New LCS B, including the associated permanent access road.
- 6.7.6 The proposed temporary and permanent features within Section 3 are illustrated on the following figures:
- PEI Report Volume 2 Part B Section 3 Figure 1.2 Permanent and Operational Features;** and
  - PEI Report Volume 2 Part B Section 3 Figure 1.3 Temporary and Construction Features.**
- 6.7.7 The permanent access road for the New LCS A would require a permanent watercourse crossing of an existing ordinary watercourse south of Rye Lane. No permanent watercourse crossing would be required for the New LCS B.
- 6.7.8 The proposed location of the New LCS A and the New LCS B would require works to ordinary watercourses, including watercourse crossings (closed culverts and single span bridge) and/or diversions. Design of any permanent diversions of these watercourses is ongoing and further information on this element will be provided within the ES.
- 6.7.9 Temporary watercourse crossings would also be required to facilitate access during the construction of the new overhead line. As set out within **PEI Report Volume 3 Part A Appendix 5C Indicative Bridge and Culvert Schedule**, 13 temporary crossings are currently assumed to be required within Section 3. Temporary construction compounds would also be established adjacent the proposed new LCS A and the New LCS B sites.
- 6.7.10 Lattice pylons, used in the Project, minimally obstruct water flow and do not significantly affect floodplain storage or conveyance. Furthermore, pylons are resilient to water damage from occasional flooding, and the conductors are located sufficiently above the highest flood level conceivable over the lifetime of the Project, ensuring that they will remain operational during a flood event and will not pose a safety risk.

## Likely Significant Effects

### Construction

- 6.7.11 Based upon the preliminary assessment, no significant effects are predicted for Water Environment and Flood Risk receptors within Section 3 Study Area, as a result of the construction phase of the Project.

### Operation and maintenance

- 6.7.12 Based upon the preliminary assessment, no significant effects are predicted for Water Environment and Flood Risk receptors within Section 3, as a result of the operation and maintenance phase of the Project.

## Non-Significant Effects

- 6.7.13 For completeness, **Table 6.11** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Water Environment and Flood Risk effects during construction and operation.



Table 6.11 Preliminary summary of non-significant Water Environment and Flood Risk effects – Section 3

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
<b>Construction</b>					
<b>Aquatic Environment Receptors</b>					
Deterioration in the water quality of aquatic environment receptors via generation of sediment laden run-off as a result of construction activities, e.g., watercourse crossings and excavations	WFD river water bodies as listed in <b>Table 6.4</b> and <b>Table 6.6</b>	High	Negligible	Not significant (Negligible)	<p>During the construction phase of the 23 new pylons, eight gantry towers and two new AIS substations there is potential to generate sediment laden runoff which could, in absence of an appropriate embedded measures, adversely affect water quality in surface water receptors. Activities that could potentially produce sediment-laden runoff include:</p> <ul style="list-style-type: none"> <li>• Construction and removal of access routes, construction compounds and working areas (including topsoil stripping, earthworks and excavations);</li> <li>• Runoff from installed access routes, temporary construction compounds and working areas;</li> <li>• Direct sediment disturbance from in channel works for the construction of access crossings;</li> </ul>

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
	IDB maintained watercourses and ordinary watercourses (referred to in <b>Table 6.4</b> )	Medium – Low	Small adverse	Not significant (Minor)	<ul style="list-style-type: none"> <li>Potential diversion/realignment of ordinary watercourses and IDB watercourses; and</li> <li>The use and management of soil stockpiles.</li> </ul> <p>The assessment of suspended sediment-related effects is considered precautionary, given that the watercourses across the Section 3 Study Area are likely to experience baseline variation in suspended sediment due to agricultural practice in the area.</p> <p>Assuming the implementation of embedded environmental measures included in the Preliminary CoCP (including GG03, GG16, W01, W05 and W11) predicted effects on the watercourses due to sediment laden run-off are Not significant.</p>
Potential impacts on hydromorphology and flow conveyance as a result of increased sediment inputs from watercourse disturbance (including from new watercourse crossings).	WFD river water bodies as listed in <b>Table 6.4</b> and <b>Table 6.6</b>	High	Negligible	Not significant (Negligible)	<p>Works directly affecting watercourses, such as crossings and diversions, could result in a direct impact on their hydromorphology. The direct impacts would be mitigated to an extent with the implementation of the measures set out within the Preliminary CoCP. This includes W01, W02 and W04. As a result, effects are Not significant.</p> <p>Where there is a requirement to undertake works in and around the watercourses, including installation of access crossings (assumed to be culverts for most watercourses), the footprint of these would be kept to a practicable minimum and ensure minimum</p>

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
	IDB maintained watercourses and ordinary watercourses (referred to in <b>Table 6.4</b> )	Medium – Low	Small adverse	Not significant (Minor)	<p>change to existing morphology and flow conveyance, by adhering to embedded environmental measure W02.</p> <p>Excess sediment ingress via runoff from working areas could also indirectly influence these characteristics, for example due to a subsequent build-up of sediment within the channel.</p> <p>Any potential increases in sediment-laden runoff from working areas would be mitigated through the embedded environmental measures outlined in the Preliminary CoCP (including GG03, GG16, W01, W05 and W11). As a result, effects are Not significant.</p>
Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants from contaminated soil or accidental spillage of	WFD river water bodies as listed in <b>Table 6.4</b> and <b>Table 6.6</b>	High	Negligible	Not significant (Negligible)	<p>The construction works have the potential to affect water quality conditions within surface water features via:</p> <ul style="list-style-type: none"> <li>• accidental spillage of fuel, oil, concrete or other chemicals used during construction;</li> <li>• mobilisation/leaching of contaminants from historical soil contamination during excavation works; and</li> </ul>

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
pollutants (e.g. fuel or oil).	IDB maintained watercourses and ordinary watercourses listed in <b>Table 6.4</b> .	Medium - Low	Small adverse	Not significant (Minor)	<ul style="list-style-type: none"> <li>contaminated water pumped from excavations.</li> </ul> <p>The proposed embedded measures to prevent surface water pollution are set out in the draft Preliminary CoCP and include GG03, GG15, GG23, W02, W05, W09 and W11.</p> <p>Assuming the implementation of these measures, predicted effects on surface water receptors and water resources/WFD receptors due to potential mobilisation and release of pollutants are Not significant.</p>
Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants in groundwater and subsequently surface water	WFD river water bodies as listed in <b>Table 6.4</b> and <b>Table 6.6</b> . WFD river water bodies as listed in <b>Table 6.4</b> and <b>Table 6.6</b>	High	Negligible	Not significant (Negligible)	<p>The risk of pollution of groundwater as a result of project construction activities would be controlled through preparation of a Foundation Works Risk Assessment (FWRA) in accordance with measures GH02 of the Preliminary CoCP. This would specify the use of suitable piling methods to prevent the creation of pathways for vertical groundwater movement between superficial and deeper aquifers.</p> <p>Therefore, in this preliminary assessment, effects upon surface water receptors resulting from the mobilisation of ground contaminants are Not significant.</p>
	IDB maintained watercourses and ordinary watercourses (referred to in <b>Table 6.4</b> )	Medium – Low	Small adverse	Not significant (Minor)	

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
Impact from any dewatering for construction from temporary works impacting groundwater – surface water interactions.	WFD river water bodies as listed in <b>Table 6.4</b> and <b>Table 6.6</b> .	High	Negligible	Not Significant (Negligible)	Any discharge of water generated during construction (e.g. from pylon foundation excavations) to land would be of unpolluted water only and undertaken in accordance with control measure W05 within the Preliminary CoCP.
	IDB maintained watercourses and ordinary watercourses (referred to in <b>Table 6.4</b> )	Medium – Low	Small adverse	Not significant (Minor)	<p>There is generally a sufficient cover of superficial deposits so it is not proposed to investigate the underlying chalk bedrock strata. The majority of construction work would be in the superficial deposits and not within the bedrock, so there would be no requirement for dewatering of the bedrock aquifers and therefore, no significant effects.</p> <p>For mobilisation of pre-existing contamination, control measures proposed in <b>PEI Report Volume 2 Part B Section 3 Chapter 7 Geology</b> and Hydrogeology will be implemented. It is likely that these control measures will protect for surface water additionally.</p> <p>For the superficial deposits, limited groundwater level information is available at this stage of the assessment. It is assumed dewatering within the superficial deposits would be required to facilitate construction. Where dewatering is required, temporary measures would be undertaken in accordance with EA guidance and in line with control measures. Groundwater effects on flows and levels are predicted to be limited and as a result, there is a limited scope for groundwater dependent surface water flows to be affected. The risk of mobilisation of pre-existing contamination</p>

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
					<p>would be managed through control measures within the Preliminary CoCP, including GH02 and GH11.</p> <p>Therefore, predicted effects upon surface water receptors due to dewatering of temporary works areas are Not significant.</p>
<b>Water Resource Receptors</b>					
The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.	<ul style="list-style-type: none"> <li>Licensed surface water abstractions</li> <li>Unlicensed surface water abstractions for private water supply</li> <li>Discharges to surface waters</li> </ul>	Low	Negligible	Not significant (Negligible)	<p>No surface water abstractions were identified within the Section 3 Study Area. The two consented discharges identified within the Section 3 Study Area are both outside the draft Order Limits. There is therefore no scope for a direct effect on the discharge infrastructure as a result of the Project. Any indirect effects on flow or quality in receiving watercourses as a result of the construction of the Project will not affect the ability of the discharge to operate as consented.</p> <p>It is therefore concluded that predicted effects on water resource receptors within the Section 3 Study Area are Not significant.</p>
<b>Flood Risk Receptors</b>					
Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance, and	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not significant (Negligible to Minor)	The land within the Section 3 draft Order Limit is primarily within Flood Zone 1 with areas of Flood Zone 2 and 3 associated with Woldgrift Drain. Of the eight gantry towers and 23 pylons within Section 3, none are located in the floodplain. As a result, the construction of infrastructure within this zone has limited potential to reduce or displace floodplain



Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
Changes to fluvial flood risk associated with compartmentalisation of the floodplain.					<p>storage and subsequently adversely impact flood risk.</p> <p>It is assumed temporary works would include stockpiling of materials within the floodplain, due to both the temporary storage of soils and the import of aggregate for the design elements. The construction of access routes, presence of stockpiles, watercourse crossings and working areas would have limited potential to compartmentalise the floodplain and therefore, would not obstruct water flow. The construction of the proposed overhead line and the New LCS A and the New LCS B would not result in a loss of functional floodplain as the Study Area is largely within Flood Zone 1.</p> <p>The proposed embedded measures to prevent an increase in flood risk due to changes in existing watercourse flow conveyance are set out in the Preliminary CoCP and include W01 and W10.</p> <p>Therefore, the predicted effects of the construction Section 3 Project infrastructure on flood risk receptors due to changes in flow conveyance during the construction phase are considered negligible to minor and are Not significant.</p>
Changes to watercourse flow conveyance arising from the presence of new or modified temporary watercourse	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not significant (Negligible to Minor)	There are 13 new temporary watercourse crossings proposed within the draft Order Limits within Section 3. In the absence of appropriate measures, these crossings could impact flow conveyance, which could potentially influence flood risk upstream of the watercourse crossing.

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
crossings. This has the potential not only to affect the morphology of aquatic environment receptors, but to increase the risk of flooding to flood risk receptors.					<p>The proposed embedded measures to prevent an increase in surface water flood risk due to changes in existing watercourse flow conveyance are set out in the Preliminary CoCP and include W04 and W10.</p> <p>Based upon the implementation of these measures, predicted effects upon flood risk due to new or temporary watercourse crossings are Not significant.</p>
Changes to surface water flood risk due to changes in runoff rates resulting from ground disturbance and creation of impermeable surfaces, and to changes in surface water runoff pathways due to changes in ground surface levels.	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not significant (Negligible to Minor)	<p>During construction, there would be temporary changes to land surface permeabilities. Temporary surfaces with lower permeability relative to the baseline include stone aggregate surfaces on the following: access tracks, pylon working areas, stringing platforms, contractor compounds and laydown areas. It is assumed Type 1 aggregate would be used, which has a lower permeability than the soils present across the majority of the Section 3 Study Area. However, this finish is not as impermeable as tarmac or concrete.</p> <p>Changes to surfacing resulting from temporary works could reduce rainfall infiltration rates, increase runoff rates, and induce overland flow during construction. This could contribute to localised changes to the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes. Any potential watercourse diversions may also disrupt or sever existing field</p>

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
					<p>drainage systems, dependent on the alignment of any diversions.</p> <p>The proposed embedded measures to prevent an increase in surface water flood risk during construction are set out in the Preliminary CoCP and include W06 and W10.</p> <p>Based upon the implementation of these embedded measures, effects on flood risk receptors due to changes in run-off rates and pathways during the construction phase are predicted to be negligible, and therefore Not significant.</p>
Impacts on the integrity of flood defence and land drainage infrastructure as a result of physical impingement of Project infrastructure.	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not Significant (Negligible to Minor)	<p>There are two temporary access crossings of the Wold Grift Drain main river and associated flood embankments within the Section 3 Study Area. In the absence of appropriate measures, the impingement of project infrastructure could deteriorate the factor of safety of flood defences, which could potentially increase flood risk to downstream receptors.</p> <p>Project infrastructure will only impact watercourses which have flood defence embankments present such as the Wold Grift Drain. The Section 3 Study Area is defended floodplain. Therefore, existing flood management assets protect for events up to the standard of protection.</p> <p>The proposed embedded measures to maintain the integrity of the flood defence during construction are set out in the Preliminary CoCP and include W04. Generally, a hierarchy of mitigation principles would be as follows:</p>

Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
					<ul style="list-style-type: none"> <li>• Avoid where possible.</li> <li>• Pre-commencement survey</li> <li>• Minimise invasive works to the flood defence through bridging or placing of additional material</li> <li>• Ensure any crossings are designed to bear design loads to avoid compaction settlement of the flood defence</li> <li>• Ensure full restoration of flood defence following completion of works, followed by completion survey.</li> <li>• If invasive works are required to a flood defence which would lead to a loss of standard of protection (i.e. through temporary breach or partial removal) design of alternative flood protection, through realignment around works would be required.</li> </ul> <p>Based upon the implementation of embedded measures, effects on flood risk receptors due to impacts upon existing flood defences and drainage infrastructure during the construction phase are predicted to be negligible, and therefore Not significant.</p>

## Operation

### Aquatic Environment and Water Resources Receptors

Increased pollution from storage of potential pollutants such as oil-filled transformers.	WFD river water bodies (referred to in <b>Table 6.4</b> and <b>Table 6.6</b> )	High	Negligible	Not significant (Negligible)	The New LCS A and the New LCS B have the potential to affect water quality conditions and therefore, aquatic environment receptors within the
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Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
	IDB-maintained watercourses and ordinary watercourses (referred to in <b>Table 6.4</b> )	Low - Medium	Small adverse	Not significant (Minor)	<p>associated water features via the introduction of contaminants.</p> <p>Substation drainage design will incorporate suitable pollution prevention measures for surface runoff through the use of SuDS, plus containment and oil interceptors for transformers as required. Foul drainage arisings from welfare facilities on the site will either be discharged to the mains sewer network or tankered off site to an appropriate permitted treatment facility. Overhead line maintenance will involve light vehicles using existing agricultural access, and will not involve significant ground disturbance. Therefore, the impacts of the operation of Section 3 on aquatic environment receptors and water resources is considered Negligible to Minor and Not significant.</p>

#### Flood Risk Receptors

Changes to surface water flood risk due to changes in runoff rates resulting in the creation of impermeable surfaces, and to changes in surface water runoff pathways due to changes in ground surface levels.	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not significant (Negligible to Minor)	There will be no significant increase in permanent impermeable area associated with the foundation elements of pylons within the Section 3 Study Area. Permanent impermeable surfaces would include tarmac access roads to and within the substations and concrete and/or tarmac hardstanding within the substation boundaries and associated building footprints. The proposed measures for the impermeable surfaces associated with the New LCS A and the New LCS B during operation include mitigation through drainage design. This would incorporate the use of SuDS as required. Foul drainage arisings from welfare facilities on the site would either be discharged to the mains sewer
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Impact	Receptor	Value of Receptor <sup>1</sup>	Magnitude of Change <sup>2</sup>	Significance <sup>3</sup>	Rationale
					<p>network or tankered off-site to an appropriate permitted treatment facility.</p> <p>Overhead line maintenance would involve light vehicles using existing agricultural access and would not involve significant ground disturbance. Therefore, the effects of the operation of Section 3 Project infrastructure on flood risk receptors is considered negligible and Not significant.</p>
Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance.	Property and infrastructure at risk of flooding	Low – Very High	Negligible	Not significant (Negligible to Minor)	<p>The effects on flood risk receptors from the operation of the Project have been scoped into the assessment for the proposed overhead line.</p> <p>There would be no significant increase in permanent impermeable area associated with the foundation elements of pylons within Section 3 and therefore these elements alone are not likely to result in significant loss of floodplain storage capacity. The presence of pylons and the substation are unlikely to result in significant effects upon flood risk due to impacts upon floodplain storage or flow conveyance.</p> <p>The operational overhead line and substation will not result in significant loss of functional floodplain. Therefore, the impacts of the operation of Section 3 Project infrastructure on flood risk receptors is considered negligible to minor and predicted effects are Not significant.</p>

<sup>1</sup> The value of receptor is defined using the criteria set out in Appendix 4B Environmental Impact Assessment Methodologies and Scope and is defined as Low, Medium, High and Very High.

<sup>2</sup> The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in Appendix 4B Environmental Impact Assessment Methodologies and Scope and is defined as negligible, small, medium, large adverse and beneficial.

<sup>3</sup> The significance of the environmental effects is based on the combination of the value of a receptor and the magnitude of change and is expressed as major (significant), moderate (potentially significant) or minor/negligible (not significant), subject to the evaluation methodology outlined in Appendix 4B Environmental Impact Assessment Methodologies and Scope.



## **6.8 Monitoring**

- 6.8.1 Although no significant effects have been identified within this assessment, given the hydrological sensitivity within Section 3, it may be necessary to undertake monitoring during the construction phase for assurance purposes. The requirement for this will be assessed further within the ES when further characterisation of the hydrological regime has been undertaken.

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# 7. Geology and Hydrogeology



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# 7. Geology and Hydrogeology

## 7.1 Introduction

- 7.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Geology and Hydrogeology assessment of the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 7.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 7.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and the subsequent scope of the Geology and Hydrogeology assessment (section 7.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high-level summary of the scope and methodology of the Geology and Hydrogeology assessment (section 7.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Geology and Hydrogeology assessment (section 7.5);
  - vi. A description of mitigation measures included for the purposes of the Geology and Hydrogeology assessment reported within the PEI Report (section 7.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Geology and Hydrogeology effects arising during construction and operation of the Project within the Section 3 Study Area, based upon the assessment completed to date (section 7.7); and
  - viii. An outline of the proposed monitoring requirements in relation to Geology and Hydrogeology (section 7.8).
- 7.1.2 Further supporting information is set out in **Table 7.1** below, including supporting figures and technical appendices:

Table 7.1 Supporting Documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<p>Figure 7.1 Superficial Geology</p> <p>Figure 7.2 Bedrock Geology</p> <p>Figure 7.3 Groundwater Source Protection Zones</p> <p>Figure 7.4 Aquifer Designation: Superficial Deposits</p> <p>Figure 7.5 Aquifer Designation: Bedrock Geology</p> <p>Figure 7.6 Landfills, Waste and Potentially Contaminative Previous Land Uses</p>
PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification	A list of identified sites with potentially contaminative uses within the Section 3 Study Area, a table identifying the risk classification criteria and an initial risk classification for each feature, to allow a proportionate assessment of potential effects within the PEI Report.
PEI Report Volume 3 Part B Sections 1 to 7 Appendix 7B Minerals Safeguarding Report	A report for the full Study Area across the Project which identifies any safeguarded minerals and provides an appraisal of the effects of the Project against relevant minerals policy.
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of national and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.

Supporting Information	Description
<b>PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered</b>	A summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
<b>PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information</b>	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
<b>PEI Report Volume 2 Part A Chapter 5 Project Description</b>	An overarching description of the Project and its key components, including available construction information.
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 7.1.3 There are interrelationships between the potential effects on Geology and Hydrogeology and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** should be consulted in relation to effects identified by the Geology and Hydrogeology assessment including impacts on land and groundwater quality and groundwater quantity, that may affect ecological receptors, such as Groundwater Dependant Terrestrial Ecosystems (GWDTE) and Sites of Specific Scientific Interest (SSSI);
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 6 Water Environment** should be consulted in relation to the effects on groundwater, including impacts on groundwater quality and quantity, identified by the Geology and Hydrogeology assessment that may affect hydrological receptors, such as surface water receptors;
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 8 Agriculture and Soils** should be consulted in relation to temporary and permanent loss of soils and soil functions and how the Project may impact the shallow soils across the Study Area;
  - iv. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment; and
  - v. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative

effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 7.2 Legislation and Policy Framework

### Legislation and National Policy

- 7.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, detail of which is set out in **Table 7.1**.

### Regional and Local Policy

- 7.2.2 Regional and local plans or policies relevant to this assessment are as follows:

- i. East Lindsey District Council Local Plan Core Strategy, 2018 (Ref 1):
  - Strategic Policy 10 (SP10) – Design: this policy includes requirements for the use of and developments on brownfield land and protection of water resources. The corresponding supporting text in the Local Plan (Paragraphs 4.10 and 4.11) sets out the considerations for the reuse of brownfield land that is potentially affected by contamination. The supporting text (Paragraph 4.11) also notes that development within areas of high sensitivity groundwater, including source protection zones and drinking water abstractions, will be expected to comply with the Environment Agency's (EA) Groundwater Protection guidance. This text also notes that the district area is under serious water stress and developments that will unacceptably deplete water resources or pose a risk to quality of groundwater will not be supported.
  - Strategic Policy 24 (SP24) – Biodiversity and Geodiversity: sets out considerations for development proposals with regard to minimising impacts on features of geodiversity value;
  - Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy: sets out considerations for developments for the transmission and interconnection of electricity, for sites or features of biodiversity or geodiversity importance;
- ii. Greater Lincolnshire Nature Partnership, 2021. Geodiversity Strategy 2022 – 26 (Ref 2): this document sets out the Geodiversity Action Plan (GAP) and a summary of geodiversity sites within Lincolnshire, along with planning and conservation advice for sites of geodiversity value; and
- iii. Lincolnshire County Council, 2017. Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (Ref 3): sets out the key principles for working of minerals and waste management development in Lincolnshire and the development management policies for minerals and waste which will be considered for any future planning applications.

## 7.3 Scope of Assessment

- 7.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 4) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following submission of the EIA Scoping Report (Ref 5). The scope has also

been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Geology and Hydrogeology chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.

- 7.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 7.3.3 The scope of the construction assessment covers the following receptor groups:
- i. Human health (construction workers, adjacent land users) – only in the context of land contamination assessments (various other aspects of human health are addressed in **PEI Report Volume 2 Part C Chapter 8 Health and Wellbeing**);
  - ii. Groundwater aquifers;
  - iii. Groundwater abstractions;
  - iv. Soil/land quality – only in the context of land contamination assessments (other aspects being addressed in **PEI Report Volume 2 Part B Section 3 Chapter 8 Agriculture and Soils**);
  - v. Structures; and
  - vi. Designated geological conservation sites (none are present within the Section 3 Study Area).
- 7.3.4 The scope of the operation and maintenance assessment covers the following receptor groups:
- i. Human health (future land users) – only in the context of land contamination assessments (various other aspects of human health are addressed in **PEI Report Volume 2 Part C Chapter 8 Health and Wellbeing**);
  - ii. Groundwater aquifers;
  - iii. Groundwater abstractions; and
  - iv. Structures.

## 7.4 Assessment Methodology

- 7.4.1 The assessment methodology, relevant guidance, key assumptions and limitations for the Geology and Hydrogeology assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all defined and assigned to the assessment. A summary of the key components is outlined below.
- 7.4.2 The assessment for Geology and Hydrogeology has been undertaken in line with Land Contamination Risk Management (LCRM) guidance (Ref 6), which includes an approach for land contamination assessments in relation to human health, land and groundwater receptors. This guidance is based on the source-pathway-receptor approach, which forms the basis of the approach used for assessing effects relating to contamination. This approach is also consistent with the Environment Agency's



(EA) Approach to Groundwater Protection (Ref 7) including the requirements noted in that guidance in relation to Nationally Significant Infrastructure Projects. The EA's guidance (Ref 7) also applies to physical effects on groundwater, forming the framework used for the assessment of these effects.

- 7.4.3 The assessment has been carried out using recognised criteria based on Construction Industry Research and Information Association (CIRIA) Publication 552 Contaminated Land Risk Assessment: A Guide to Good Practice (Ref 8), adapted as necessary to support environmental impact assessment.
- 7.4.4 The assessment is expected to be developed further in the ES, where further relevant information becomes available, for example from ongoing consultation or additional data collection.

## Assessment Assumptions and Limitations

- 7.4.5 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no assumptions and limitations that have been identified which are specific to the assessment for Section 3.
- 7.4.6 These key parameters and assumptions will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 7.5 Baseline Conditions

### Study Area

- 7.5.1 For the purposes of the Geology and Hydrogeology assessment, a general Study Area of the draft Order Limits plus a 250 m buffer for geological receptors and a 500 m buffer for hydrogeological receptors has been applied. This is considered to be a proportionate and suitable approach for this assessment, in line with the Scoping Opinion (Ref 4). As outlined within the Scoping Report (Ref 5) hydrogeological receptors further from the draft Order Limits are more susceptible to effects from the Project than geological receptors due to the mobile nature of groundwater and corresponding potential for the Project to affect receptors at a greater distance, hence the use of a larger Study Area for the hydrogeological assessment.

### Data Collection

- 7.5.2 The following data has been used to inform the baseline conditions:
- Published historical mapping to identify potentially contaminative former land uses (National Library of Scotland mapping, (Ref 9);
  - UK Health Security Agency radon mapping (Ref 10);
  - Geological mapping published by the British Geological Survey (BGS) (1:50,000 scale) (Ref 11);

- iv. Historical borehole records held by the BGS (Ref 11), details of which are provided in **Table 7.2**;
- v. Groundwater abstraction details (public and private), discharge consents, historical pollution incident records, and historical and authorised landfills, as available from the EA and Local Planning Authorities, obtained through formal data requests;
- vi. Department for Environment, Food and Rural Affairs (DEFRA) groundwater aquifer information, provided through MAGIC (Multi-Agency Geographic Information for the Countryside) (Ref 12);
- vii. Source Protection Zones (SPZ) data, available under Open Government License (Ref 13);
- viii. Environment Agency (EA) Catchment Data Explorer records on groundwater quality (Ref 14);
- ix. Natural England designated Sites, i.e. Geological SSSIs, provided through MAGIC (Ref 12);
- x. Zetica Unexploded Ordnance (UXO) online hazard mapping (Ref 15);
- xi. Records from East Lindsey District Council, including historical and current potentially contaminative land uses, environmental permits and private water supplies, obtained through a formal data request and received on 03 December 2024; and
- xii. Records on locally designated geological sites, including a review of relevant local planning documentation and readily available local geo-conservation documents.

7.5.3 The data sources listed above are as specified in the Scoping Report (Ref 5). Furthermore, where additional information over and above this is available from geotechnical assessments being undertaken in support of the engineering design of the Project, this supplementary information has also been used. This includes Groundsure historical feature polygons and geo-environmental data search records for partial coverage within the Study Area (approximately 2,900 hectares in a 100 m wide swathe), originally obtained relative to earlier provisional engineering design alignment options. This dataset covers approximately 50 % of the draft Order Limits for Section 3.

## Existing Baseline

7.5.4 The following section outlines the Geology and Hydrogeology baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:

- i. **PEI Report Volume 2 Part B Section 3 Figure 7.1 Superficial Geology;**
- ii. **PEI Report Volume 2 Part B Section 3 Figure 7.2 Bedrock Geology;**
- iii. **PEI Report Volume 2 Part B Section 3 Figure 7.3 Groundwater Source Protection Zones;**
- iv. **PEI Report Volume 2 Part B Section 3 Figure 7.4 Aquifer Designation: Superficial Deposits;**

- v. **PEI Report Volume 2 Part B Section 3 Figure 7.5 Aquifer Designation: Bedrock Geology;**
- vi. **PEI Report Volume 2 Part B Section 3 Figure 7.6 Landfills, Waste and Potentially Contaminative Previous Land Uses;**
- vii. **PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification;** and
- viii. **PEI Report Volume 3 Part B Sections 1 - 7 Appendix 7B Minerals Safeguarding Report.**

### **Topography, Current and Historical Land Use**

- 7.5.5 Section 3 covers the New Lincolnshire Connection Substations A and B (LCS A and LCS B) and the proposed overhead line between them. Section 3 is located north of Alford and includes approximately 4.3 km of overhead line connecting the two substations with pylons at regular intervals (approximately 350 m spacing), including pylons LB1 to LB21. Section 3 also includes two short sections of proposed overhead line, one connecting the New LCS A to the route section break between Sections 2 and 3 (in the west) including pylons GL119 to GL123, and the other connecting the New LCS B to the route section break between Sections 3 and 4 (in the east) including pylons LW1 to LW4.
- 7.5.6 The land within the Section 3 Study Area is comprised primarily of woodland and farmland, with two major roads (A1104, A1111) and minor/local roads within the draft Order Limits. A review of Ordnance Survey (OS) mapping shows the Section 3 Study Area as being gently undulating throughout, with topographic highs of 10 m above ordnance datum (AOD). Surface water features, including ponds, drains and streams, are present within the Section 3 Study Area.
- 7.5.7 No properties or farm buildings are currently present within the draft Order Limits for Section 3, although residential properties and farm buildings are present within the Section 3 Study Area, including the villages of Saleby, Thoresthorne, Bilsby and Asserby Turn. Existing electrical infrastructure crosses through the centre of Section 3, to the east of Thoresthorne.
- 7.5.8 A sewage works (Strubby Sewage Treatment Works) is noted from historical mapping (Ref 9) dated 1949 to 1973 and is shown on current aerial imagery, located directly northeast of the draft Order Limits and north of pylon LB7. The location of this feature is shown on **PEI Report Volume 2 Part B Section 3 Figure 7.6 Landfills, Waste and Potentially Contaminative Previous Land Uses.**
- 7.5.9 No other features of note of potential contamination sources were observed from historical mapping or aerial imagery within the Section 3 Study Area.

### **Geology**

#### **Made Ground**

- 7.5.10 There are no recorded artificial deposits within the draft Order Limits or Section 3 Study Area, although Made Ground would be expected in minor deposits within isolated areas along roads and access tracks, such as A1104 and A1111 within the centre of Section 3, and in areas of historical and current land use, as noted within the 'Topography and Land Use' section above.

### Superficial Deposits

- 7.5.11 The Section 3 Study Area is recorded to be entirely underlain by various superficial deposits, the majority of which comprises Devensian Till (Glacial Till), typically described as heterogenous clay, sand, gravel and boulders.
- 7.5.12 The following superficial deposits are recorded in isolated areas within the Section 3 Study Area:
- i. Alluvium – comprising clay, silt, sand and gravel, present along surface watercourses and within the draft Order Limits surrounding pylon LB7;
  - ii. Glaciofluvial deposits – comprising sand and gravel, generally present surrounding alluvium deposits adjacent to surface watercourses within the Section 3 Study Area, present to the east of the New LCS A footprint and adjacent to pylon LB9 within the draft Order Limits; and
  - iii. Tidal Flat deposits – comprising clay and silt, present along a surface watercourse and crossing through the east of Section 3 and surrounding pylon LB15.
- 7.5.13 The distribution of the superficial deposits within the Section 3 Study Area is shown on **PEI Report Volume 2 Part B Section 3 Figure 7.1 Superficial Geology**.

### Bedrock

- 7.5.14 The bedrock within the Section 3 Study Area is recorded to comprise:
- i. Ferriby Chalk Formation in the west of Section 3, beneath the New LCS A footprint and pylons GL119 to GL123 and LB1 to LB8, generally described as soft, marly, flint-free chalk; and
  - ii. Welton Chalk Formation in the east of Section 3, beneath the New LCS B footprint and pylons LB9 to LB21 and LW1 to LW5, generally described as massive or thickly bedded chalk with occasional, but well-developed flint bands. This lithology is generally recorded to be softer than the overlying Burnham Chalk.
- 7.5.15 The distribution of the bedrock strata within the Section 3 Study Area are shown on **PEI Report Volume 2 Part B Section 3 Figure 7.2 Bedrock Geology**.

### Geological Setting

- 7.5.16 No linear geological features (e.g. faults, breaklines, etc.) are recorded within the Section 3 Study Area. Published geological mapping (Ref 11) shows a general dip of bedrock strata towards the northeast on geological sections, although no indication of dip value is shown across the Study Area.
- 7.5.17 Borehole records published by the BGS within the draft Order Limits were reviewed as part of this assessment to confirm the anticipated geological sequence in line with the published geological mapping. Three boreholes are located within the draft Order Limits for Section 3 and logs from these are summarised in **Table 7.2** below.

Table 7.2 Summary of British Geological Survey boreholes within the Section 3 Study Area

Borehole ID	Location (Easting, Northing)	Location Description	Stratigraphy
TF47NW33	544010, 379000	Immediately north of the New LCS A footprint, south of Rye Lane and east of pylons GL122 and GL123	<ul style="list-style-type: none"> <li>• 0 – 0.30 m: Topsoil</li> <li>• 0.30 – 1.20 m: Glacial Till</li> <li>• 1.20 – 3.00 m: Lower Claxby Ironstone</li> </ul>
TF47NW47	544050, 379150	North of the New LCS A footprint, south of Rye Lane and Galley Hill Farm	<ul style="list-style-type: none"> <li>• 0 – 0.60 m: Topsoil</li> <li>• 0.60 – 21 m: Drift, comprising clay with grit, stones, sand and chalk</li> <li>• 21 – 46 m: Chalk</li> </ul>
TF47NE72, TF47NE122	547415, 377415	West of Asserby Turn, northeast of LB16	<ul style="list-style-type: none"> <li>• 0 – 1 m: Topsoil</li> <li>• 1 – 2 m: Alluvium</li> <li>• 2 – 16.5 m: Till (Boulder Clay)</li> <li>• 16.5 – 20 m: Chalk bearings</li> <li>• 20 – 54.3 m: Chalk</li> </ul>

- 7.5.18 The named bedrock strata of the Lower Claxby Ironstone recorded within borehole TF47NW33 is not recorded on the published geological mapping within this area and other BGS borehole records nearby record approximately 20 m of superficial deposits. This record appears to be an erroneous duplicated borehole record by the BGS, named 'A16 Est Keal Bypass' which relates to a geographical location approximately 15 km to the southwest. Consequently, it is not considered further during the determination of baseline conditions.
- 7.5.19 No Local Geological Sites or sites nationally designated for their geological importance (e.g. SSSI) are located within the Section 3 Study Area.
- 7.5.20 Relevant information from the BGS geohazards database information that is available is summarised below. The limitations associated with this dataset, including the basis of its spatial extent, are discussed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. The geohazards classifications are described relative to the superficial geology, so reference to **PEI Report Volume 2 Part B Section 3 Figure 7.1 Superficial Geology** should be made for the areas affected by the classifications described.
- 7.5.21 Areas of Alluvium and Tidal Flat deposits (beneath pylons LB7 and LB15) are classified as Class D in relation to compressibility, meaning that compressibility and uneven settlement hazards are probably present.
- 7.5.22 One localised area of medium plasticity clays (Class C with respect to shrink-swell hazards) and Class C or D running sand hazards (defined as running sand hazards 'may be' or are 'probably present') are associated with areas of alluvium also.

- 7.5.23 Given the nature of Glaciofluvial deposits and their classifications elsewhere within the Study Area for the Project, there is a possibility of running sands where these strata are recorded (beneath the New LCS A footprint and pylon LB9).
- 7.5.24 The bedrock geology in Section 3 generally consists of chalk. Whilst this is a soluble rock that is prone to dissolution, this is not reflected in the available BGS geohazards data, which is assumed to be due to presence of superficial deposits over the chalk across the Section 3 Study Area.

### Hydrogeology

- 7.5.25 The superficial deposits within the Section 3 Study Area are designated as follows:
- i. Secondary A Aquifer:
    - Alluvium – present within one localised area within the draft Order Limits surrounding pylon LB7 and extending north and south within the Section 3 Study Area; and
    - Glaciofluvial deposits – surrounding alluvium deposits adjacent to surface watercourses within the Section 3 Study Area, present to the east of the New LCS A footprint and adjacent to pylon LB9 within the draft Order Limits.
  - ii. Secondary Undifferentiated Aquifer:
    - Glacial Till – present across the Section 3 Study Area where the isolated Alluvium, Glaciofluvial deposits or Tidal Flat deposits are not present.
  - iii. Unproductive Strata:
    - Tidal Flat deposits – present within one localised area surrounding pylons LB15 and extending north and south within the Section 3 Study Area.
- 7.5.26 The bedrock across the Section 3 Study Area comprising chalk of both the Ferriby Chalk Formation and Welton Chalk Formation is designated as Principal Aquifers.
- 7.5.27 The designations and spatial distribution of the superficial and bedrock aquifers within the Section 3 Study Area are shown on **PEI Report Volume 2 Part B Section 3 Figure 7.4 Aquifer Designations: Superficial Deposits** and **PEI Report Volume 2 Part B Section 3 Figure 7.5 Aquifer Designations: Bedrock Geology**. A brief summary of the aquifer descriptions is provided below in **Table 7.3**.

Table 7.3 Summary of aquifer designations

Aquifer Designation	Hydrogeological Description
Principal	Layers of rock that have high intergranular and/or fracture permeability and a high level of water storage, they may support water supply and/or river base flow on a strategic scale.
Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Secondary B	Lower permeability layers which may store or yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.



Aquifer Designation	Hydrogeological Description
Secondary Undifferentiated	Rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow, and when neither Secondary A or B aquifer designation can be applied.
Unproductive	These strata have negligible significance for water supply or baseflow to rivers, lakes and wetlands. They typically consist of strata with low permeability that naturally offer protection to any aquifers that may be present beneath.

- 7.5.28 The BGS borehole records (Ref 11) were reviewed within the draft Order Limits for Section 3 to help confirm the anticipated geology in line with the published geological mapping within areas of construction or ground disturbance. These records demonstrate an expected superficial cover for the bedrock aquifer in excess of 15 m within the draft Order Limits, primarily comprising Glacial Till. The BGS report on the Chalk Aquifer System of Lincolnshire (Ref 16) has determined that the chalk aquifer is typically confined by the Glacial Till deposits within this region.
- 7.5.29 The Section 3 Study Area lies entirely within the South Lincolnshire Chalk Unit groundwater body, which is monitored as part of the Water Framework Directive (WFD) and has been classified by the Environment Agency (EA) as having Poor overall status in 2019, due to poor nutrient management from agriculture and rural land management.
- 7.5.30 The Section 3 Study Area is not located within a Drinking Water Safeguard Zone for groundwater. One nitrate vulnerable zone (NVZ) for surface water is present within the west and centre of the draft Order Limits for Section 3 (Woldgrift Drain NVZ) and a second for groundwater is present within the south of the Section 3 Study Area (Lincolnshire Chalk), although this does not enter the draft Order Limits.

### Groundwater Levels

- 7.5.31 The EA has provided details of boreholes monitored for groundwater levels within or surrounding the Study Area for the Project, although none are located within the Section 3 Study Area. The closest borehole to the Section 3 Study Area is located 1.8 km northeast of the draft Order Limits (borehole reference Washdyke Bridge, Beesby (6/104)). This borehole has recorded a groundwater level within the South Lincolnshire Chalk as ranging between -0.5 m and 2.0 m above ordnance datum (AOD) (0.2 m and 2.7 m below ground level (bgl)). Given the presence of low permeability superficial deposits across the Section 3 Study Area, it should be noted that the groundwater levels within this borehole may reflect sub-artesian conditions rather than the actual level of groundwater in the ground.

### Source Protection Zones

- 7.5.32 The Section 3 Study Area is located within a SPZ, with a SPZ I (inner catchment) entering the draft Order Limits within the southeast of Section 3, directly adjacent to pylons LW4 and LW5. The surrounding SPZ II (outer catchment) covers the majority of the footprint of the New LCS B and pylons LB17 to LB21 and LW1 to LW5 within Section 3. The remainder and majority of the Section 3 Study Area is located within a SPZ III (total catchment). The spatial distribution of the SPZs within the Section 3

Study Area is shown on **PEI Report Volume 2 Part B Section 3 Figure 7.3 Groundwater Source Protection Zones**.

#### Abstractions

- 7.5.33 One groundwater abstraction (4/29/15/\*G/0096) within the EA records is located just beyond the extent of the draft Order Limits for Section 3, located directly north of the LCS A footprint and south of Rye Lane and Galley Hill Farm. This abstraction is used for spray irrigation for agricultural purposes and therefore is not surrounded by a SPZ.
- 7.5.34 East Lindsey District Council have provided records of private water supplies (PWS) within their district area, two of which are located within the Section 3 Study Area but just outside the draft Order Limits. These are recorded in the same location as the EA record above, off Rye Lane at Galley Hill. These abstraction records are associated with a borehole for commercial/public supply for Cottage Jam & Preserves and Camping & Caravaning Club. The location of these abstractions is shown on **PEI Report Volume 2 Part B Section 3 Figure 7.5 Aquifer Designations – Bedrock Geology**.

#### Environmental Setting

- 7.5.35 Zetica UXO online risk mapping (Ref 15) shows the Section 3 Study Area to be located within an area of Low bomb risk, with no strategic targets within the Section 3 Study Area. The closest strategic target to Section 3 is Strubby Airfield, located approximately 1.5 km north of the draft Order Limits and northwest of Beesby and north of the B1373.
- 7.5.36 A recorded historical landfill is present within the south of the Section 3 Study Area, approximately 450 m south of the draft Order Limits and south of pylon LB15. This landfill is recorded to have accepted household waste, although there are no recorded input dates. There is also only a point location for this feature, and it is absent from historical mapping (Ref 9), so the extent of this feature is unknown.
- 7.5.37 A sewage treatment works (Strubby Sewage Treatment Works) is located within the Section 3 Study Area, directly northeast of the draft Order Limits and east of the New LCS A footprint.
- 7.5.38 No other historical landfills, current landfills or sewage treatment works are recorded within the Section 3 Study Area.
- 7.5.39 The features listed above are shown on **PEI Report Volume 2 Part B Section 3 Figure 7.6 Landfills, Waste and Potentially Contaminative Previous Land Uses**.
- 7.5.40 East Lindsey District Council has also provided a list of land potentially affected by contamination within their district area, although none of these are located within the Section 3 Study Area.

#### Pollution Incidents

- 7.5.41 There are two pollution incidents within the Section 3 Study Area, both located within the Study Area but north of the draft Order Limits and approximately 670 m and 820 m north of pylon LB10. The first (reference 282323) is dated 10 December 2004 and the second (reference 326413) is dated 04 July 2005. Both are recorded to have had a Category 3 (minor) impact on water, with Category 4 (no impact) to land, although it is unknown whether these affected groundwater or surface water. These pollution

incidents are associated with sewage materials from a septic tank or sewage treatment plant failure and the locations of the pollution incidents are shown on **PEI Report Volume 2 Part B Section 3 Figure 7.6 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

### Discharge Consents

- 7.5.42 Two discharge consents are recorded within the Section 3 Study Area, although these are both recorded to be discharges to surface water and not to land or groundwater and are therefore not relevant to the Geology and Hydrogeology assessment. The locations of the discharge consents are shown on **PEI Report Volume 2 Part B Section 3 Figure 7.6 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

### Radon

- 7.5.43 The radon potential within the Section 3 Study Area is considered to be low risk. The majority of the Section 3 Study Area is recorded as being within an area where less than one per cent of homes are at or above the radon Action Level, which is the lowest category defined by the UK Health Security Agency (Ref 10). Localised areas of Section 3 are within an area of between one and three per cent of homes at or above the Action Level, although not beneath the substation footprints.

### Minerals

- 7.5.44 A Minerals Safeguarding Report has been prepared for the Project, which is provided in **PEI Report Volume 3 Part B Sections 1 to 7 Appendix 7B Minerals Safeguarding Report**. This report identifies the safeguarded minerals and safeguarded areas within the draft Order Limits and any potential effects on these as a result of the Project, within the context of relevant mineral safeguarding policy. One area of safeguarded minerals within the Section 3 Study Area is the Glaciofluvial Sand and Gravel present south west of pylon LB13, although these deposits are isolated and the quantity of sand and gravel is considered too small to be commercially viable as an extraction site. Alluvium is a geological superficial deposit that can contain safeguarded minerals of sand and gravel. However, Alluvium generally contains high quantities of silt and clays, and it is considered highly unlikely that this would be worked as a commercial mineral in Section 3. No other safeguarded minerals are recorded within the Section 3 Study Area.
- 7.5.45 The minerals report has not identified any potentially significant effects on safeguarded minerals. Therefore, these have not been assessed subsequently in this Chapter of the PEI Report, in line with the approach agreed within the Scoping Opinion (Ref 4).

### Future Baseline

- 7.5.46 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.

- 7.5.47 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 7.5.48 It is currently anticipated that, subject to gaining development consent in 2028, construction works would begin in 2029 and be completed by 2033. Up to and including that period, it is not expected that ground conditions, with respect to land contamination and geology, would change significantly. This assumes that any future activities undertaken within the Study Area would be permitted or controlled in accordance with current contaminated land legislation.
- 7.5.49 Hydrogeological conditions are more susceptible to change and therefore may be affected by the following factors:
- i. Climate change – changes in rainfall can affect aquifer recharge, groundwater levels and flow gradients (including consequent effects on the movement of contaminants in the ground);
  - ii. Future developments, should there be any such developments that are completed prior to the construction start date of the Project, including housing – increases in housing within the areas surrounding the Study Area have the potential to affect recharge to the underlying aquifers. Increased demand for drinking water associated with these can also affect future water resources and groundwater levels in aquifers, including the SPZ areas present across the Section 3 Study Area; and
  - iii. Changes in nitrate concentrations due to changes in land use or leaks from infrastructure – leaking waste water infrastructure represents a potential diffuse source of nutrients (nitrogen and phosphorus), other contaminants (e.g. heavy metals) and coliform bacteria to groundwater.
- 7.5.50 It is not considered likely at this stage that any change to the baseline conditions would be likely to significantly affect the assessment of effects within Section 3. This will remain under review prior to submission of the ES, to ensure that any change in circumstances are considered on a case-by-case basis.

## 7.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 7.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 17) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 18) which apply to design and siting of substations, converter stations and SECs. These approaches are explained in further detail within the **Corridor Preliminary Routing and Siting Study (CPRSS)** (Ref 24) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of

natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.

- 7.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts on the Project. Specific examples relevant to the assessment include:
- i. The careful routing and siting of the New LCS B and pylons LW1 to LW4 outside of a SPZ 1 area (surrounding groundwater abstraction 4/29/15/\*G/0097, a drinking water abstraction for Anglian Water) and site them within surrounding SPZ 2 areas. Note that this abstraction is located within the Study Area for Section 4, so it is only the associated SPZ (which encroaches into Section 3) that is relevant to the design mitigation specifically in relation to Section 3.

## Control Mitigation Measures

- 7.6.3 A Preliminary CoCP has been prepared for this project, provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control and management measures included within the Preliminary CoCP relevant to Geology and Hydrogeology assessment of Section 3 include:
- i. GH01: Intrusive ground investigations and assessment will be undertaken prior to construction which will inform appropriate geotechnical design in relation to the site/structure specific ground conditions including ground instability/adverse ground conditions.
  - ii. GH02: Construction methods such as appropriate piling techniques will be required to minimise the risk of mixing of aquifer bodies through the creation of new pathways. This includes the provision of a Foundation Works Risk Assessment (FWRA), which would be undertaken once the proposed foundation solutions are known, in accordance with CL:AIRE guidance 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention' (Ref 19).
  - iii. GH03: Appropriate training of construction and maintenance workers in the handling and use of potentially hazardous substances and the associated risks.
  - iv. GH04: All use and storage of chemicals to be undertaken in accordance with The Control of Pollution (Oil Storage) Regulations 2001 and EA guidance 'Protect groundwater and prevent groundwater pollution' (Ref 20).
  - v. GH05: Any temporary dewatering activities during construction will be undertaken in accordance with EA guidance (Ref 7), and if required, an Abstraction Licence and Environmental Permit (for the discharge) and will be limited to the depth and time required to facilitate construction activities.
  - vi. GH06: General good contamination avoidance and waste management procedures for construction sites (e.g. regular vehicle checks, use of spill kits, correct waste storage and disposal).
  - vii. GH07: If required (e.g. for maintenance during the operational phase), herbicides to be used in accordance with relevant DEFRA guidance (Ref 21).
  - viii. GH08: Application of salt grit (for example, to prevent access tracks freezing) to comply with recommended rates in CIRIA 648 'Control of water pollution from



linear construction projects (C648)' (Ref 22), with control of run-off during any application in SPZs.

- ix. GH09: At any trenchless crossings where horizontal directional drilling is required, a pre-construction Hydrogeological Risk Assessment will be carried out to inform the detailed design of the crossing and ensure that this does not present an unacceptable environmental risk. This will include the provision of a drilling fluid breakout management plan. The nature and scope of control or remediation measures will be agreed with the EA, as appropriate.
- x. GH10: Vehicle parking, fuel storage, de-icer storage, rock salt storage, and washout/cleaning of ready-mix concrete vehicles and equipment will be sited outside of SPZ I (inner catchment) wherever possible.
- xi. GH11: A protocol for dealing with any unexpected contamination will be included in the CEMP.
- xii. W05: The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This will particularly be with regard not only to volumes and discharge rates, but also to water quality (particularly suspended solids, pH and hydrocarbons) and will include discharges to land, water bodies or third-party drains/sewers.
- xiii. GG21: A Materials and Waste Management Plan (MWMP) will be developed prior to construction. The MWMP shall include but not be limited to:
  - waste forecasts;
  - identification of recovery routes; and
  - actual waste figures once work has begun.

Consideration will be given to the guidance in the Code of Practice developed by Contaminated Land: Applications in Real Environments (CLAIRE) "A Definition of Waste: Development Industry Code of Practice (DoWCoP)" (Ref 23). Dedicated waste management areas will be designed to sufficiently accommodate the types and volumes of waste produced and to reduce the environmental risk of storing waste on site (covered, secured and away from drainage).

The control of earthworks and the movement of excavated materials (including any re-use of excavated materials) will be achieved under appropriate Environmental Permits, exemptions or the DoWCoP.

## Additional Mitigation Measures

- 7.6.4 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 7.6.5 Additional mitigation measures are not anticipated to be required in relation to Geology and Hydrogeology effects. However, this will remain under review during the completion of further assessment and development of the ES.



## 7.7 Preliminary Assessment of Effects

- 7.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, maintenance and/or operational activities associated within Section 3.
- 7.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures, as previously described.
- 7.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section 3 in **Table 7.4**, based upon the assessment scope detailed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 7.7.4 Where it has been concluded that effects are not significant but may still be considered notable from a stakeholder perspective, a more detailed explanation is provided in support of the summaries included within **Table 7.4**. Examples include consideration of receptors of particularly high sensitivity or effects which have been identified of interest during previous consultation engagement. It is noted that the assessment which has informed the conclusions presented remains ongoing and is subject to change, due to the ongoing data collection and further design development of the Project. A full detailed assessment will be included within the ES submitted with the DCO application.
- 7.7.5 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

### Likely Significant Effects

#### Construction

- 7.7.6 Based on the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 3, as a result of the construction phase of the Project.

#### Operation and Maintenance

- 7.7.7 Based on the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 3, as a result of the operation and maintenance of the Project.

### Likely Non-Significant Effects

- 7.7.8 For completeness, **Table 7.4** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Geology and Hydrogeology effects.
- 7.7.9 Further to the approach described in paragraph 7.7.4, a detailed explanation of the non-significant effects on the chalk aquifer and associated SPZ is provided below. The effects on these receptors have been selected for this detailed explanation due to the regional importance of the aquifer within the Section 3 Study Area.

## Chalk Aquifer and Source Protection Zones

- 7.7.10 The entire Section 3 Study Area is located within a SPZ associated with the chalk aquifer, although no permanent infrastructure is located within the SPZ 1 area within the southeast of Section 3.
- 7.7.11 Control measures within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) would prevent the release of new contaminants from construction activities to the aquifer, through measures GH03 (appropriate training of workers in handling of potentially hazardous substances), GH04 (use and storage of chemicals), GH06 (general good environmental and waste management procedures), GH08 (application of salt grit and control of surface run-off in line with restrictions for SPZ 1 areas), GH10 (de-icer, salt and fuel storage outside of SPZ 1 areas wherever possible) and GG21 (materials movement controls). The expectation of low permeability superficial cover across the majority of the draft Order Limits also provides further assurance of protection in this regard.
- 7.7.12 Two features of contamination potential were identified within the assessment of baseline conditions (provided within **PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification**), neither of which are within the draft Order Limits or within the SPZ 1 area. Therefore, there are no instances where the construction of the Project would involve ground disturbance within areas of potential historical land contamination on land underlain by the chalk aquifer or SPZs.
- 7.7.13 The primary instance in which adverse effects could occur would be the installation of piled foundations, which may introduce a risk of creating a pathway for vertical migration and mixing of groundwater between different aquifers. Such effects would be prevented through the use of suitable piling methods to prevent inadvertent mixing of shallow groundwater with that in deeper, sensitive aquifers (control measure GH02 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**)). Control measure GH02 would include the preparation of a FWRA which would include appropriate controls to prevent any significant effects. Examples include the selection of specific piling techniques that prevent the creation of open pathways and minimising any physical downwards transport of soils. The chalk aquifer is recorded to have a protective cover of Glacial Till in this location (in excess of 15 m based on nearby BGS borehole records).
- 7.7.14 Control measure GH01 would ensure adequate pre-construction ground investigation to verify the ground conditions and inform the FWRA. Control measure GH11 would also ensure suitable protocol in the instance of encountering unexpected contamination.
- 7.7.15 In addition to the chemical or contamination effects discussed above, physical effects on the SPZ and chalk aquifer require consideration in relation to any construction activities that could mobilise sediment/turbidity in the chalk. The majority of the construction work will involve near surface construction activities that would not be expected to interact with the chalk, given the expected nature and thickness of the superficial deposits. Exceptions may include piling for pylon and substation foundations or horizontal directional drilling (HDD) to underground existing lower voltage utilities. Any piling work will be controlled in accordance with control measure GH02 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) through a FWRA, which will require careful controls and monitoring particularly if the piling is within SPZ 2

areas (there will be no permanent infrastructure within SPZ 1 in Section 3). Undergrounding of existing assets by HDD would generally only be used in cases where engineering design indicated trenching to be unfeasible. Whilst such locations are yet to be identified, there are no circumstances identified to date where HDD directly in chalk is anticipated in Section 3, although this is subject to confirmation as the design progress. Additionally, as a general groundwater protection requirement, HDD work would be subject to control measure GH09.

- 7.7.16 Given the expected depth of the chalk aquifer and the nature of the construction activities, it is not anticipated that any pumping/dewatering of the chalk aquifer will be required during construction, nor that there will be any discharges to the aquifer.
- 7.7.17 Based on consideration of all of the above potential effects, it is concluded that the magnitude of effect on the chalk aquifer and SPZ, for all effect types identified in the Scoping Report (Ref 5), is negligible. Together with a high receptor sensitivity, this shows that the Project will have a negligible effect on these receptors.

### **Abstractions**

- 7.7.18 There is one recorded EA groundwater abstraction (4/29/15/\*G/0096) and two private water supplies within the Section 3 Study Area, all located directly adjacent to (outside of) the draft Order Limits to the north of the New LCS A footprint and construction compound. The EA abstraction is recorded to relate to spray irrigation for agricultural purposes and the private water supplies are recorded by East Lindsey District Council to be associated with commercial/public supply.
- 7.7.19 The superficial geology beneath these abstractions is recorded to comprise glaciofluvial deposits, with glacial till directly east of the abstraction. Published borehole records directly adjacent to the abstraction show a local superficial thickness of approximately 21 m overlying chalk bedrock, primarily comprising clay, with sand and gravel components from approximately 7.5 m depth.
- 7.7.20 Construction work would be expected to be restricted to the superficial deposits rather than intersecting the chalk, with the exception of piling for pylon and substation foundations. It is not known whether the abstractions abstract groundwater from the chalk or the superficial deposits. In the event that the abstractions are from the superficial deposits then it is expected that the effects from construction of the project would be negligible, which is not significant. This is because: (i) ground disturbance within the glaciofluvial deposits that the abstractions are situated on would be restricted to widening and use of an existing access track, (ii) control measures GH04 and GH08 will suitably prevent/mitigate any releases of contamination from the widening and use of this track, (iii) any effects from the construction of the New LCS A (located around 200m to the south west of the abstractions) would be expected to be negligible due to the expected absence of a pathway (intervening Glacial Till deposits) and precautionary control measures (GH01, GH02, GH03, GH04, GH05, GH06, GH08, GG21 and W05).
- 7.7.21 In the event that the abstractions are from the chalk, then the presence of low permeability horizons in the superficial material will likely reduce hydrogeological connectivity with the chalk (e.g. for the downwards transport of solids mobilised by construction activities), such that the only potential pathway by which water quality could be affected would be piling that directly intersected the chalk (if required following engineering design). Should this be required then it would be controlled under control measures GH01, GH11 and GH02 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of**

**Construction Practice)** such that the resulting effects would be negligible, which is not considered to be significant.

- 7.7.22 For completeness, **Table 7.4** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Geology and Hydrogeology effects.

Table 7.4 Preliminary summary of non-significant Geology and Hydrogeology effects – Section 3

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Construction</b>					
Construction workers and adjacent land users (Human health)	Harm to human health through exposure to contamination, including dust and vapours through disturbance of the ground during construction that is affected by pre-existing contamination	Medium (construction workers)	Negligible	Negligible – not significant	<p>Two potential contamination sources have been identified within the Section 3 Study Area with a moderate or greater potential, including a sewage treatment works and historical landfill. These sources are summarised within <b>PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification</b>.</p> <p>These features are both located outside of the draft Order Limits and therefore are not located within pylon or substation working areas or locations where undergrounding of existing Distribution Network Operator (DNO) assets may be required, so will not undergo ground disturbance for the Project.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), then with the use of appropriate personal protective equipment (PPE) and the implementation of control measure GG21 (control of earthworks and materials movement) included within the Preliminary CoCP, provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary</b></p>

<sup>1</sup> Geological Conservation Sites have not been included as receptors within this table due to their absence within the Section 3 Study Area. Effects on groundwater in Tidal Flat superficial deposits have also not been included as they are not considered as groundwater aquifers, due to the unproductive nature of the strata.

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					<p><b>Code of Construction Practice</b>, the exposure pathways would be reduced/prevented such that the effects on construction workers are not significant.</p>
		High (adjacent land users)	Negligible	Negligible – not significant	<p>The potential contamination sources within the Section 3 Study Area are summarised within <b>PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification</b>.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), with the implementation of control measure GH06 (which would include dust and leachate control), provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, the exposure pathways would be reduced/prevent such that the effects on adjacent land users are not considered to be significant.</p>
Groundwater Aquifers	Deterioration in chemical quality of the groundwater through disturbance of the ground during construction that is affected by pre-existing contamination	<p>High – Bedrock (Ferriby Chalk Formation, Welton Chalk Formation)</p> <p>Medium – Glaciofluvial deposits, Alluvium</p>	Negligible	Negligible – not significant	<p>Two sources of potential contamination were identified within the initial contamination screening assessment within <b>PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification</b>, the Strubby Sewage Treatment Works and an unnamed historical landfill. Both of these features are located outside of the draft Order Limits and therefore not within areas of proposed ground disturbance associated with</p>



Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
		Deposits, Glacial Till			the Project, including construction areas and areas of undergrounding of existing lower voltage assets.
		Low - Tidal Flat Deposits			<p>No other features of contamination potential were identified within the Section 3 Study Area, although the potential for unrecorded pre-existing contamination cannot be discounted.</p> <p>Control measure GH02 provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, includes the use of suitable piling methods, in accordance with a foundation works risk assessment, to prevent pathway creation into the sensitive aquifers, if pre-existing contamination is encountered during construction.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), with the implementation of control measure GH02, the pathways would be reduced/prevented such that the effects on the groundwater aquifers are not significant.</p>
Groundwater Abstractions	Deterioration in chemical quality of the groundwater through disturbance of the ground during construction that is affected by pre-	<p>High – Private water supplies</p> <p>Medium – Abstractions used for agricultural purposes</p>	Negligible	Negligible – not significant	East Lindsey District Council record two private water supplies within the Section 3 Study Area in the same location, located adjacent to but outside of the draft Order Limits, directly north of the LCS A footprint and south of Rye Lane and Galley Hill Farm. The EA also record a groundwater abstraction at this location, used

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	existing contamination				<p>for spray irrigation for agricultural purposes, and therefore not surrounded by a SPZ.</p> <p>These records are located within an area of Glaciofluvial superficial deposits, within which ground disturbance associated with construction of the project would be limited to widening and use of an existing track, and not pylon or substation construction.</p> <p>No contamination sources are located surrounding this feature, the Strubby Sewage Treatment Works is located approximately 600 m east of this abstraction.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), with the implementation of control measure GH02 provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, the pathways would be reduced/prevented such that the effects on the abstraction are not significant.</p>
Groundwater Aquifers	Physical effects on aquifers, such as depletion of the aquifer and increased solids/turbidity, through dewatering activities (e.g. during excavations for	High – Bedrock (Ferriby Chalk Formation, Welton Chalk Formation)	Negligible	Negligible - not significant	<p>The bedrock aquifers within Section 3 are of high sensitivity. The likely thickness of superficial deposits within the area from published borehole records is considered to be in excess of 15 m.</p> <p>Excavations for pylon and substation construction and open trenching for undergrounding of existing DNO assets would be expected to be within the superficial</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	foundations for new structures) and changes to groundwater flows caused by construction activities and generation of solids through ground disturbance				<p>deposits and not within the bedrock. Therefore, it is not considered likely that the high sensitivity bedrock aquifers would require dewatering for construction of pylons.</p> <p>The majority of construction work would be undertaken within the superficial deposits and not with the chalk bedrock; the possible exception being piling for pylon foundations or undergrounding of existing lower voltage assets through HDD. Control measures (GH02 and GH09) provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, would prevent migration of solids towards the underlying chalk aquifer and adequately control any release of solids from the chalk. Therefore, there is not considered to be a significant effect.</p>

	Medium – Glacial Till, Glaciofluvial deposits and Alluvium	Low	Minor – not significant	<p>The superficial deposits of medium sensitivity underly the majority of the Section 3 Study Area.</p> <p>No information was provided for groundwater monitoring levels within the superficial deposits. Therefore, for the purposes of this assessment, a worst-case scenario has been assumed where dewatering may be required for construction within the superficial deposits. This has the possibility to reduce groundwater levels locally and increase suspended solids/turbidity.</p> <p>It is likely that any dewatering during construction of the New LCS A and and the New B would be restricted to management of surface water accumulation and localised perched water. Temporary groundwater control/pumping during substation and pylon foundation excavations or open trenching for undergrounding of existing DNO assets would be undertaken in accordance with EA guidance (control measure GH05) provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice.</b></p> <p>With the implementation of control measures (GH02 and GH05) within the Preliminary CoCP to ensure physical effects are appropriately minimised and controlled, the effects on the medium sensitivity groundwater aquifers are not significant.</p>
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Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Groundwater Abstractions	Physical effects on aquifers, such as depletion of the aquifer and increased solids/turbidity, through dewatering activities (e.g. during excavations for foundations for new structures) and changes to groundwater flows caused by construction activities and generation of solids through ground disturbance	High – Private water supplies  Medium – Abstractions used for agricultural purposes	Negligible	Negligible – not significant	<p>There are two private water supplies and one medium sensitivity groundwater abstraction (within the EA records) recorded in the same location, just outside of the draft Order Limits and north of the New LCS A footprint at Galley Hill.</p> <p>This abstraction location is adjacent to an existing track which will be adopted by the Project as an access track and is located on an isolated area of Glaciofluvial deposits. Construction activities within these deposits will be limited to widening and use of an existing track, not pylon or substation construction, therefore is it not considered that dewatering would be required in proximity to this abstraction.</p> <p>The construction activities required for Section 3 may generate solids and negatively impact the groundwater via increased turbidity. With the implementation of control measures (GH02, GH09 and GG21) provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, any physical effects from construction activities would be sufficiently mitigated.</p>
Groundwater Aquifers  Groundwater Abstractions	Physical and chemical effects on groundwater as a result of the discharge of groundwater, such	High – Bedrock (Ferriby Chalk Formation, Welton Chalk Formation)	Negligible	Negligible – not significant	Any discharge of water during construction (e.g. from pylon and substation foundation excavations) to land would be of unpolluted water only and undertaken in accordance with control measure W05 (compliance with discharge conditions) provided in <b>PEI Report</b>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	as depletion of the aquifer, increased solids/turbidity and reduction in chemical quality, arising from dewatering or surface water control	<p><i>And</i> Private water supplies</p> <p>Medium – Alluvium, Glaciofluvial deposits and Glacial Till</p> <p><i>And</i> Abstractions used for agricultural purposes</p>			<b>Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice.</b> Discharges directly to groundwater are not anticipated. Therefore, there is not considered to be a significant effect.
Soil/land quality	Deterioration in chemical quality of the land through release of contamination by construction activities	Medium	Negligible	Negligible – not significant	<p>Soil/land quality can be negatively affected by construction due to the inadvertent release of contamination and/or incorrect storage and re-use of excavated soils.</p> <p>With the implementation of control measures (GH03 – adequate training of workers in managing hazardous substances, GH04 - appropriate storage of chemicals and health and safety measures for construction sites) provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, the effects on soil/land quality are not significant.</p>



Groundwater Aquifers	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g. loss of fuels to an aquifer)	High – Bedrock (Ferriby Chalk Formation, Welton Chalk Formation)  Medium – Alluvium deposits, Glaciofluvial deposits and Glacial Till	Negligible	Negligible – not significant	<p>Published borehole records within Section 3 generally show a superficial cover in excess of 15 m, primarily comprising cohesive Glacial Till which is considered to be of low permeability. The superficial deposits are more susceptible to releases of contamination from ground level than deeper aquifers as these are anticipated to be acting as a protective cover from surface releases of contamination.</p> <p>There are three recorded areas where undergrounding of existing lower voltage assets may be required within the Section 3 Study Area. The anticipated thickness of superficial cover is such that undergrounding would be expected to be within the superficial deposits, as the three locations only include undergrounding beneath access tracks and drainage ditches or very small surface water features and not major roads or river crossings. A Hydrogeological Risk Assessment (control measure GH09) will be undertaken to assess specific risks to groundwater aquifers (including the risk of breakout of drilling fluids) and a drilling fluid breakout management plan would be prepared, to identify any additional mitigation or remediation that may be required.</p> <p>With the implementation of control measures (GH03, GH04 and GH09) provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, releases of contamination should be adequately prevented and the pathways would be reduced/prevented such that the effects on the groundwater aquifers are not significant.</p>
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Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Groundwater Abstractions	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g. loss of fuels to an aquifer)	High – Private water supplies  Medium – Abstractions used for agricultural purposes	Negligible	Negligible – not significant	<p>There are two private water supplies and one medium sensitivity groundwater abstraction (within the EA records) within the Section 3 Study Area, all recorded within the same location just beyond the extent of the draft Order Limits and north of the New LCS A footprint.</p> <p>A SPZ 1 area is located within the Section 3 Study Area, although the associated groundwater abstraction is within the Section 4 Study Area. <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b> includes specific control measures (GH08 and GH10) for works within SPZ 1 areas to prevent deterioration in the chemical quality of groundwater aquifers through control of surface water run-off and the reduction of leaching into sensitive aquifers.</p> <p>With the implementation of these control measures and additional measures (GH03, GH04 and GH09) within the Preliminary CoCP, releases of contamination from construction activities should be adequately prevented and the pathways reduced/prevented such that the effects on groundwater abstractions are not significant.</p> <p>Details of any control measures for works within high sensitivity groundwater areas required by Anglian Water will be obtained prior to the ES, to verify whether any additional protective measures are necessary to satisfy</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					their requirements.
Adjacent land users, construction workers (Human health)	Explosion or asphyxiation as a result of ingress and accumulation of ground gas within buildings or other confined spaces	High	Negligible	Negligible – not significant	<p>Only one potential source of ground gas was identified within the Section 3 Study Area (within <b>PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification</b>), comprising an unnamed historical landfill located approximately 450 m south of the draft Order Limits and south of pylon LB15. This feature is considered to be sufficient distance from the draft Order Limits and any areas of ground disturbance that it is not considered to represent a significant risk of ground gas migration to the draft Order Limits.</p> <p>No other specific sources of ground gas or potential ground gas-generating material were identified within the assessment of baseline conditions.</p> <p>Should ground investigations undertaken prior to construction (control measure GH01) provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>, identify the presence of hazardous ground gases or materials with the potential to generate these (e.g. Made Ground or natural materials with degradable content), with the use of appropriate PPE and</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					the implementation of control measures (GH02 and GH06) within the Preliminary CoCP, as well as suitable construction of any temporary structures (i.e. construction compounds) to prevent accumulation of ground gas, the exposure pathways would be identified and mitigated such that the effects on construction workers and adjacent land users are not significant. The FWRA (within control measure GH02) will consider migration of ground gas if disturbed during construction, to ensure that there are no risks to occupants/users of nearby buildings.
Structures	Explosion as a result of ingress and accumulation of ground gas within buildings or other confined spaces	Medium	Negligible	Negligible – not significant	<p>Only one specific source of ground gas was identified within the assessment of baseline conditions, the unnamed historical landfill approximately 450 m south of the draft Order Limits and south of pylon LB15. This feature is considered to be sufficient distance from the draft Order Limits and any ground disturbance to present a risk for the Project.</p> <p>Should ground investigations undertaken prior to construction (control measure GH01 provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>) identify the presence of hazardous ground gases or materials with the potential to generate these (e.g. Made Ground or natural materials with degradable content), suitable construction of any temporary structures (i.e. construction compounds) will prevent ground gas</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					accumulation and migration towards adjacent structures, as such, the pathways would be identified and mitigated such that the effects on structures are not significant.
Adjacent land users, construction workers (Human health)	Unstable ground and damage to buildings or property through disturbance of unstable ground by construction activities	High (Human health)  Medium (Structures)	Negligible	Negligible – not significant	Based on the mapped geology and currently available information from the BGS geohazards data set, it is considered that natural geohazards can be mitigated through suitable engineering design (in accordance with standard good practice) such that adverse effects should not occur. As such, there is not considered to be a significant effect.
Structures					
Soil/land quality	Ground stability issues caused through dissolution of soluble rocks due to changed patterns of groundwater flow/discharges caused by construction activities	High (Human health)  Medium (Structures and soil/land quality)	Negligible	Negligible – not significant	The bedrock beneath the Section 3 Study Area comprises chalk, which can be susceptible to dissolution through changes in the groundwater regime, which could affect the soil/land quality through stability issues. However, the anticipated thickness of superficial deposits within Section 3 (in excess of 15 m) is such that it is not considered likely that construction activities would affect the deeper bedrock strata and it is not considered that discharges to the bedrock would be undertaken within the Project.
Adjacent land users, construction workers (Human health)					Piling work would not be expected to affect groundwater flow patterns and induce dissolution, with this activity subject to control measure GH02 provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b> . With the
Structures					

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					implementation of control measures GH02 and GH09, there is not considered to be a significant effect from either shallow construction work or piling.
Groundwater Aquifers	Deterioration in chemical quality of the groundwater through dissolution of soluble rocks due to changed patterns of groundwater flow/discharges caused by construction activities	High – Chalk bedrock	Negligible	Negligible – not significant	The aquifer under consideration for this effect is the chalk bedrock, which is of high sensitivity, and groundwater abstractions associated with these strata. It is not considered that discharges to or disturbance of the bedrock aquifer would be undertaken within Section 3, due to the anticipated thickness of superficial cover within the Section 3 Study Area.  There is a possibility for dissolution of soluble rocks through piling activities (control measure GH02 provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b> ) would include suitable risk assessment of any works and mitigation such that these works would not affect groundwater flow patterns.  Therefore, it is not considered that the construction would induce chalk dissolution that could affect the quality of groundwater in the chalk aquifer, and therefore there are no non-significant effects to assess.
Groundwater Abstractions		Private water supplies  Medium – Abstractions used for agricultural purposes			
Operation and Maintenance					
Future land users (Human health)	Harm to health of substation operatives due to	High (Human health)	Negligible	Negligible – not significant	Only one potential source of ground gas was identified within the Section 3 Study Area (provided in <b>PEI Report Volume 3 Part B</b>



Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Structures	explosions or asphyxiation as a result of ingress and accumulation of ground gas within structures	Medium (Structures)			<p><b>Section 3 Appendix 7A Initial Contamination Risk Classification</b>), an unnamed historical landfill located approximately 450 m south of the draft Order Limits. This landfill is considered to be sufficient distance from any proposed structures associated with the Project (approximately 750 m west of the New LCS B) such that it would not pose a risk of ground gas generation potential for the Project.</p> <p>Should ground investigations undertaken prior to construction (control measure GH01 provided in <b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>) identify the presence of hazardous ground gases or materials with the potential to generate these (e.g. Made Ground or natural materials with degradable content), the substations would be designed to incorporate appropriate gas protection, if required. Therefore, there is not considered to be a significant effect.</p>
Groundwater Aquifers	Changes to infiltration and corresponding effects on groundwater levels as a result of the presence of new structures and surfaces	High – Bedrock (Ferriby Chalk Formation, Welton Chalk Formation)	Negligible	Negligible – not significant	The construction of the New LCS A and the New LCS B within Section 3 will introduce new impermeable surfacing. However, both substations are entirely underlain by superficial deposits comprising Glacial Till deposits, which are likely to be primarily cohesive and of low permeability/infiltration capacity. Therefore, the chalk aquifer that underlies the superficial deposits is unlikely to be fed by surface run-off/infiltration from the substation sites at present, so the installation of impermeable

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>surfacing and engineered drainage presents minimal change to this situation.</p> <p>Although it is possible that Glacial Till may have variable contents of more permeable granular materials, it is considered that any current recharge to the regional chalk aquifer from the substation footprints is likely to be so minimal that the magnitude of change on groundwater levels within the chalk from the presence of impermeable surfacing at the substation sites would be negligible. Therefore, there is not considered to be a significant effect.</p>
		Medium – Glacial Till	Negligible	Negligible – not significant	<p>Glacial Till deposits are present across the majority of the Section 3 Study Area, with an estimated local thickness in excess of 15 m. These deposits are present in areas of proposed hardstanding, including the New LCS A and the New LCS B and access roads.</p> <p>However, these deposits are generally cohesive and impermeable and the construction of new impermeable surfaces is not considered likely to alter infiltration and recharge substantively. Therefore, there is not considered to be a significant effect.</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
		Medium – Alluvium and Glaciofluvial deposits	Negligible	Negligible – not significant	<p>These deposits are localised within the Section 3 Study Area, being present at pylons LB7 and LB15, and adjacent to pylon LB9. Neither deposit type is present within the Indicative New Substation Boundary for the New LCS A and the New LCS B.</p> <p>The presence of pylons LB7, LB9 and LB15 will not introduce significant hardstanding and therefore is not considered likely to alter the drainage regime within the Alluvium and Glaciofluvial deposits.</p> <p>Therefore, there is not considered to be a significant effect.</p>
Future land users, adjacent land users	Harm to human health through exposure to contamination, including dust and vapours through disturbance of pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent	Medium	Negligible	Negligible – not significant	<p>Two potential sources of contamination were identified within the initial contamination assessment (provided in <b>PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification</b>), comprising the Strubby Sewage Treatment Works and an unnamed historical landfill. Both features are located outside of the draft Order Limits and therefore not within areas of expected ground disturbance associated with the Project. No other features of potential contamination were identified within the Section 3 Study Area.</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	maintenance or repair activities requiring excavations for inspection/access to utilities, below ground infrastructure or foundations)				<p>It is considered that the degree of ground disturbance associated with maintenance activities would be no greater than that associated with construction, which have been determined to be not significant for Section 3. There is also a minimal risk for encountering unexpected contamination during the maintenance phase, as this would already be known and understood from the construction phase.</p> <p>It is considered that with suitable health and safety measures, any risks to human health would be suitably mitigated. Therefore, the effects on human health are not significant.</p>
Groundwater Aquifers	Deterioration in chemical quality of the aquifers through disturbance of pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent maintenance or repair activities requiring excavations for inspection/access to utilities, below	<p>High – Bedrock (Ferriby Chalk Formation, Welton Chalk Formation)</p> <p><i>And</i> Private water supplies</p> <p>Medium – Alluvium deposits, Glaciofluvial deposits and Glacial Till</p> <p><i>And</i> Abstractions used for</p>	Negligible	Negligible – not significant	<p>Two potential sources of contamination were identified within the baseline conditions assessment for Section 3 (within <b>PEI Report Volume 3 Part B Section 3 Appendix 7A Initial Contamination Risk Classification</b>), although both are outside of the draft Order Limits and not within areas of expected ground disturbance.</p> <p>Any contamination associated with these potential sources would be known and understood from the construction phase. Any work involving disturbance of the ground would be planned and carried out accordingly, complying with suitable environmental controls, to prevent the release of contaminants to the sensitive aquifers. Maintenance activities are also typically much less intrusive than</p>

Receptor <sup>1</sup>	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	ground infrastructure or foundations)	agricultural purposes			construction activities and any resulting effects therefore would be smaller than during the construction phase, where these effects were determined to be negligible (not significant). Therefore, the effects on groundwater are not significant.
		Negligible – Tidal Flat deposits			

## **7.8 Monitoring**

- 7.8.1 Although no significant effects have been identified within this assessment, given the hydrogeological sensitivity within Section 3, it may be necessary to undertake monitoring prior to and during the construction phase for assurance purposes. The requirement for this will be assessed further within the ES when further characterisation of the hydrogeological regime has been undertaken.



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- Ref 24 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 12 April 2024].

# 8. Agriculture and Soils

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# 8. Agriculture and Soils

## 8.1 Introduction

- 8.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Agriculture and Soils assessment for New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 8.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 8.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and the subsequent scope of the Agriculture and Soils assessment (section 8.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high level summary of the methodology of the Agriculture and Soils assessment within Section 3 (section 8.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Agriculture and Soils assessment (section 8.5);
  - vi. A description of mitigation measures included for the purposes of the Agriculture and Soils assessment reported within the PEI Report (section 8.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Agriculture and Soils effects arising during construction and operation of the Project within Section 3, based upon the assessment completed to date (section 8.7); and
  - viii. An outline of the likely monitoring requirements in relation to Agriculture and Soils (section 8.8).
- 8.1.2 Further supporting information is set out in **Table 8.1** below, including supporting figures and technical appendices.

Table 8.1 Supporting Documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<p>Figure 8.1 National Soil Map</p> <p>Figure 8.2 Provisional Agricultural Land Classification</p> <p>Figure 8.3 Woodland and Forestry Schemes</p> <p>Figure 8.4 Agri-Environment Schemes</p>
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	Provides a summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.



Supporting Information	Description
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 8.1.3 There are interrelationships between the potential effects on Agriculture and Soils and other environmental topics. Therefore, reference should also be made to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 2 Landscape** should be consulted in relation to the landscape setting (for example topography) which can influence land use in any given location;
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** should be consulted in relation to the ecology receptors and biodiversity value which can, in part, be influenced by the presence of Agri-environment and Woodland and Forestry Schemes and which may, in turn, be relevant to soil ecosystem services (such as potential for soil carbon sequestration associated with some habitat types);
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 6 Water Environment** should be consulted in relation to the details of the water environment which interacts with the soil, for example in relation the land drainage, infiltration rates, erosion risk and flood risk;
  - iv. **PEI Report Volume 2 Part B Section 3 Chapter 7 Geology and Hydrogeology** should be consulted in relation to geology present within the Section and how the underlying geology influences soil characteristics and how soil characteristics may influence groundwater recharge;
  - v. **PEI Report Volume 2 Part C Chapter 8 Agriculture and Soils (route-wide summary)** should be consulted in relation to the route-wide impacts upon Best and Most Versatile (BMV) soils across the entire Project and any significant effects; and
  - vi. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 8.2 Legislation and Policy Framework

- 8.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, detail of which is set out in **Table 8.1**.

## Regional and Local Policy

8.2.2 Regional and local plans or policies relevant to this assessment are as follows:

- i. Lincolnshire County Council (Adopted 2016). Lincolnshire Minerals and Waste Local Plan (Ref 1): sets out the key principles for working of minerals and waste management development in Lincolnshire and the development management policies for minerals and waste which will be considered for any future planning applications.
- ii. East Lindsey District Council (2018). East Lindsey Core Strategy (Ref 2):
  - Strategic Policy (SP10) Design: this requires poorer quality agricultural land to be used in preference to that of higher quality; and
  - Strategic Policy 24 (SP24) Biodiversity and Geodiversity: this recognises the importance of soil as a component of the natural environment and the requirement to protect soils and use them sustainably.

## 8.3 Scope of Assessment

- 8.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 3) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 4). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Agriculture and Soils chapter is provided in **PEI Report Volume 3 Part A Appendix 4B Planning Inspectorate Scoping Opinion Responses**.
- 8.3.2 Non statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 8.3.3 The scope of the construction, and operation and maintenance assessment covers the following receptor groups:
- i. Agricultural Land Classification (ALC), including Best and Most Versatile (BMV) land;
  - ii. Soil function; and
  - iii. Agricultural Landholdings.

## 8.4 Assessment Methodology

- 8.4.1 The assessment methodology, relevant guidance, key assumptions and limitations for the Agricultural and Soils assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components is outlined below.
- 8.4.2 This preliminary assessment is supported by an initial collation and review of available baseline data. The data sources used to develop the baseline conditions are set out in section 8.5.

- 8.4.3 To fully inform the assessment of Agriculture and Soils, a detailed ALC and soil survey will be undertaken from January to October 2025 to determine the sensitivities of soils and the grade(s) of agricultural land within the draft Order Limits. The information from the detailed ALC and soil survey was not available for this preliminary assessment but will inform the assessment presented in the ES. The survey and assessment will be undertaken in accordance with the Soil Survey Field Handbook (Ref 6) and the ALC guidelines (Ref 5) and will characterise soil properties based on an examination of soil profiles, from which agricultural land grade as well as soil resilience can be calculated and assessed. An Agriculture and Soils survey strategy document is provided within Annex B to the **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 8.4.4 The assessment presented in the PEI Report is based on publicly available Provisional ALC data, and detailed data (where available). The Provisional ALC mapping does not differentiate between Grade 3a (BMV) and Grade 3b (non-BMV); as such a worst-case approach has been taken for the assessment presented, with all land provisionally mapped as Grade 1, 2 and 3 being considered to comprise BMV land. The ES submitted with the DCO application will include detailed ALC survey data that will show the split between Grade 3a and 3b land. This information will further refine the assessment as presented in this Chapter for the ES. A Detailed ALC Survey Report will be included as an appendix within the ES.
- 8.4.5 To inform the assessment of impacts on farm holdings, broad data on agricultural landholdings will be collected through on-going discussions by the Project's Lands Team with landowner/occupiers or land agents. A preliminary overview of landowner/occupier information has been used to inform the preliminary assessment. This does not, for the PEI Report, include an assessment of individual landholdings in terms of viability (such as disruption or proportion of landholding taken temporarily or permanently). An assessment will be presented in the ES based on the level of further information gained and with a focus on the permanent impacts and on any land uses which may be considered more sensitive (such as orchards, high value cropping systems or livery stables). The assessment in relation to landholdings takes account of the framework associated with financial compensation for disruption and temporary/permanent loss of land (in accordance with the compensation code) which would include consideration of any active agri-environment and/or forestry/woodland schemes.
- 8.4.6 Land taken temporarily during construction, for example for construction compounds, would be reinstated following completion of construction activities. Land taken permanently during construction, for example for pylon foundations, would not be available for on-going agricultural use. Temporary and permanent impacts associated with land being taken are therefore addressed as part of the construction phase as the land is taken at that point in the Project.
- 8.4.7 Maintenance or repair works which would result in disturbance to soils during the operation of the Project (for example creation of temporary access routes and contractor compounds) would be undertaken in accordance with good practice soil handling methods. As these are likely to be small-scale and temporary, no likely significant effects on agricultural land during operational, maintenance or repair activities are predicted. Whilst operational impacts are proposed to be scoped out of the assessment, the Scoping Opinion (Ref 3) requested further detail on the location and extent of access tracks and compounds for maintenance activities to demonstrate the limited extent/duration. Further information on the scale and duration of likely standard operational activities which could affect Agriculture and Soils will be provided in the ES.

## Assessment Assumptions and Limitations

- 8.4.8 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 8.4.9 The following assumptions and limitations are specific to the Agriculture and Soils of Section 3.
- 8.4.10 It should be noted that while land in Section 3 is provisionally mapped as ALC Grade 2 and 3 land, this classification will be confirmed by detailed surveys and the final magnitude of effects will be presented based on the survey information. Furthermore, provisional ALC mapping is at a scale of 1:250,000 and does not split Grade 3 into Grades 3a and 3b, which is critical for assessing impacts on BMV land. As such, for the purpose of the preliminary assessment all provisional ALC Grade 1, 2 and 3 land will be considered BMV land.
- 8.4.11 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions applicable to the full assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 8.5 Baseline Conditions

### Study Area

- 8.5.1 The Study Area for the assessment of Agriculture and Soils comprises the draft Order Limits within Section 3, as agreed within the Scoping Opinion (Ref 3). The assessment is confined to within this boundary as no land will be affected outside of this.

### Data Collection

- 8.5.2 The following data has been used to inform the baseline conditions:
- i. British Geological Survey (BGS) Geology Viewer (Ref 7);
  - ii. Ordnance Survey (OS) mapping and aerial photography (Ref 8);
  - iii. Department for Environment, Food and Rural Affairs (Defra) Agricultural Land Classification – Provisional (England), provided through MAGIC (Multi-Agency Geographic Information for the Countryside) (Ref 9);
  - iv. Department for Environment, Food and Rural Affairs (Defra) Post-1988 Agricultural Land Classification (England), provided through MAGIC (Multi-Agency Geographic Information for the Countryside) (Ref 9);
  - v. National Soil Association Map of East Midlands and Eastern England and soil data from National Soils Resources Institute at Cranfield university (NSRI) (Ref 10);
  - vi. Likelihood of BMV Agricultural Land map (Ref 11);
  - vii. Relevant Agriculture and Soils data from other projects which overlap with the draft Order Limits); and
  - viii. Climate data sets for ALC assessment (Ref 12).

## Existing Baseline

- 8.5.3 The following section outlines the Agriculture and Soils baseline. The baseline section should be read in conjunction with the following supporting Figures as found within **PEI Report Volume 2**:
- i. **PEI Report Volume 2 Part B Section 3 Figure 8.1 National Soil Map;**
  - ii. **PEI Report Volume 2 Part B Section 3 Figure 8.2 Provisional Agricultural Land Classification;**
  - iii. **PEI Report Volume 2 Part B Section 3 Figure 8.3 Woodland and Forestry Schemes;** and
  - iv. **PEI Report Volume 2 Part B Section 3 Figure 8.4 Agri-Environment Schemes.**

## Geology

- 8.5.4 Geology plays a crucial role in shaping the soil types and characteristics as the parent material from which the soils are formed. Available geological maps show that the underlying bedrock geology present within Section 3 is the Burnham Chalk Formation (chalk), described as thinly bedded chalk with common and discontinuous flint bands formed between 93.9 and 83.6 million years ago during the Cretaceous period.
- 8.5.5 Superficial drift present is predominantly Devensian Till (Diamicton), a sedimentary superficial deposit formed between 11.6 and 11.8 thousand years ago during the Quaternary period, with some Alluvium and Tidal Flat deposits present.

## Soils

- 8.5.6 The Soil Associations describe the different types of soil found within the UK. Available national soil survey mapping data indicates that the Soil Associations present within Section 3 (as shown in **PEI Report Volume 2 Part B Section 3 Figure 8.1 National Soil Map**) are:
- i. Holderness - consists mainly of slowly permeable fine loamy and moderately permeable coarse loamy soils on chalky till and glaciofluvial drift with narrow strips of clayey alluvial soils. The till is usually clay loam but can be sandy clay loam in texture, with a clay content of 25 to 30 per cent. They are seasonally waterlogged slowly permeable soils, formed above 3 m Above Ordnance Datum (AOD) and prominently mottled above 40 cm depth. They do not have any relatively permeable material starting within 1 m of the surface and extending below it;
  - ii. Wick 1 - deep well drained coarse loamy and sandy soils locally over gravel, some soils can be affected by groundwater. The soils have a slight risk of water erosion with dominantly brownish or reddish subsoils and no prominent mottling or greyish colours (gleying) above 40 cm depth. They are non-alluvial, with non-calcareous loamy or clayey subsoils without significant clay enrichment;
  - iii. Fladbury 2 - stoneless clayey and fine loamy soils sometimes affected by groundwater some with sandy subsoils. They are seasonally waterlogged soils affected by a shallow fluctuating groundwater-table and flat land flooding. They are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth; and
  - iv. Wallasea 2 - deep stoneless clayey soils with some deep calcareous silty soils. They are often found in flat land often with low ridges giving a complex soil pattern



with groundwater controlled by ditches and pumps. This causes seasonally waterlogged soils affected by a shallow fluctuating groundwater-table that are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth most occupy low-lying or depressional sites with distinct topsoil, in loamy or clayey recent alluvium more than 30 cm thick.

- 8.5.7 The soils in Section 3 will be providing a range of soil functions, and as such are considered to have a range of sensitivities from very high to medium.

### **Agricultural Land Classification**

- 8.5.8 ALC is a classification system used to assess the quality of agricultural land within England and Wales. The Provisional ALC mapping shows that the draft Order Limits within Section 3 comprises Grade 2 and Grade 3 land. This is shown in **PEI Report Volume 2 Part B Section 3 Figure 8.2 Provisional Agricultural Land Classification**. This would be considered a receptor of very high to high sensitivity.
- 8.5.9 The provisional ALC mapping shows Grade 3 land is located from Lincolnshire Connection Substation A to west of the A1104 road as well as a small section between Thoresthorpe and Bilsby. Grade 2 land is located south of Saleby as well as from Bilsby to the Lincolnshire Connection Substation B. Please note limitations associated with using provisional ALC mapping, with particular reference to Grade 3 including Grades 3a and 3b, as described in paragraph 8.4.10.
- 8.5.10 There is no pre-existing detailed ALC survey data available within the draft Order Limits for Section 3.
- 8.5.11 Detailed ALC surveys are only found where a detailed ALC survey has previously been conducted and accepted by Natural England.

### **Woodland and forestry scheme**

- 8.5.12 Woodland and Forestry Schemes are government provided incentives that reward landowners for the creation and management of woodlands. There are no Woodland and Forestry Schemes within the draft Order Limits for Section 3 (as shown on **PEI Report Volume 2 Part B Section 3 Figure 8.3 Woodland and Forestry Schemes**).

### **Agri environment Schemes**

- 8.5.13 Agri-environment Schemes comprise government funding to farmers and land managers to support activities which improve the local environment. There are different levels of Environmental Stewardship Schemes which have increasing complexity and land management requirements but also therefore have greater environmental benefits. There are no Agri-environment Schemes within the draft Order Limits for Section 3 (as shown on **PEI Report Volume 2 Part B Section 3 Figure 8.4 Agri Environment Schemes**).

### **Land Use**

- 8.5.14 Aerial imagery and OS mapping indicate that the agricultural land use within Section 3 is predominantly arable, with some grassland and woodland areas. Field boundaries generally comprise hedges, trees and roads.



## Agricultural Landholdings

- 8.5.15 Agricultural landholdings will be affected within Section 3 due to the permanent land take caused by the construction of the proposed New Lincolnshire Connection Substations A (LCS A) and the New LCS B and the proposed overhead line.
- 8.5.16 There are five landowners affected within Section 3. The land is arable land with small sections of woodlands and grassland. Given the predominant land use this receptor is considered to have a low sensitivity.

## Future Baseline

- 8.5.17 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 8.5.18 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 8.5.19 It is considered that the baseline conditions for soils and ALC grades will remain unchanged from those described in the baseline during the construction period of the Project. While there may be potential changes in relation to climate change, including greater rainfall intensity and frequency of droughts, that could affect soil conditions, land grade, and farming practices, it is likely that these would only become apparent over longer time frames.
- 8.5.20 There could potentially be future changes to land management practices and business approaches across the landowners/land managers irrespective of whether this Project goes ahead; these cannot be known or assessed currently as any future changes would be driven by a third party.
- 8.5.21 The baseline details as presented above are not anticipated to change in the absence of the Project.

## 8.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 8.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 13) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 14) which apply to design and siting of substations. These approaches are explained in further detail within the **Corridor Preliminary Routeing and Siting Study (CPRSS)** (Ref 15) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value,

taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.

- 8.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. For example, the Project design has been and will continue to be rationalised to minimise the extent of land take required to construct, maintain and operate the proposed assets and position infrastructure (such as pylons and access routes) as close as is practicable to field boundaries to minimise impacts to agricultural operations.

## Control Mitigation Measures

- 8.6.3 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Agriculture and Soils assessment of Section 7 include:
- i. GG01: The Project will be compliant with all relevant legislation, consents and permits.
  - ii. GG02: The Project will be designed to comply with existing National Grid standards and the guidelines and policies detailed in NPS-EN5 including the International Commission on Non-Ionizing Radiation Protection guidelines for electric and magnetic fields (EMFs) and associated precautionary policy.
  - iii. GG05: A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities, prior to works commencing. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
  - iv. GG08: Land used temporarily will be reinstated where practicable to its pre-construction condition (including ALC grade) and use. Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, in consultation with the landowner.
  - v. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
  - vi. GG19: Earthworks and stockpiled soil will be managed as per the SMP.
  - vii. AS01: Where land is being returned to agricultural use, the appropriate soil conditions (for example through the replacement of stripped layers and the removal of any compaction) will be recreated. This will be achieved to a depth of 1.2 m (or the maximum natural soil depth if this is shallower).
  - viii. AS02: The intention is to maintain access where possible; this may have to be done using localised diversions/restrictions. Although not envisaged at this stage it may be that temporarily access isn't maintained but, in all instances, those impacted will be consulted on the proposals. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties during the pre-construction period. with any changes communicated in advance of the change being

implemented. Where field-to-field access points require alteration as a result of construction, alternative field access will be provided in consultation with the landowner/occupier.

- ix. AS03: Existing water supplies for livestock will be identified pre-construction. Where supplies will be lost or access compromised by construction works, temporary alternative supplies will be provided. Water supplies will be reinstated following construction.
- x. AS04: A scheme of pre-construction land drainage will be designed with the intent of maintaining the efficiency of the existing land drainage system and to assist in maintaining the integrity of the working area during construction. The Project may include a system of 'cut-off' drains which feed into a new header drain and the Project will also take into account surface water runoff measures;
- xi. AS05: Should animal bones be discovered during construction, which may indicate a potential burial site, works will cease, and advice will be sought from the Animal Health Regional Office on how to proceed, relevant to the origin and age of the materials found.
- xii. AS06: All movement of plant and vehicles between fields will cease in the event of a notification by the Department for Environment, Food and Rural Affairs (Defra) of a disease outbreak in the vicinity of the site that requires the cessation of activities. Advice will be sought from Defra in order to develop suitable working methods required to reduce the biosecurity risk associated with the continuation of works.
- xiii. AS07: Stone pads or alternatives such as soil stabilisation will be installed in areas where heavy equipment, such as cranes and piling rigs, and access routes are to be used. The stone pads will provide stable working areas and will reduce disturbance to the ground. The stone pad area will be stripped of the topsoil, which will be stored and reinstated in accordance with the soil management measures.
- xiv. AS08: Soil management measures will be set out in the SMP. The SMP, will include, but not be limited to the following:
  - details of the soil resources present;
  - roles and responsibilities (and required competencies and training);
  - how topsoil and subsoil will be stripped and stockpiled;
  - suitable conditions for when handling soil will be undertaken, for example avoiding handling of waterlogged soil;
  - indicative soil storage locations;
  - how soil stockpiles will be designed taking into consideration site conditions and the nature/composition of the soil;
  - specific measures for managing sensitive soils;
  - suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works;
  - approach to reinstating soil that has been compacted, where required;
  - details of measures required for soil restoration; and
  - requirements for monitoring.

## Additional Mitigation Measures

- 8.6.4 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 8.6.5 Additional mitigation measures are not anticipated to be required in relation to Agriculture and Soils effects. However, this will remain under review during the completion of further assessment and development of the ES.

## 8.7 Preliminary Assessment of Effects

- 8.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, maintenance and/or operational activities within Section 3.
- 8.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described.
- 8.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 8.2** based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 8.7.4 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application. Where it has been concluded that effects are not significant but may still be considered notable from a stakeholder perspective, an explanation is provided in **Table 8.2**. Examples include consideration of receptors of particularly high sensitivity or effects which have been identified as of interest during previous consultation and engagement.

## Likely Significant Effects

### Construction

#### Agricultural Land Classification

- 8.7.5 To undertake this assessment, publicly available Provisional ALC data, has been used to determine the likely presence of BMV. Land provisionally mapped as Grade 3 has been assumed to comprise BMV land. This approach has been taken at PEI Report stage as currently detailed ALC surveys have not been undertaken. The ES submitted with the DCO application will include detailed ALC survey data that will show the split between Grade 3a and Grade 3b land.
- 8.7.6 During construction there would be a potential loss of BMV land (defined as ALC Grades 1, 2 and 3a) from agricultural productivity.
- 8.7.7 For Section 3, it is assumed that all land within the draft Order Limits is likely to be temporarily impacted and temporarily removed from agricultural production during the construction phase. This is based on the requirement to secure land temporarily for both the construction of infrastructure and the stringing of conductors between pylons.

- 8.7.8 All agricultural land required in Section 3 is provisionally mapped as Grade 2 and Grade 3, and as such is considered likely to comprise BMV land. Grade 2 BMV land is considered to have a very high sensitivity. The total extent of land required during construction would be 178.5 ha. Of this, 111.6 ha would be reinstated to its preconstruction condition and grade; the impacts of the temporary land take would therefore comprise an impact of small magnitude which would be a moderate adverse effect and likely significant (following the assessment criteria set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**). The land required includes all agricultural land needed for the construction of the proposed Project infrastructure including pylons, access roads and temporary land requirements.
- 8.7.9 Of the land required during construction, 66.9 ha would be required for permanent infrastructure (pylon footings and foundations). The permanent loss of this land (assumed to be BMV land) would be of a large magnitude and a major adverse effect and likely significant.

#### Soil Function

- 8.7.10 There would be disturbance to soils, from the soil stripping required for the construction of the two Substations, pylons, access routes and areas required temporarily (such as construction compounds and haul roads).
- 8.7.11 The soils in Section 3 will be providing a range of soil functions, and as such are considered to have a range of sensitivities from very high to medium. The stripping and stockpiling of soil resources would have a temporary effect on the soil ecosystem services. This could include affecting soil hydrology as well as a soils' natural carbon storage ability. The implementation of effective soil handling, storage and reinstatement measures, which will be detailed in the SMP (submitted as part of the DCO application), would therefore be critical in ensuring minimisation of effects on these functions and the successful restoration and re-use of soils.
- 8.7.12 For Section 3, it is assumed that all land within the draft Order Limits will be temporarily impacted by construction activities involving soil handling or trafficking, with soils temporarily affected reinstated to their pre-construction condition. The magnitude of the impact on soil quality and ecosystem function as a result of temporary disturbance is assessed as being small; however, due to the spectrum of soil functions likely to be present within the draft Order Limits for Section 3, this would result in a range of major, moderate or minor adverse effects that would therefore be likely significant.
- 8.7.13 The permanent loss of 66.9 ha of soils would affect the associated soil ecosystem services. However, where practicable, all surplus soil resources would be re-used within the Project where, depending on the proposed land use, some soil ecosystem services will be retained, restored or potentially enhanced. Until it can be confirmed how practicable it will be to re-use the soil resources it is considered that this would result in an impact of large magnitude, which would be considered a major adverse effect on soil function and is considered likely significant. The land grades and soil types (including peat if present) affected permanently will be confirmed following surveys and will be fully assessed in the ES submitted with the DCO application.

#### Operation and Maintenance

- 8.7.14 Based upon the preliminary assessment, no likely significant effects are expected to occur on Agriculture and Soil receptors during the operation and maintenance phase of

the Project in Section 3. During the operation of the Project, land taken temporarily by the Project will have been reinstated and returned to agricultural use, whilst land taken permanently would no longer be for agricultural use and any likely significant effects accounted for during the construction phase assessment.

### Likely Non-Significant Effects

- 8.7.15 For completeness, **Table 8.2** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Agriculture and Soil effects.



Table 8.2 Preliminary summary of likely non-significant Agriculture and Soils effects – Section 3

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Construction Phase</b>						
Construction on agricultural land in use as part of an agricultural business.	Agricultural Landholdings	Temporary loss of productive land	Low	Medium	Likely not significant	Land use is predominantly arable, and so of low sensitivity. Land required temporarily would be reinstated to its pre-construction condition and impacts on individual agricultural businesses would be dealt with through financial compensation in accordance with the compensation code (which would include consideration of any active agri-environment and/or forestry/woodland schemes).
<b>Operation and Maintenance Phase</b>						
Any operational activity on agricultural land for operational and maintenance purposes.	Agricultural Land Classification	Loss of BMV land from agricultural production due to activities required for operational and maintenance purposes.	Very high	Low/negligible	Likely not significant	Maintenance or repair works which would result in disturbance to BMV land during the operation of the Project (such as creation of access routes, use of trackway or creation of compounds) would be undertaken in accordance with good practice soil

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
						handling methods which would be set out in a Soil Management Plan for the works. As these are likely to be small-scale and temporary, no likely significant effects on BMV land during operational, maintenance or repair activities are predicted.
Impacts on soil function due to any activities required for operational and maintenance purposes.	Soil function	Disturbance to soils and loss of function due to activities required for operational and maintenance purposes.	Depending on the specific soil type, soils in Section 3 are assigned a sensitivity of Medium, High and Very High	Negligible	Likely not significant	Maintenance or repair works which would result in disturbance to soils during the operation of the Project (such as creation of access routes, use of trackway or creation of compounds) would be undertaken in accordance with good practice soil handling methods which would be set out in a Soil Management Plan for the works. As these are likely to be small-scale and temporary, no likely significant effects on soil function during operational, maintenance or repair activities are predicted.

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Impacts on agricultural business due to any activities required for operational and maintenance purposes.	Agricultural Landholdings	Temporary loss of productive land due to activities required for operational and maintenance purposes.	Low/negligible	Low/negligible	Likely not significant	Land use is predominantly arable, and so of low sensitivity. Land required temporarily would be reinstated to its pre-construction condition and impacts on individual agricultural businesses would be dealt with through financial compensation in accordance with the compensation code (which would include consideration of any active agri-environment and/or forestry/woodland schemes). The overhead line will not result in any further permanent impacts in relation to on-going agricultural activities above and beyond the permanent effects assessed during the construction phase, and any maintenance or repair works are likely to be small-scale and temporary, with works undertaken in accordance with good practice at the time of the works.

## **8.8 Monitoring**

- 8.8.1 Monitoring of soil handling, storage and reinstatement activities will be required during construction, and full details of what would be monitored, and the roles and responsibilities associated with the monitoring will be set out in the Outline SMP (submitted as part of the DCO application).
- 8.8.2 Monitoring may be required during the aftercare period. The Outline SMP will set out the commitments associated with the aftercare period, with full details confirmed prior to the end of construction and prior to any land hand back.

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# 9. Traffic and Movement

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# 9. Traffic and Movement

## 9.1 Introduction

- 9.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Traffic and Movement assessment for the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 9.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 9.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and the subsequent scope of the Traffic and Movement assessment (section 9.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high-level summary of the methodology of the Traffic and Movement assessment within Section 3 (section 9.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Traffic and Movement assessment (section 9.5);
  - vi. A description of mitigation measures included for the purposes of the Traffic and Movement assessment reported within the PEI Report (section 9.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Traffic and Movement effects arising during construction and operation of the Project within Section 3, based upon the assessment completed to date (section 9.7); and
  - viii. An outline of the proposed monitoring requirements in relation to traffic and movement (section 9.8).
- 9.1.2 Further supporting information is set out in **Table 9.1** below, including supporting figures and technical appendices.

Table 9.1 Supporting Documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<p><b>Figure 9.1 Overall Context Plan</b></p> <p><b>Figure 9.2 Primary Access Routes and Worker Access Route</b></p> <p><b>Figure 9.3 Existing Public Rights of Way (PRoW)</b></p> <p><b>Figure 9.4 Route Sensitivity</b></p> <p><b>Figure 9.5 Preliminary Impact Analysis</b></p>
PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline	Presents baseline traffic information for key highway links including type of link, traffic flows, congestion rating, collision clusters and sensitive receptors.
PEI Report Volume 3 Part B Sections 1-7 Appendix 9B Preliminary Construction Information	Provides preliminary construction traffic information for substations, compounds and bellmouths providing access to the construction haul routes. This includes construction Heavy Goods Vehicles (HGVs) and construction staff traffic flows.
PEI Report Volume 3 Part B Sections 1-7 Appendix 9C Future Baseline and Impact Analysis	Presents the traffic analysis, including calculated future baseline and forecast construction traffic flows, to determine the likely percentage change in traffic flows on key highway links as a result of the Project. This is used to determine whether the impact (change) meets the threshold for more detailed assessment based on the sensitivity of the links.
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific Sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.

Supporting Information	Description
<b>PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered</b>	Provides a summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
<b>PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information</b>	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
<b>PEI Report Volume 2 Part A Chapter 5 Project Description</b>	An overarching description of the Project and its key components, including available construction information.
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The Preliminary Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 9.1.3 There are interrelationships between the potential effects on Traffic and Movement and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 10 Noise and Vibration** considers the noise and vibration impacts of changes in traffic flow on those road links utilised by traffic generated by the Project;
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** considers potential in-combination effects to users of promoted/recreational routes including PRoW;
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 12 Air Quality** considers the air quality impacts of changes in traffic flow on those road links utilised by traffic generated by the Project, including vehicle emissions and dust (trackout);
  - iv. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment;
  - v. **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** considers potential impacts on neighbourhood quality and access to open space and health and social infrastructure, including those associated with traffic generated by the Project;
  - vi. **PEI Report Volume 2 Part C Route-wide Chapter 9 Climate Change** considers the potential greenhouse gas emissions from traffic resulting from the Project. It should be noted that at this preliminary stage, this does not include quantitative calculations; and
  - vii. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other

Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 9.2 Legislation and Policy Framework

### Legislation and National Policy

- 9.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, detail of which is set out in **Table 9.1**.

### Regional and Local Policy

- 9.2.2 Regional and local plans or policies relevant to this assessment are as follows:

- i. North East Lincolnshire Local Plan 2013-2032<sup>1</sup> (Ref 1):
  - Policy 36 - Promoting sustainable transport: which sets out the Council's support for measures that promote more sustainable transport choices and identifies a number of objectives for development proposals.
  - Policy 37 - Safeguarding transport infrastructure: the Council will safeguard routes of, and support measures which deliver, maintain and improvement key transport infrastructure, namely, South Humber Bank Link Road, Grimsby West Link Road and Network Rail improvements.
  - Policy SO7 – Transport: aims to improve access to jobs and services through sustainable transport modes like cycling and walking, reduce the need to travel by balancing employment and housing growth, and provide the infrastructure needed to support sustainable growth.
- ii. Lincolnshire County Council's Local Transport Plan 5 (Adopted 2022) (Ref 2):
  - Aims to use the local and strategic development management processes to ensure that development is planned, delivered and managed to reduce the need to travel and to support the delivery of sustainable transport modes. Supports the provision of improved walking, cycling and public transport services and facilities as part of new development and actively encourage innovative solutions to travel.
- iii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 3):
  - Strategic Policy SP22 – Transport and Accessibility: which states that the Council will support accessibility and seek to reduce isolation in the District. The policy stipulates the requirements that developments must meet in order to secure Council support, this include large scale development being accompanied by a transport assessment and travel plan.
- iv. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 4):

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<sup>1</sup> Construction traffic routes anticipated to be utilised by construction traffic associated with works in Section 3 include highway links across the wider region, therefore policies set out within wider area policy documents are also considered relevant to the assessment.



- Policy S47 – Accessibility and Transport: sets out the requirements for an efficient and safe transport network, inclusive of strategic and public community transport infrastructure and services. Development proposals which contribute towards an efficient and safe transport network that offers a range of transport choices for the movement of people and goods will be supported.
  - Policy S48 – Walking and Cycling Infrastructure: requires existing and new active travel infrastructure to be protected, maintained and improved.
- v. South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019) (Ref 5):
- Policy 33 – Delivering a More Sustainable Transport Network: seeks improvements to existing transport infrastructure and services and encourages the protection of existing footpaths, cycle routes and public rights of way from development.
  - Policy 34 Delivering the Boston Distributor Road: Priority strategic infrastructure – development that compromises identified priority strategic infrastructure will not be permitted.
- vi. Lincoln Transport Strategy 2020-2036 (Ref 6):
- Aims to provide a clear vision of transport across the Lincoln area, it sets out measures to enhance the transport network, improve choice and inclusive accessibility and to support growth. Strategic interventions include improvements to the A46 and rail services.
- vii. Boston Transport Strategy 2016-2036 (Ref 7):
- The Strategy helps to address existing transport and travel issues in Boston and help support proposals for significant growth in the short, medium and long-term. The Strategy includes support for development of the Boston Distributor Road.

## 9.3 Scope of Assessment

- 9.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 8) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 9). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Traffic and Movement chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 9.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 9.3.3 The scope of the construction assessment considers potential effects upon a range of receptor groups in accordance with Institute of Environmental Management and Assessment (IEMA) Guidance (Ref 10) which is based on consideration of the impacts upon the following transport infrastructure: highways (including footpaths and cycleways), railways, waterways and Public Rights of Way (PRoW). The receptors assessed and potential effects considered are summarised in **Table 9.2**.

Table 9.2 Scope of Traffic and Movement assessment

Receptor	Potential effects
<b>Highway Network (including footways and cycleways)</b>	
Road users	Effects as a result of construction traffic and road closures/diversions leading to potential severance, driver delay and highway safety effects. Effects as a result of the movement of abnormal and hazardous loads during construction.
Public transport users (bus)	Effects as a result of construction traffic and road closures/diversions leading to potential journey time delays.
Pedestrians and cyclists	Effects as a result of construction traffic leading to severance and pedestrian/cycle delay. Effects on footway closures/diversions leading to severance and/or increased journey time. Effects of general construction works leading to a decline in pedestrian and cycle amenity <sup>2</sup> and additional fear and intimidation.
<b>Railways</b>	
Railway users	Effects upon users of the rail network due to potential impacts upon railway infrastructure.
<b>Navigable Waterways</b>	
Waterway users	Effects upon users of navigable waterways due to temporary closures leading to reduced access/increased journey time.
<b>Public Rights of Way and Promoted/Recreational Routes</b>	
Pedestrians, Cyclists and Equestrians	Effects as a result of route closures/diversions leading to potential increased journey time. Effects due to a decline in pedestrian and cycle amenity due to interaction with traffic

- 9.3.4 The EIA Scoping Report Traffic and Movement chapter sought to scope out effects associated with the operation of the Project, however it is noted that the Scoping Opinion (Ref 8) received requested further information relating to operational traffic to support this position. This PEI Report and supporting Appendices therefore provides an initial assessment of potential effects during operation. The scope of the operational assessment also considers potential effects on users of PRow and promoted/recreational routes, i.e. pedestrians, cyclists and equestrians.

<sup>2</sup> Pedestrian amenity is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, composition and pavement width/separation from traffic.

## 9.4 Assessment Methodology

- 9.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Traffic and Movement assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components is outlined below.
- 9.4.2 The IEMA Guidance (Ref 10) assesses the effect on users by assessing the transport infrastructure upon which they rely.
- 9.4.3 For users of the highway network during construction, the assessment is based on the impact criteria set out within the IEMA Guidance (Ref 10), which sets out two broad rules for identifying potential highway links for analysis:
- Rule 1: include highway links where traffic flows will increase by more than 30 per cent (or the number of HGVs will increase by more than 30 per cent); and
  - Rule 2: include highway links of high sensitivity where traffic flows have increased by 10 per cent or more.
- 9.4.4 Based on the IEMA Guidance (Ref 10), highway links have therefore been identified where traffic flows are expected to increase by 30 per cent or more, and where there are increases of 10 per cent or more in an area identified as high or very high sensitivity. Sensitive areas are those where there is a presence of sensitive receptors as defined by the IEMA Guidance, and are also defined through consideration of congestion and accident data.
- 9.4.5 To determine likely increases in traffic flows on highway links, projected volumes of construction traffic have been distributed across the highway network. Construction traffic has been assigned based upon an assessment of the connection points between the works areas and the highway network, and the most suitable/likely routes that will be used to access the draft Order Limits. This approach is based upon identification of bellmouths, Primary Access Routes and Worker Access Routes, which are defined in **Table 9.3** and described further in section 9.5 Baseline Conditions.

Table 9.3 Distribution of Project traffic – definitions

Accesses used by Project traffic Definition	
Bellmouths	Access points (junctions) from the existing highway network, facilitating access to construction compounds and site haul roads.
Primary Access Routes	Identified as a series of roads and junctions, between the Strategic Road Network (SRN) <sup>3</sup> and the bellmouths, suitable for access by large construction vehicles that are planned to be used by HGVs. Identification of these

<sup>3</sup> The Strategic Road Network is the national network of motorways and major A roads maintained and operated by National Highways

Accesses used by Project traffic	Definition
Worker Access Routes	<p>routes is based on existing conditions, potential for improvements and professional judgement.</p> <p>Identified as a series of additional roads and junctions which are not promoted as construction HGVs routes but could be used by workers to travel to site. These are identified as likely routes between residential areas, key employment/skills centres and the bellmouths.</p>

- 9.4.6 A qualitative assessment of impacts to bus users during construction has been undertaken based on the projected increase in traffic flows as a result of the Project and potential impacts to bus services. More detailed assessment will be provided within the ES if the projected increase in traffic flows on the highway links where bus services operate exceed the IEMA Guidance (Ref 10) screening criteria defined above.
- 9.4.7 A qualitative assessment of impacts to railway users and waterway users during construction has been undertaken based on any identified requirement to restrict access or close these routes to enable construction of the Project within Section 3. An initial assessment of sensitivity is based on consideration of the likely numbers of users of the infrastructure; for railways this is considered High as there are likely to be high numbers of passengers, for waterways this is considered Low as the number of users will likely be less. More detailed assessment, where required, will be provided in the ES following further consultation with the infrastructure operators.
- 9.4.8 A qualitative assessment of impacts to pedestrians and cyclists has been undertaken based on the projected increase in traffic flows as a result of the Project during construction, and potential impacts upon pedestrians and cyclists using the affected highway routes. More detailed assessment will be provided in the ES where the projected increase in traffic flows exceed the IEMA Guidance (Ref 10) criteria and the impact thresholds defined with the Scoping Report or if required by the highway authority.
- 9.4.9 In addition, PRoW and promoted/recreational routes that are expected to be crossed by the works within Section 3 have been identified and qualitative assessment of impacts to pedestrians, cyclists and equestrians undertaken where routes are anticipated to require temporary diversion or closure. The significance of effects on PRoW and promoted/recreational routes is determined through professional judgement based on the sensitivity (national, regional, local importance and potential usage of the routes) and magnitude of impact based on requirement for crossing, diversion or closures of routes. More details assessment will be provided within the ES where requested by the local authority.
- 9.4.10 A high-level summary of potential effects (without mitigation) is then provided within this chapter based on professional judgement and experience on other similar National Grid Electricity Transmission plc (National Grid) projects. Residual effects will be assessed and reported in the ES.
- 9.4.11 While the Scoping Report Traffic and Movement chapter sought to scope out effects associated with the operation of the Project, this PEI Report assessment presents details of forecast operational traffic movements and provides an initial assessment of potential effects of the forecast flows on the baseline flows.

## Assessment Assumptions and Limitations

- 9.4.12 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. No limitations and assumptions have been identified for the assessment which are specific to the assessment of Section 3.
- 9.4.13 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 9.5 Baseline Conditions

### Study Area

- 9.5.1 The Traffic and Movement Study Area for Section 3 comprises highway links assumed to be used to provide access for construction vehicles and considers the impacts to traffic, bus routes and pedestrian/cycle routes along these highway access routes. The Study Area for Construction Traffic Routes is defined in further detail below.
- 9.5.2 The Study Area also includes pedestrian/cycle/equestrian routes and PRow networks, railways and waterways that are crossed by the Section 3 draft Order Limits.
- 9.5.3 **PEI Report Volume 2 Part B Section 3 Figure 9.1 Overall Context Plan** provides the wider Project context showing the SRN and main A roads that provide access to all Sections of the Project. The access routes and proposed Section 3 Study Area are shown in **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes and Workers Access Routes**.

### Construction Traffic Routes - HGVs

- 9.5.4 Initial construction information (including construction traffic, compound locations, bellmouth accesses and haul roads) has been used to determine the Primary Access Routes which form the basis of the initial assessment presented in this PEI Report. Primary Access Routes have been developed using the following criteria where possible:
- Construction traffic would access site bellmouths from the Primary Access Routes along the local road network. The Primary Access Routes would then connect to an appropriate close junction with the SRN and classified road network. Whilst it is acknowledged that the SRN is part of the classified road network, the report makes a distinction between the two because of the capacity of the SRN to carry trunk road traffic and abnormal loads.
  - From the site bellmouths, construction vehicles would be routed off the public highway along haul roads to access the construction compounds and construction areas. Haul roads will be temporary in nature and reinstated upon completion of the construction phase. Haul roads and permanent access roads are illustrated on **PEI Report Volume 2 Part B Section 3 Figure 1.2 Temporary**

**and Construction Features and PEI Report Volume 2 Part B Section 3 Figure 1.3 Permanent and Operational Features** respectively.

- iii. Shorter available routes between the SRN and classified road network and site access bellmouths have been selected where possible, balancing distance and suitability of links to accommodate construction traffic.
- iv. Existing known highway constraints, such as road geometry, height and weight restrictions, junction arrangement and other physical constraints have been avoided where possible.
- v. Settlements and sensitive locations such as schools or hospitals have been avoided where possible to reduce potential effects on receptors.

9.5.5 **Table 9.4** provides a summary of the SRN and classified road network that would be used by construction traffic accessing areas within the Section 3 draft Order Limits, and their strategic connections for delivery of materials/equipment.

**Table 9.4 Construction traffic route – SRN connections**

<b>Strategic/classified road network</b>	<b>SRN Connections</b>
A180	West to SRN M180, M18, M62 and A1(M), Immingham Docks
A46	South west to SRN A46 at Lincoln to A1(M) and M1
A158	West to SRN A46 at Lincoln to A1(M) and M1

9.5.6 Primary Access Routes are formed of one or more roads within the road network between the SRN/classified road network and the site access bellmouths. The Primary Access Routes are made up of Core Routes (CR series), which are the main A roads providing connections across the wider Study Area, and Local Links (LK series), which are roads providing local access from the Core Routes to the individual bellmouth accesses.

9.5.7 These are summarised in **Table 9.5** and presented on **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes and Worker Access Routes**. Further details of the roads forming the Primary Access Routes are presented in **PEI Report Volume 3 Part B Section 3 Appendix 9A Traffic and Movement Baseline**.



Table 9.5 Primary access routes for HGVs

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
New LCS A + compound	CR1 (A180)/CR21 (A1173)/CR20 (A18)/CR18 (A18)/CR6 (A16)/CR7 (A16) or	LK7 (A1104)/LK8 (A1104)/LK9 (A1104)/LK26 (Rye Lane)
LB-B003	CR25 (A158)/CR8 (A16)	LK7 (A1104)/LK8 (A1104)/LK9 (A1104)
LB-B004		
LB-B007		LK7 (A1104)/LK8 (A1104)/LK10 (A1111)/LK80 (Sutton Road)
LB-B008/New LCS B + compound		

### Construction traffic routes – Worker Access Routes

- 9.5.8 In addition to the Primary Access Routes, construction workers cars/light goods vehicles (LGVs) will use highway links which are not planned to be used by HGVs to access the site. Therefore, additional access routes have been identified that construction workers are expected to use (W series), which provide access from local urban areas where workers are assumed to live.
- 9.5.9 **Table 9.6** summarises the main construction Worker Access Routes relevant to Section 3. These are presented on **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes and Worker Access Routes**.

Table 9.6 Worker access routes – additional highways for construction workers

Access	Roads forming Workers Access Routes
New LCS A and New LCS B and compounds	CR1 (A180), CR2 (A180), CR3 (A180), CR4 (A16), CR5 (A16), CR8 (A16), CR9 (A16), CR10 (A16) CR11 (A16), CR12 (A16), CR22 (A17), CR26 (A52), LK5 (A157), LK22 (A157), LK23 (A157), LK24 (B1373), LK27 (B1449), LK49 (B1183), LK51 (B1184), LK52 (Armtree Road), LK53 (B1184), LK55 (B1192), LK56 (B1192), LK58 (B1192), LK83 (B1192), W31 (B1373), W32 (A1104), W33 (A1104 Beesby Road), W34 (Beesby Walk/Beesby Road), W35 (A1111 Sutton Road), W36 (Claythorpe Road), W37 (Greenfield Road), W38 (Bluestone Heath Road), W39 (A155), W80 (Rye Lane), W81 (A52 Wainfleet Road), W82 (B1183), W83 (A1031)

### Data collection

- 9.5.10 The following data has been used to inform the baseline conditions:
- highway network – Ordnance Survey open map (Ref 11), Google Maps (Ref 12), OpenStreetBrowser (Ref 13);
  - bus route information – local bus operators, traveline.info (Ref 14), Google Maps (Ref 12);



- iii. rail information – National Rail (Ref 15), Google Maps (Ref 12);
- iv. waterways – Environment Agency, Navigation Authority and The Inland Waterways Association (Ref 16);
- v. designated non-motorised user routes for pedestrians, cyclists and equestrians and PRow – Sustrans (Ref 17) Local Authority Definitive/PRow map(s);
- vi. other promoted/recreational routes for pedestrians obtained from the Long Distance Walkers Association and through stakeholder engagement undertaken to date;
- vii. Annual Average Daily Traffic (AADT) flows obtained from the Department for Transport (DfT) traffic count data (Ref 18);
- viii. traffic count data from surveys undertaken for this Project – the surveys record road users, pedestrians, cyclists and equestrians as required with Automatic Traffic Count (ATC) data/PRow count data collected in August 2024 and October 2024;
- ix. Traffic Regulation Orders restricting movement and constraints such as height and weight restrictions as viewed on Google Maps;
- x. Personal Injury Collision (PIC) DfT accident data over a five year period (Ref 19);
- xi. traffic growth factors have been obtained from Trip End Model Presentation Program (TEMPPro)/National Trip End Model; and
- xii. identification of pedestrian, cycle and horse-riding infrastructure provision along the Primary Access Routes, obtained from Google Maps imagery of the highway network.

9.5.11 The following data was not available at the time of writing this PEI Report but will be included within the ES:

- i. traffic and PRow user survey data has been obtained for August 2024 and October 2024, additional surveys will be undertaken in 2025 to understand baseline conditions;
- ii. traffic information on other developments (committed) within the Study Area received from relevant planning authorities;
- iii. committed transport schemes along and in vicinity of the Primary Access Routes; and
- iv. construction and operational traffic flows for Eastern Green Link 3 and 4 projects for cumulative sensitivity testing.

## Existing Baseline

9.5.12 The following section outlines the Traffic and Movement baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:

- i. **PEI Report Volume 2 Part B Section 3 Figure 9.1 Overall Context Plan;**
- ii. **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes (PAR) and Worker Access Routes;**

- iii. **PEI Report Volume 2 Part B Section 3 Figure 9.3 Existing Public Rights of Way (PRoW);**
- iv. **PEI Report Volume 2 Part B Section 3 Figure 9.4 Route Sensitivity;** and
- v. **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline.**

### Highway Network

- 9.5.13 Links forming Primary Access Routes and Worker Access Routes and a description of the road network along each route can be found within **PEI Report Volume 3 Part B Section 3 Appendix 9A Traffic and Movement Baseline.**
- 9.5.14 **Table 9.7** provides a description of each highway link which forms part of the Primary Access Routes and Worker Access Routes within the Section 3 Study Area, including the type of carriageway, character, speed limits, highway constraints, presence of street lighting, bus routes, on-carriageway parking, and pedestrian, equestrian and cycle provision. These highway links are presented on **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes (PAR) and Worker Access Routes.**

Table 9.7 Highway network – links

Route Ref	Highway Links	Description
CR1/C R2	A180	Dual carriageway through rural area, national speed limit - 70 mph, no footways or street lighting.
CR3	A180	Dual carriageway through built up area of Grimsby, national speed limit - 70 mph reduces to 50 mph to east of Westgate roundabout, street lighting, generally no footways with shared footway/cycleway on northern side of Westgate section.
CR4	A16	Wide single carriageway road through Grimsby, localised widening at main road junctions, 30 mph speed limit increases to 40 mph on Peaks Parkway, footways and street lighting, numerous local junctions (priority and traffic signal control) and commercial frontages, bus stops, pedestrian crossing provision, generally double yellow line restrictions although some on street parking.
CR5	A16	Wide single carriageway, more rural road to south of Grimsby, 40 mph speed limit increases to 50 mph and national speed limit (60 mph) to south, street lighting, generally no footways. Speed limit reduces (30 mph/40 mph) and sections of footway/cycleway in built up areas at New Waltham, bus stops on A16 at a few locations including North Thoresby and New Waltham.
CR6	A16	Wide single carriageway, generally national (60 mph) and 50 mph speed limits which reduce to 40 mph near residential properties, no street lighting or footways except where some residential properties front carriageway, bus stops on A16 to north of Utterby.
CR7	A16	Wide single carriageway, national speed limit (60 mph), no street lighting, some narrow footways.

Route Ref	Highway Links	Description
CR8	A16	Wide single carriageway, national speed limit (60 mph), no street lighting or footways.
CR9	A16	Generally wide single carriageway, predominantly rural, 50 mph/60 mph speed limit, no street lighting or footways. Some small residential areas (Sibsey, Littlemoor, Stickney, East Keal, Spilsby), with 30/40 mph, street lighting and footways in these areas. Crosses rail line at level crossing in High Ferry. Southern section passes through central Boston where John Adams Way is dual carriageway with 40 mph speed limit, footways and street lighting.
CR10	A16	Generally wide single carriageway, predominantly rural, 60 mph speed limit, no street lighting or footways, speed limit reduces and street lighting provided through Kirton and southern Boston where 40 mph applies and some sections of footway and segregated cycleways are provided.
CR11	A16	Wide single carriageway, rural area, national speed limit applies (60 mph), no footways or street lighting.
CR12	A16	Wide single carriageway, generally national speed limit (60 mph), generally no street lighting except at junctions, no footways.
CR18	A18	Single carriageway, rural route, generally 50 mph speed limit reducing to 40pmh on approaches to junction with Waltham Road (Barnoldby le Beck) and to 30 mph close to Ludborough, no street lighting except at main road junctions, no footways.
CR20	A18	Wide single carriageway to north becomes dual carriageway north west of Aylesby, rural route, national speed limit (60 mph/70 mph) applies, street lighting on single carriageway section, no street lighting on dual carriageway, no footways.
CR21	A1173	Wide single carriageway, rural route, generally national speed limit (60 mph) applies except 50 mph limit on short section south of A180 and 40 mph limit to south of roundabout junction with B1210, generally no street lighting except at main road junctions, generally no footways although narrow footways on some short sections near residential properties. Crosses rail line at level crossing.
CR22	A17	Wide single carriageway with some short sections of dual carriageway, national speed limit (60/70 mph), no footways, generally no street lighting except at junctions.
CR24	A46	Wide single carriageway, national speed limit (60 mph), no street lighting, narrow footway on one side along part of the route.
CR25	A158	Single carriageway, national speed limit (60 mph), no footways or street lighting. Footways and street lighting in Horncastle, 30 mph speed limit.
CR26	A52	Wide single carriageway, 50 mph and 60 mph speed limits, no footways or street lighting except street lighting at some junctions.

Route Ref	Highway Links	Description
LK5	A157 Kenwick Hill	Wide single carriageway, national speed limit (60 mph), no street lighting, no footways.
LK7	A1104	Single carriageway, national speed limit (60 mph), no street lighting, no footways.
LK8	A1104	Built up urban route through Alford, single carriageway narrow in places, 30 mph speed limit, street lighting, footways on both sides of carriageway. Residential, retail and commercial accesses and frontages, on street parking, bus route but stops not clearly marked.
LK9	A1104	Single carriageway, 50 mph speed limit (30 mph on urban edge of Alford), narrow footway on western side, no street lighting.
LK10	A1111 Bilsby Road	Single carriageway, 30 mph/40 mph speed limit, footways and street lighting.
LK22	A157	Wide single carriageway, national speed limit (60 mph), no footways or street lighting except through South Reston and Legbourne where speed limit reduces and footways and street lighting are provided.
LK23	A157 Main Road	Wide single carriageway, national speed limit (60 mph), no footways or street lighting except in Withern where speed limit reduces to 30 mph.
LK24	B1373	Single carriageway, national speed limit (60 mph), no footways or street lighting except in Withern where speed limit reduces to 30 mph and a footway is provided.
LK26	Rye Lane	Narrow single carriageway, national speed limit (60 mph), no footways or street lighting.
LK27	B1449 Thurlby Road	Single carriageway, 30 mph with narrow footway and street lighting in Bilsby, 60 mph no footways or street lighting outside of residential area.
LK49	B1183 Carrington Road	Single carriageway, no footways or street lighting and national speed limit applies (60 mph), in Frithville footways and street lighting are provided and 40 mph speed limit applies.
LK51	B1183 Canister Lane	Single carriageway, no footways or street lighting, 50 mph/60 mph speed limit applies.
LK52	B1184 Leagate Road	Single carriageway, 30/40 mph speed limit, no footways or street lighting, some footways in Langrick, but stops on carriageway in Langrick.
LK53	Armtree Road	Single carriageway, 30/40 mph speed limit, no footways or street lighting, some footways in Langrick.
LK55	B1192 Main Road	Single carriageway, national speed limit, no footways or street lighting

Route Ref	Highway Links	Description
LK56	B1192 Langrick Road	Single carriageway, generally national speed limit except in Hubberts Bridge and Langrick Bridge where speed limit is 30/40 mph, no footways or street lighting and narrow footways and street lighting are provided, narrow signal controlled bridge over River Witham.
LK58	Hubberts Bridge Road	Single carriageway, 40 mph/50 mph speed limit signed, footways and some lighting along its length.
LK80	A1111 Sutton Road	Single carriageway, 30 mph/40 mph speed limit, footways and street lighting.
LK83	B1192 Langrick Road	Single carriageway, generally national speed limit, no footways or street lighting.
W31	B1373	Single carriageway, 60 mph speed limit, no footways or street lighting.
W32	A1104	Single carriageway, 50 mph speed limit reducing to 30 mph in Beesby, no footways or street lighting.
W33	A1104 Beesby Road	Single carriageway, 40 mph speed limit, no footways or street lighting.
W34	Beesby Walk/Beesby Road	Narrow single carriageway, 40 mph speed limit in Beesby but not signed outside, therefore 60 mph applies, no footways or street lighting.
W35	A1111 Sutton Road	Single carriageway, 60 mph speed limit, no footways or street lighting.
W36	Claythorpe Road	Narrow single carriageway, 60 mph speed limit, no footways or street lighting.
W37	Greenfield Road	Narrow single carriageway, 60 mph speed limit, no footways or street lighting except in Aby.
W38	Bluestone Heath Road	Narrow single carriageway, 60 mph speed limit, no footways or street lighting.
W39	A155	Single carriageway, 30 mph limit in West Keal with narrow footways and street lighting.
W80	Rye Lane	Narrow single carriageway, national speed limit (60 mph), no footways or street lighting.
W81	A52 Wainfleet Road	Wide single carriageway with 40 mph speed limit in urban area increasing to 50 mph, street lighting provided, footways in urban area.

Route Ref	Highway Links	Description
W82	B1183	Single carriageway alongside Maud Foster Drain, 30 mph speed limit in urban Boston increasing to 40 mph/60 mph, narrow footways and street lighting in urban area.
W83	A1031	Single carriageway, 60 mph speed limit, no footways or street lighting through much of length, 30 mph/40 mph and narrow footways in local settlements.

9.5.15 For the PEI Report no assessment of junction impacts along the Primary Access Routes and Worker Access Routes has been undertaken. However, the baseline review of link congestion and accident data provided in **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline** does consider junctions as part of the route sensitivity. More detailed assessment of junction operation will be undertaken as required and presented with the Transport Assessment and ES to be submitted with the DCO application.

9.5.16 In addition to the Primary Access Routes and Worker Access Routes, there are roads located on the local highway network where a crossover point is proposed to be provided. This allows construction vehicles to cross over the road (likely via a priority crossing arrangement) and progress along the proposed haul roads. Construction traffic will not access the local highway at these points, therefore these roads have not been assessed within this PEI Report. These cross over points are listed within **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline**.

#### Traffic Flows

9.5.17 Where available, baseline traffic flows are taken from the DfT's traffic counters for road links forming the Primary Access Routes and Worker Access Routes. The DfT traffic counter sites are shown on **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes and Worker Access Routes**.

9.5.18 Traffic surveys were undertaken in August and October 2024 on links that do not have available or recent DfT counts. The location of the traffic surveys are also shown on **PEI Report Volume 2 Part B Section 3 Figure 9.2 Primary Access Routes and Worker Access Routes**.

9.5.19 Appropriate growth factors derived from the DfT's Trip End Model Presentation Program (TEMPro), which is used for viewing the National Trip End Model information, have been applied to the count data where required to present all traffic data for a consistent 2024 Base Year.

9.5.20 Baseline traffic flows on road links forming the Primary Access Routes and Worker Access Routes where surveys have been undertaken are presented in **PEI Report Volume 3 Part B Section 3 Appendix 9A Traffic and Movement Baseline**. All traffic data is presented as Annual Average Daily Traffic (AADT) flows for total vehicles and for HGVs.

9.5.21 In addition, a Congestion rating is set out within **PEI Report Volume 3 Part B Section 3 Appendix 9A Traffic and Movement Baseline** and presented on **PEI Report Volume 2 Part B Section 3 Figure 9.4 Route Sensitivity**. This is based on



a review of google traffic flow categories for typical weekday peak hours; coloured grading of fast to slow represented as green = 0, orange = 1, red = 2, dark red = 3. Congestion along the whole link has been considered and where congestion varies along the link or over different time periods a judgement has been made for the overall link rating.

### Collision Data

- 9.5.22 Personal injury collision (PIC) data has been obtained from DfT Road Safety Data for the roads along the Primary Access Routes and Worker Access Routes. The latest five-year PIC data (2019-2023) is presented on **PEI Report Volume 2 Part B Section 3 Figure 9.4 Route Sensitivity**.
- 9.5.23 A collision cluster has been determined by the following criteria:
- i. a location where there are nine or more injury collisions occurring within a junction or a 100 m stretch; and
  - ii. a location with four or more fatal and/or serious collisions happening either within a junction or within a 100 m stretch.
- 9.5.24 From the collision data analysis, collision clusters have been identified at the following locations:
- i. At the A180/Moody Lane/Birchin Way/Pyewipe Road, A180/Estate Road 1/Estate Road 2/Gilbey Road, A180/Lockhill/A16 junctions and A16/A1136 junctions in Grimsby;
  - ii. At the A16/B1219 junction to the south of Grimsby;
  - iii. On the A16 between Cordeaux Corner and Bolingbroke Road to the north of Louth;
  - iv. At the A16/Greenfield Rd/Bluestone Heath Road junction;
  - v. At the A16/South Square/South End, A16/High Street, A16/A52 Roundabout in Boston;
  - i. At the junction of A1121/Station Rd/Langrick Road to the west of Boston; and
  - ii. At the A16/B1397 Roundabout, A16/B1192 Roundabout, and A16/A17 (Sutterton) Roundabout to the south of Boston.

### Highway Link Sensitivity

- 9.5.25 Sensitive receptors include users of highway links including drivers, walkers, cyclists, horse riders and public transport passengers. Sensitive areas comprise urban areas where there are likely to be more people (including vulnerable users, younger, older, socially disadvantaged people) and include residential properties, retail areas, schools and hospitals.
- 9.5.26 Receptor/area sensitivity has been assigned to all assessed highway links which constitute the Primary Access Routes and Workers Access Routes for Section 3. The sensitivity level follows IEMA guidance and is categorised as Negligible, Low, Medium, High and Very High. Sensitivity of a link has been determined based on the identified receptors which are present, alongside the assessment of each highway link's congestion rating and any associated collision clusters. Further detail is



included in **PEI Report Volume 3 Part A Appendix 4A Environmental Impact Assessment Methodologies and Scope**.

- 9.5.27 A description, location, and the sensitivity level within the Section 3 Study Area are summarised in **Table 9.8** below and **PEI Report Volume 3 Part B Section 3 Appendix 9A Traffic and Movement Baseline** and presented on **PEI Report Volume 2 Part B Section 3 Figure 9.4 Route Sensitivity**.

**Table 9.8 Highway link sensitivity within the Section 3 Study Area**

<b>Route Ref</b>	<b>Road</b>	<b>Description</b>	<b>Sensitivity Level</b>
CR1/CR2	A180	No receptors are identified on this link	Negligible
CR3	A180	Urban area with a range of commercial premises although limited direct local accesses or frontages, segregated shared pedestrian/cycle route along Westgate. Some peak hour congestion, collision cluster identified at two junctions	Medium
CR4	A16	Urban area through central Grimsby. Multiple commercial properties with local accesses and direct frontages, busy pedestrian area with varying width/quality of footways and crossings, on road cycling, bus route, some peak hour congestion, collision cluster identified at one junction	Very High
CR5	A16	A few residential and commercial properties with some frontages/direct accesses. Sections of footway and limited off road cycle infrastructure, bus route, collision cluster identified at one junction	Medium
CR6	A16	A few residential and commercial properties, occasional footways near properties	Medium
CR7	A16	A few adjacent residential properties along this link	Low
CR8	A16	A few adjacent residential properties along this link	Low
CR9	A16	Route passes through some small settlements - residential and commercial properties with some frontages/direct accesses. Schools in Sibsey and Stickney. Sections of footway, bus route. To the south the route passes through central Boston - residential and commercial properties with some frontages/direct accesses. Hospital to north of Boston. Footway adjacent to carriageway, bus route	High
CR10	A16	Few properties through rural areas. Some residential and commercial properties in Boston though generally not with direct frontages/accesses, some footways and pedestrian crossings, short sections of segregated cycleway	Medium

Route Ref	Road	Description	Sensitivity Level
CR11	A16	A few commercial properties along this link	Low
CR12	A16	Very occasional properties along this link	Low
CR18	A18	A few adjacent residential properties at southern end of link	Low
CR20	A18	A few adjacent residential and commercial properties at southern end of link	Low
CR21	A1173	Very few adjacent residential properties and pedestrian infrastructure.	Low
CR22	A17	Very occasional properties along this link	Low
CR24	A46	A few adjacent residential properties, short section of footway	Low
CR25	A158	A few adjacent residential and commercial properties in rural area. Residential and commercial frontages, footways and some on street parking though Horncastle	Medium
CR26	A52	A few residential and commercial properties along this link	Low
LK5	A157 Kenwick Hill	A few residential properties along this link	Low
LK7	A1104 Miles Cross Hill	A few adjacent residential properties	Low
LK8	A1104 Station Rd/West St	Urban area through Alford. Multiple residential, retail and commercial properties with local accesses and direct frontages, busy pedestrian area with varying width/quality of footways and crossings, on road cycling, bus route, on street parking. The Lindsey Loop long distance walking route and Sustrans South Wolds and Skegness local cycle route pass through Alford. Multiple sensitive receptors including residential/care homes, school, church	Very high
LK9	A1104 East St	A few adjacent residential properties with some frontages/direct accesses, narrow footway	Medium
LK10	A1111 Bilsby Rd/Alford Rd	Many adjacent residential properties with frontages/direct accesses, narrow footways	Medium
LK22	A157	Many adjacent residential properties with frontages/direct accesses and narrow footways in Legbourne, some retail and commercial properties	Medium
LK23	A157 Main Road	A few adjacent residential properties in Withern	Low

Route Ref	Road	Description	Sensitivity Level
LK24	B1373	A few adjacent residential properties and village hall in Withern	Low
LK26	Rye Lane	Few adjacent receptors, school bus stop at junction with A1104, walkers/cyclists would be in road	Medium
LK27	B1449 Thurlby Road	Residential properties with frontages/direct accesses, narrow footways in Bilsby, few properties outside of village	Medium
LK49	B1183 Carrington Road	A few residential properties, driveways and accesses in Frithville	Low
LK51	B1183 Canister Lane	A few residential properties along this link	Low
LK52	Armtree Road	Residential properties, primary school in Gipsey Bridge, bus route through Langrick	High
LK53	B1184 Leagate Road	A few residential properties, bus route	Low
LK55	B1192 Main Road	A few residential properties along this link	Low
LK56	B1192 Langrick Road	A few residential properties along this link	Low
LK58	Hubberts Bridge Road	Residential properties along its length, some direct frontages, pub in village, level crossing of railway	Medium
LK80	A1111 Sutton Road	A few adjacent residential properties with frontages/direct accesses, narrow footways	Medium
LK83	B1192 Langrick Road	A few residential properties along this link	Low
W31	B1373	A few adjacent residential and commercial properties	Low
W32	A1104	A few adjacent residential and commercial properties	Low
W33	A1104 Beesby Road	A few adjacent residential and commercial properties	Low
W34	Beesby Walk/Beesby Road	Residential properties along the route	Medium

Route Ref	Road	Description	Sensitivity Level
W35	A1111 Sutton Road	A few adjacent residential and commercial properties	Low
W36	Claythorpe Road	A few adjacent residential properties along this link	Low
W37	Greenfield Road	Residential properties along the route and in Aby	Medium
W38	Bluestone Heath Road	A few adjacent residential properties along this link	Low
W39	A155	Residential and commercial properties along the route	Medium
W80	Rye Lane	Few receptors, but stop, walkers/cyclists in road	Medium
W81	A52 Wainfleet Road	Residential and commercial properties along the route	Medium
W82	B1183	Multiple residential and commercial properties with some direct frontages, on street parking	High
W83	A1031	A few residential and commercial properties	Low

### Bus Routes

- 9.5.28 On the local road network, occasional bus services (service 7 and 96) including school services) run through Alford and on to Mablethorpe and Skegness with bus stops on the A1104 in Alford and the A1111 in Bilsby. Service 7 provides services approximately every 2 hours between Skegness and Alford and Service 96/96A provides a few services daily between Mablethorpe, Alford and Spilsby.
- 9.5.29 Buses connect local residential areas and generally run through towns and villages on local roads rather than strategic and classified A road network. Bus stops are located on Primary Access routes to Section 3 including some sections of the A16 connecting towns and villages.

### Railway Infrastructure

- 9.5.30 The nearest rail station is at Skegness, some 15 km south east of the Section 3 draft Order Limits and no rail lines are crossed by the Section 3 draft Order Limits.

### Waterways

- 9.5.31 The Section 3 draft Order Limits run close to or cross a number of small becks, dykes, and land drains. However, no navigable waterways are crossed by the draft Order Limits in Section 3.

### Public Rights of Way and Promoted/Recreational Routes

- 9.5.32 PRoWs and promoted/recreational routes potentially affected by the proposed works within the Section 3 draft Order Limits are summarised in **Table 9.9** below and

presented on **PEI Report Volume 2 Part B Section 3 Figure 9.3 Existing Public Rights of Way (PRoW)**. 'P' series references have been applied to each PRoW which is crossed by the draft Order Limits for ease of reference.

- 9.5.33 The sensitivity of the PRoWs and Promoted/Recreational Routes has been considered and is summarised in **Table 9.9**. The assignment of sensitivity considers potentially highly used routes and routes that have extensive connectivity and/or social significance, such as long distance trails, recreational circular routes or Local Authority promoted routes. For the purposes of the PEI, the sensitivity assessment is subjective. Further detail, including surveyed usage, will be determined in consultation with the local highway authority and provided within the ES. The sensitivity of routes along the highway are included within the highway link sensitivity at **Table 9.8**.
- 9.5.34 The Lindsey Loop long distance walking route and South Wolds and Skegness Sustrans local cycle route pass through Alford along a section of the A1104 which will provide a construction traffic access route to the proposed substation compounds.
- 9.5.35 Further details of promoted/recreational routes are included within **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** and discussions with PRoW officers from all relevant Local Authorities will continue to confirm key routes for assessment reported within the ES.

**Table 9.9** Public rights of way and promoted/recreational routes

Ref	Type	Location	Sensitivity
P106	Footpath	South of Saleby running in a north-south direction between the two substations	Local route with limited connectivity, low sensitivity
Lindsey Loop	Long distance walking route	Passes through Alford along the A1104	Regional recreational route, high sensitivity
South Wolds and Skegness	Sustrans cycle route	Passes through Alford along the A1104	Regional recreational route, high sensitivity

## Future Baseline

- 9.5.36 The future baseline relates to known or foreseeable changes to the current baseline in the future against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 9.5.37 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken, including future highway schemes. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. This will be

reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.

- 9.5.38 Based on the proposed construction programme for the Project, the peak year for construction activities that would affect each road link comprising the Primary Access Routes and Workers Access Routes has been identified as 2031. The future baseline traffic along these road links has been calculated by applying an appropriate growth factor derived from DfT's Trip End Model Presentation Program (TEMPro) to the 2024 Baseline traffic flows. These flows are summarised in **PEI Report Volume 3 Part B Sections 1-7 Appendix 9C Future Baseline and Impact Analysis**.
- 9.5.39 A review of all committed developments will be undertaken for the assessment to be presented within the ES. This will identify any other developments anticipated to be operational prior to construction of the Project commencing, that could generate additional traffic along the identified construction traffic routes.
- 9.5.40 Based upon available information, existing public transport and cycle infrastructure are likely to remain unchanged in the future baseline assessment years.

## 9.6 Design, Control and Mitigation Measures

### Design Mitigation Measures

- 9.6.1 The Project is being designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 20) applicable to routing of new overhead line and the 'Horlock Rules' (Ref 21) which apply to design and siting of substations. These approaches are explained in further detail within the **Corridor Preliminary Routeing and Siting Study (CPRSS)** (Ref 22) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 9.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the Traffic and Movement assessment include:
- i. Construction traffic would be routed along classified roads as far as possible, and haul roads would be used to minimise construction vehicle movements on local roads where the impact of the forecast traffic movement is deemed to be unacceptable.
  - ii. Primary Access Routes and Worker routes will be further discussed and determined with Local Highway Authority input with a view of utilising the classified road network and SRN as much as practicably possible. Where narrow roads form part of the Primary Access Routes (i.e. closer to bellmouths), areas of temporary highway improvement works (e.g. road widening and creation of passing places) will be considered for implementation to maintain a safe operational highway.



- iii. Where further assessment identifies the need for off-site road and junction improvements (i.e. mitigation works), these will be designed in collaboration with the local highway authorities to maintain a safe and operational highway network. Any improvements will be set out in the Transport Assessment (TA) and ES.
- iv. Construction traffic crossing of rail lines or navigable waterways will be avoided or use existing vehicle crossings where possible to minimise the impact on railway and waterway users.
- v. Where road closures are required, the period of the closure would be kept to a minimum and diversions would be via the most appropriate alternative route. Access to properties would be maintained at all times. Any route diversions or closures will be discussed with the Local Highway Authority.
- vi. PRoWs will only be closed or diverted on safety grounds to protect PRoW users or workers. Haul roads crossing PRoWs will be designed such that the PRoW remains open by default and passing construction traffic affords priority of movement to PRoW users. In the locality of PRoW crossing points the haul road will be fenced and gated to prevent PRoW users and animals from straying into a construction site.
- vii. Where more than one PRoW crosses the haul road in close proximity to another, local diversions will be required to merge PRoWs routes across a single passing point to reduce the likelihood of pedestrian-vehicular conflict (including equestrians and horses).
- viii. PRoWs will be closed when necessary on safety grounds. This is likely to be over a couple of months during the overhead line stringing works. Where PRoW closures are required, the period of the closure would be kept to a minimum, and a diversion provided where necessary and practicable. Any route diversions or closures will be discussed with the local authority.

## Control Mitigation Measures

- 9.6.3 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Traffic and Movement assessment of Section 3 are:
- ix. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Site Waste Management Plan (SWMP), a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (WSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), DrMP along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans.'
  - x. GG12: Appropriate site layout and housekeeping measures will be implemented by the contractor(s) at all construction sites. This will include but not be limited to: preventing pests and vermin control and treating any infestation promptly, including arrangements for the proper storage and disposal of waste produced on site;

- inspecting and collecting any waste or litter found on site;
  - locating or designing site offices and welfare facilities to limit the overlooking of residential properties;
  - locating designated smoking/vaping areas to avoid nuisance to neighbours;
  - managing staff/vehicles entering or leaving site, especially at the beginning and end of the working day; and
  - managing potential off-site contractor and visitor parking.
- xi. GG13: Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. Electric, or other low carbon plant and equipment should be used where available and where practicable.
  - xii. GG14: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including excavated materials, drop heights will be limited.
  - xiii. TT01: The contractor(s) will implement a monitoring and reporting system to check compliance with the measures set out within the CTMP.
  - xiv. TT02: All affected Public Rights of Way (PRoWs) will be identified, and any potential permanent or temporary closures detailed in the DCO. All designated PRoWs crossing the working area will be managed with access only closed for periods while construction activities occur. Any required diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns and will be subject to a PRoWMP. PRoWs crossing the working areas will be managed in discussion with the relevant local authorities and potential temporary closures applied for discussed with the relevant local authority. Access disruption would be reduced as reasonably practicable while construction activities occur.
  - xv. TT03: The CTMP will set out measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. It will also provide suitable control for the means of access and egress to the public highway and set out measures for the maintenance and upkeep of the public highway. The plan will also identify access for emergency vehicles. It will also set out measures to reduce safety risks through construction vehicle and driver quality standards and measures to manage abnormal loads.
  - xvi. W04: Where watercourses are to be crossed by construction traffic, measures to be applied include the use of temporary culverts or temporary spanned bridges. Once the temporary culvert is installed, the area above the temporary culvert will be backfilled and a suitable surface finish established to permit the passage of plant, equipment, materials, and people. Temporary culverts will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge.
  - xvii. AS03: Access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction period or as agreed

through the landowner discussions. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties at the start of the Project, with any changes communicated in advance of the change being implemented. Where field-to-field access points require alteration as a result of construction, alternative field access will be provided in consultation with the landowner/occupier.

- 9.6.4 The CTMP referred to in measures GG06, TT01 and TT03 above will include, but not be limited to:
- i. measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions;
  - ii. measures for the maintenance and upkeep of the public highway;
  - iii. identification of access routes for emergency vehicles;
  - iv. measures to reduce safety risks through construction vehicle and driver quality standards; and
  - v. measures to manage abnormal loads.

## Additional Mitigation Measures

- 9.6.5 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 9.6.6 Additional mitigation measures are not anticipated to be required in relation to Traffic and Movement effects. However, this will remain under review during the completion of further assessment and development of the ES.

## 9.7 Preliminary Assessment of Effects

- 9.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, maintenance and/or operational activities within Section 3.
- 9.7.2 The preliminary assessment of effects reported below takes into account the Design and Control Measures previously described.
- 9.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 9.11** based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 9.7.4 It should be noted that the assessment which has informed the conclusions presented remains ongoing and is subject to change, due to the ongoing survey activities and further design development of the Project. A full detailed assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

#### Highway Network

- 9.7.5 The primary Traffic and Movement effects on users of the highway network will be as a result of an increase in traffic flows on those roads used by vehicles associated with the Project. An assessment has been undertaken to calculate the percentage increases in total and HGV AADT flows as a result of the Project due to construction traffic using the local road network. This is based upon projected changes relative to a future baseline.
- 9.7.6 Traffic and Movement effects associated with the construction phase on receptors relate to the change in traffic flow and the sensitivity of highway links. **PEI Report Volume 3 Part B Sections 1-7 Appendix 9C Future Baseline and Impact Analysis** sets out the predicted increase in traffic on the local road network for each Primary Access Route and Worker Access Routes used by construction traffic. These increases have then been assessed against the assigned sensitivity of each highway link.
- 9.7.7 Within this PEI Report the assessment identifies highway links where an increase in baseline traffic flows due to construction traffic exceeds 10 percent for sensitive roads and 30 percent for non-sensitive roads, in accordance with the IEMA Guidance (Ref 10) thresholds. On these links there is potential for negative effects on receptors and users of the highway network that may lead to potential significant effects. Therefore, these links have been identified for further consideration within the TA and ES. **PEI Report Volume 3 Part B Section 3 Figure 9.5 Preliminary Impact Analysis** shows the location of highway links that are below or above the IEMA thresholds.
- 9.7.8 At this stage of assessment, baseline data for some of the identified construction traffic access routes is not currently available (from either DfT counts or 2024 traffic surveys). For these routes, a qualitative analysis has been undertaken to consider whether the volume of projected construction traffic is likely to be significant, given the type of road and type of construction vehicles (HGVs or Workers cars/vans). These links will be considered further within the TA and ES if the total number of all construction vehicles exceeds 50 per day or the number of HGVs exceeds 20 per day.
- 9.7.9 The receptors/users on the highway links exceeding the appropriate sensitivity threshold for potential significant effects are summarised in **Table 9.10**. At this preliminary stage of the assessment, significant effects upon users of these highway links cannot be ruled out. However, no detailed assessment, in terms of severance, delay (junction assessment), highway safety and fear and intimidation, has yet been undertaken to determine the magnitude of impacts upon these road links. As such, an assessment of the scale of effects upon the receptors identified in **Table 9.10** has not yet been completed.
- 9.7.10 Following further assessment of the projected increases in traffic flow upon severance, congestion (potentially resulting in increases in journey time and driver delay), highway safety and fear and intimidation, the subsequent effects upon users of the highway network as a result of the Project will be reported in the ES.

Table 9.10 Preliminary assessment of effects upon users of highway links – Section 3

Receptor	Potential Significant Effects	Route/Link
Drivers (all vehicles including HGVs and Emergency Services)	Severance, changes in journey time, driver delay and highway safety effects due to increased traffic	CR6-CR9 (A16), CR18 (A18), CR20 (A18), CR21 (A1173), CR25 (A158), LK5 (A157), LK7-LK9 (A1104), LK10/LK80 (A1111), LK22 (A157), LK26 Rye Lane, LK52 (Armtree Road), LK55/LK56 (B1192), LK83 (B1192),
Bus passengers	Potential for delay due to congestion as a result of increased traffic	CR6/CR9 (A16), LK8 (A1104 in Alford), LK52 (Armtree Road)
Pedestrians and cyclists	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects as a result of increased traffic	CR6/CR9 (A16), CR25 (A158) in Horncastle, LK8/LK9 (A1104), LK10/LK80 (A1111) in Alford and Bilsby, LK26 Rye Lane. Linsdey Loop and South Wolds and Skegness promoted recreational routes through Alford

### Operation and Maintenance

- 9.7.11 Based upon the preliminary assessment, no significant effects upon Transport and Movement receptors within the Section 3 Study Area are predicted during operation and maintenance of the Project. Further discussion is provided in the following sections in relation to the predicted non-significant effects of the Project

### Likely Non-Significant Effects

- 9.7.12 For completeness, **Table 9.11** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Traffic and Movement effects.

### Construction

#### Highway Network

- 9.7.13 **Table 9.11** identifies the highway links that form part of the Primary Access Route and Worker Access Route network where construction traffic impacts are below the assessment thresholds and are therefore not likely to have significant effects on users/receptors on these highway links. It is not currently anticipated that these links will be subject to further assessments within the ES, subject to further screening of final construction traffic projections and discussions with the Local Highway Authority. **PEI Report Volume 3 Part B Section 3 Figure 9.5 Preliminary Impact Analysis** shows the location of highway links that are below or above the IEMA thresholds.
- 9.7.14 It is not anticipated that there will be any Abnormal Indivisible Loads required for construction of the Section 3 Substations and overhead line therefore no significant effects are expected.



## Public Rights of Way

- 9.7.15 From an accessibility and connectivity perspective, PRoW users are unlikely to be significantly affected during the delivery of the Project. PRoW routes will remain open by default during both construction working hours and outside working hours. Haul road crossings are designed such that pedestrian, cycle and equestrian users are afforded priority of movement.
- 9.7.16 Where more than one PRoW crosses the haul road within close proximity of each other, these will be merged to provide a single passing point to reduce the likelihood of conflict with vehicular traffic.
- 9.7.17 PRoW are anticipated to be closed/diverted for short periods when necessary on safety grounds. This is likely to be during the overhead line stringing works. Routes would be reopened at the earliest opportunity following completion of these works
- 9.7.18 Therefore, the PRoW within the Section 3 draft Order Limits where the impacts of the Project are not likely to result in significant effects upon users are listed below and summarised in **Table 9.11**:
- i. P106 – a managed crossing of the haul route will be provided

## Operation and Maintenance

- 9.7.19 The Scoping Report (Ref 9) Traffic and Movement chapter sought to scope out effects associated with the operation of the Project. The Scoping Opinion (Ref 8) received requested further information relating to operational traffic. This PEI Report assessment therefore presents details of forecast operational traffic movements and provides an initial assessment of potential effects.
- 9.7.20 The operational traffic flows of the New LCS A and the New LCS B are anticipated to comprise vehicles associated with routine visits and fault maintenance. Based upon existing precedent and National Grid estimates, typical routine maintenance vehicle movements would comprise approximately two visits per month by two people to each substation.
- 9.7.21 With regards to operational visits for the overhead line, based upon existing precedent and National Grid estimates, typical routine maintenance vehicle movements would comprise approximately one vehicle per permanent pylon, per year. The movement itself could comprise a light goods vehicle access via the permanent access route. There could also be a drone or helicopter survey taken from the air, taking off from a nearby vantage point.
- 9.7.22 For Section 3 it is anticipated that there would be 20 pylons therefore there would be 40 vehicle trips (arrivals and departures). This would therefore generate an average of less than one trip per week. This level of trips is considered negligible and will not impact operation of the highway network.
- 9.7.23 Whilst there may be occasional variation in traffic flows associated with maintenance or refurbishment as required, the projected volume of traffic is predicted to be low.
- 9.7.24 On the basis of the information provided, operational/maintenance traffic will not have material impact on traffic flows and no likely significant effects on users of highway links are expected.
- 9.7.25 Operational traffic flows will be very occasional therefore no impact to users of bus services is expected. No railway lines are crossed as part of Section 3 overhead line,



therefore impact to rail users is not expected. No likely significant effects on public transport users are expected.

9.7.26 No navigable waterways are impacted by operation of Section 3 of the Project, therefore no likely significant effects are expected.

9.7.27 PRow crossed and/or diverted during construction will be reinstated, therefore no PRow are permanently affected by Section 3, therefore no significant effects are expected.

Table 9.11 Preliminary summary of non-significant Traffic and Movement effects – Section 3

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
<b>Construction</b>					
<b>Highway Network</b>					
Road users of highway links CR1, CR2, CR3, CR5, CR10, CR11, CR12, CR22, CR24, CR26, LK23, LK24, LK27, LK49, LK51, W31, W32, W33, W38, W39, W80, W81, W83	Increased traffic due to construction of the Project, potentially resulting in severance, changes in journey time, driver delay and highway safety effects upon road users	Negligible/Low/Medium	<30 per cent	Low – Not significant	The percentage increase in traffic flows as a result of the Project does not meet IEMA thresholds for significant effects.
Road users of highway links CR4, W82	Increased traffic due to construction of the Project, potentially resulting in severance, changes in journey time, driver delay and highway safety effects upon road users	High/Very High	<10 per cent	Low – Not significant	The percentage increase in traffic flows as a result of the Project does not meet IEMA thresholds for significant effects.
Road users of highway links LK25, LK53, LK58, W34-37	Increased traffic due to construction of the Project, potentially resulting in severance, changes in journey time, driver delay and highway safety effects upon road users	Low/Medium	No. of construction HGVs <20 and/or workers cars/LGVs <50 daily	Low – Not significant	The volume of construction traffic is low across the day.

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
Bus passengers in services on highway link CR5	Increased traffic due to construction of the Project, potentially resulting in delay due to congestion on bus routes.	Medium	<30 per cent change in traffic flow	Low – Not significant	The percentage increase in traffic flows as a result of the Project does not meet IEMA thresholds for significant effects and is unlikely to impact bus movements.
Bus passengers in services on highway link LK53	Increased traffic due to construction of the Project, potentially resulting in delay due to congestion on bus routes.	Low	No. of construction HGVs <20 daily	Low – Not significant	The volume of projected HGV movements is low across the day and unlikely to impact bus movements.
Pedestrians and cyclists on links CR3, CR4, CR5, CR10, CR24	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects as a result of increased traffic	Low/Medium/High	varies	Low – Not significant	The volume of construction traffic does not meet IEMA thresholds or considered low (on routes without baseline data) such that it is unlikely to impact pedestrian and cycle movements
All road users	Potential for severance, delay, increased journey time due to potential road closures and/or diversion to facilitate Abnormal Indivisible Loads	Low to Very High	No change	Negligible – Not significant	It is not anticipated that there will be any Abnormal Indivisible Loads required for construction of the New LCS A and the New LCS B within Section 3 and the proposed overhead line therefore no significant effects are expected.
All road users	Movement of Hazardous Loads during construction	Low to Very High	No change	Negligible – Not significant	It is not anticipated that there will be any Hazardous Loads required for construction of the New LCS A and

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
	potentially resulting in safety effects upon road users.				the New LCS B within Section 3 and the proposed overhead line therefore no significant effects are expected.
<b>Railway Infrastructure</b>					
Railway users	Potential for disruption of the railway network and/or operational safety	High	Negligible	Negligible – Not significant	No railway lines are crossed by the Section 3 draft Order Limits, therefore, no likely significant effects on railway users are expected.
<b>Waterways</b>					
Waterway Users	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects as a result of construction traffic/haul road crossings	Low	Negligible	Negligible – Not significant	No navigable waterways are crossed by the Section 3 draft Order Limits, therefore, no likely significant effects on railway users are expected.
<b>Public Rights of Way and Promoted/Recreational Routes</b>					
Pedestrians, cyclists and equestrians on links P106	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects as a result of temporary route	Low	No change	Negligible – Not significant	The haul route crossing of the PRoW would be managed so no significant effects are expected.

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
	closures/diversions to enable construction				
<b>Operation and maintenance</b>					
Users of highway links including drivers, public transport users, pedestrians, cyclists and equestrians	Increased traffic during operation and maintenance resulting in potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.	Negligible – Very High	2 visits per month by 2 people for each substation and 1 per year for each pylon for maintenance	Negligible – Not significant	The volume of traffic associated with operation and maintenance is very low and would not result in significant effects upon users of highway links.
Pedestrians, cyclists and equestrians on PRow	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects	Low	No impact	Negligible – Not significant	PRoW would be reinstated and not impacted by operation of the New LCS A and the New LCS B and the proposed overhead line
Railway users	Potential for disruption of the railway network and/or operational safety	High	No impact	Negligible – Not significant	No railway lines are crossed by the Section 3 draft Order Limits, therefore no likely significant effects on railway users are expected.
Waterway Users	Potential for disruption of navigable waterways	Low	No impact	Negligible – Not significant	No navigable waterways are crossed by the Section 3 draft Order Limits, therefore no likely significant effects on users of waterways are expected

## **9.8 Monitoring**

- 9.8.1 As set out within the Preliminary CoCP, the Contractor will implement a CTMP, which will detail the environmental and control measures in relation to the traffic generated during construction of the Project.
- 9.8.2 This will include undertaking of dilapidation surveys prior to the start of the relevant phase of construction and identification of any remedial works required to access routes.
- 9.8.3 The contractor will also implement a monitoring and reporting system to check compliance with the measures set out within the CTMP, as per measure TT01 of the Preliminary CoCP.
- 9.8.4 No monitoring relevant to the Traffic and Movement assessment and reported impacts and effects is proposed during operation and maintenance of the Project within Section 3 Study Area.



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# 10. Noise and Vibration

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# 10. Noise and Vibration

## 10.1 Introduction

- 10.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the assessment of Noise and Vibration on noise sensitive receptors (NSR) for the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 10.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 10.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and subsequent scope of the Noise and Vibration assessment (section 10.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Responses**;
  - iv. A high-level summary of the methodology of the Noise and Vibration assessment within Section 3 (section 10.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the assessment (section 10.5);
  - vi. A description of mitigation measures included for the purposes of the assessment reported within the PEI Report (section 10.6). Further information regarding design development can be found in **Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Noise and Vibration effects arising during construction and operation of the Project within Section 3, based upon the assessment completed to date (section 10.7); and
  - viii. An outline of the likely monitoring requirements in relation to Noise and Vibration (section 10.8).
- 10.1.2 Further supporting information is set out in **Table 10.1** below, including supporting figures and technical appendices.

Table 10.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<b>Figure 10.1 Noise and Vibration Study Area</b> <b>Figure 10.2 Noise and Vibration Baseline</b> <b>Figure 10.3 Initial Construction Noise Assessment Outputs</b> <b>Figure 10.4 Initial Construction Vibration Assessment Outputs</b>
PEI Report Volume 3 Part B Section 3 Appendix 10A Construction Noise and Vibration Data	Includes information and data used within the assessment of noise and vibration effects from construction activities at noise and vibration sensitive receptors.
PEI Report Volume 3 Part B Section 3 Appendix 10B Initial Construction Traffic Noise Assessment	Includes the assessment of construction traffic noise on construction traffic routes within Section 3.
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including the permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of national and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2.1Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific Sections of the Project.
PEI Report Volume 3 Part A Appendix 2.1Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	Provides a summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.



Supporting Information	Description
<b>PEI Report Volume 2 Part A Chapter 5 Project Description</b>	An overarching description of the Project and its key components, including available construction information.
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The Preliminary Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 10.1.3 There are interrelationships between the potential Noise and Vibration effects and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** which assesses the effects of the Project upon ecological receptors, including those resulting from noise and vibration.
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 5 Historic Environment** which assesses the impacts of the Project upon heritage assets, including the potential effects of vibration.
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement** which assesses the potential change in traffic movements during construction and operation, which are relevant to the assessment of noise effects associated with changes in traffic flow.
  - iv. **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** which assesses potential effects upon recreational areas that could be affected by noise and vibration and thus suffer a reduction in amenity value.
  - v. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
  - vi. **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** which assesses the potential effects of noise and vibration generated by the Project upon health and wellbeing.
  - vii. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects and identifies a short-list of wider developments which will be used to complete an assessment of likely inter-project cumulative effects within the ES.

## 10.2 Legislation and Policy Framework

- 10.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 3 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, details of which are set out in **Table 10.1**.

## Regional and Local Policy

10.2.2 Regional and local plans or policies relevant to this assessment are as follows.

- i. East Lindsey District Council Local Plan Core Strategy (Adopted 2018) (Ref 1):
  - Strategic Policy 10 (SP10) – Design: which whilst not specifically relating to noise and vibration, supports well-designed sustainable development which does not unacceptably harm nearby residential amenity.
  - Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy: which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation to residential amenity.

## 10.3 Scope of Assessment

10.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 2) provided by the Planning Inspectorate on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). A summary of the Scoping Opinion together with a response against each point of relevance to the Noise and Vibration chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**.

10.3.2 Non-statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.

10.3.3 The scope of the Noise and Vibration assessment within Section 3 includes consideration of effects upon NSRs due to:

- i. construction noise;
- ii. construction vibration on people within buildings;
- iii. construction vibration on buildings and structures;
- iv. construction traffic noise; and
- v. noise and vibration from substantial maintenance activities, such as conductor replacement.

10.3.4 Noise generating equipment (such as transformers) are not proposed within the New Lincolnshire Connection Substation A (LCS A) and the New Lincolnshire Connection Substation B (LCS B). Additionally, based upon the low noise conductor system proposed, noise associated with the operation of permanent infrastructure is scoped out of the assessment of Noise and Vibration effects within this Section.

10.3.5 As set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**, the scope of the assessment excludes:

- i. construction traffic vibration;
- ii. operational noise impacts from auxiliary plant (e.g. back-up generators and switchgear) within proposed new substations;
- iii. operational noise impacts from typical maintenance activities due to their infrequent and localised nature; and

- iv. operational noise from proposed overhead lines, on the basis that a low noise conductor system is proposed. Further information regarding the scoping out of overhead line noise is provided in paragraph 10.6.3.

10.3.6 As set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**, noise effects associated with typical maintenance activities are also scoped out, based upon the infrequent and localised nature of typical activities.

## 10.4 Assessment Methodology

10.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Noise and Vibration assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components are outlined below.

10.4.2 Construction Noise and Vibration has been assessed in accordance with the methodology described in British Standard (BS) 5228-1:2009+A1:2014 Code of practice for Noise and Vibration control on construction and open sites – Part 1: Noise (BS 5228-1) (Ref 4), and Part 2: Vibration (BS 5228-2) (Ref 5), respectively. The assessment Study Area for construction noise is 300 m from the proposed works, based on guidance from BS 5228-1. The assessment Study Area for construction vibration is 100 m from the proposed works, based on guidance from BS 5228-2.

10.4.3 Construction traffic noise has been predicted in accordance with the methodology described in Calculation of Road Traffic Noise (CRTN) (Ref 6) and assessed in accordance with the methodology described in the Design Manual for Roads and Bridges LA 111 Noise and vibration (DMRB LA 111) (Ref 7).

10.4.4 Other applicable guidance has also been used to inform the assessments, where appropriate. These are detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.

### Assessment Assumptions and Limitations

10.4.5 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 3.

10.4.6 These key parameters and assumptions will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 10.5 Baseline Conditions

### Study Area

- 10.5.1 The Study Area for the assessment of the Noise and Vibration baseline is illustrated in **PEI Report Volume 2 Part B Section 3 Figure 10.1 Noise and Vibration Study Area**. The baseline Study Area includes an additional 1 km buffer from the draft Section 3 draft Order Limits.

### Data Collection

- 10.5.2 The following data has been used to inform the baseline conditions:
- i. Ordnance Survey (OS) AddressBase Plus data, as presented within **PEI Report Volume 2 Part B Section 3 Figure 10.1 Noise and Vibration Study Area**;
  - ii. Department for Environment, Food and Rural Affairs (Defra) strategic noise mapping, presented as noise contours within **PEI Report Volume 2 Part B Section 3 Figure 10.2 Noise and Vibration Baseline**. This represents the daytime ambient noise levels from road and rail sources and Noise Important Areas (NIAs); and
  - iii. current OS mapping.

### Existing Baseline

- 10.5.3 The following section outlines the Noise and Vibration baseline for the Section 3 Study Area. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2**:
- i. **PEI Report Volume 2 Part B Section 3 Figure 10.1 Noise and Vibration Study Area**; and
  - ii. **PEI Report Volume 2 Part B Section 3 Figure 10.2 Noise and Vibration Baseline**.
- 10.5.4 The proposed substation sites and new overhead line within Section 3 are located within predominantly rural areas, largely avoiding settlements and residential areas. The majority of NSRs within the Study Area are therefore isolated dwellings and farms and small settlements. **PEI Report Volume 2 Part B Section 3 Figure 10.1 Noise and Vibration Study Area** also shows NSR locations, including residential and non-residential receptors.
- 10.5.5 The noise environment is expected to vary around the Section 3 baseline Study Area depending on the nature of the area. For example, close to noise sources, such as roads and in built up areas, ambient noise levels are expected to be higher. Further away from road and rail sources and in rural areas which cover most of Section 3, ambient and background noise levels would be expected to be lower. Daytime noise level contours from existing road and railway sources are presented in **PEI Report Volume 2 Part B Section 3 Figure 10.2 Noise and Vibration Baseline**, showing how existing noise levels vary along the draft Order Limits. Areas outside of the contours are generally considered to have low ambient and background noise levels. Areas where the road and rail contours overlap are considered to experience noise effects from both sources.

- 10.5.6 NIAs are determined via strategic noise maps and highlight the residential areas experiencing the highest 1 per cent of noise levels from road and rail sources in England and are shown in **PEI Report Volume 2 Part B Section 3 Figure 10.2 Noise and Vibration Baseline**. There are no NIAs close to the Section 3 Study Area.
- 10.5.7 Acceptable levels of vibration during construction are higher than those that would be acceptable during normal conditions. It is therefore assumed that existing vibration levels at NSR within the draft Order Limits are negligible compared to the construction vibration threshold values, as described in **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information**. Construction vibration impacts are therefore assessed against fixed thresholds, rather than relative thresholds informed by an assessment of the baseline.
- 10.5.8 Section 3 is predominantly rural and proposed infrastructure passes through agricultural land. The main sources of environmental noise include the A1104 and the A1111, as well as traffic on local roads. In terms of industrial sources, the main source of noise is likely to be agricultural activity.
- 10.5.9 With regards to NSRs in the Section, the Section 3 draft Order Limits are in proximity to several villages. These include:
- i. Woodthorpe, approximately 700 m north of the Section 3 draft Order Limits and the New LCS A site;
  - ii. Saleby, approximately 300 m north of the Section 3 draft Order Limits at the approximate mid-point of the proposed overhead line connecting the New LCS A and the New LCS B;
  - iii. Thorethorpe, approximately 150 m south of the Section 3 draft Order Limits at the approximate mid-point of the proposed overhead line connecting the New LCS A and the New LCS B; and
  - iv. Bilsby, immediately adjacent to the southern extent of the Section 3 draft Order Limits and the proposed New LCS B site.
- 10.5.10 There are also isolated dwellings, farmhouses, and settlements within the Section 3 baseline study area.

## Future Baseline

- 10.5.11 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 10.5.12 At this preliminary stage, a full assessment of the implications of any committed developments with respect to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES.



- 10.5.13 No significant changes to the future Noise and Vibration baseline that would affect the assessment are anticipated. This is owing to the largely rural and agricultural nature of the Section 3 Study Area. This will remain under review during development of the ES and further consideration of any appropriate changes to the assumed future baseline characterised within this PEI Report.

## 10.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 10.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 11) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 12) which apply to design and siting of substations. These approaches are explained in further detail within the **Corridor Preliminary Routeing and Siting Study (CPRSS)** (Ref 8) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 10.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has and will continue to contribute to the avoidance or reduction of the potential environmental impacts of the Project as the design is finalised.
- 10.6.3 The proposed overhead line system is a 'Triple Araucaria' conductor bundle. Noise from high voltage overhead lines is primarily due to a phenomenon called corona discharge. Overhead line noise is generated when the conductor surface voltage gradient (electric stress, or  $E_{max}$  expressed in kilovolts per centimetre (kV/cm)) exceeds the inception level for corona discharge activity which is released as acoustic energy and radiates into the air as sound. In UK conditions the corona inception level is regarded to occur when electric stress is in the range 17 to 20 kV/cm. Whilst most high voltage overhead lines are designed to operate below this level, those that operate close to this may produce audible noise when enhancement of conductor surface electric stress occurs due to rainfall (wet noise) or the presence of conductor surface contamination (dry noise). Overhead lines that operate significantly below the corona inception level are much less likely to produce audible noise. 'Triple Araucaria' is regarded as practically quiet during both dry and wet weather conditions as it typically operates with an electrical stress below the inception level for corona discharge. Operational noise from the proposed overhead line would therefore not lead to significant adverse effects at nearby NSR, even if directly underneath the line. This supports the rationale for scoping operational noise out of the assessment.
- 10.6.4 In addition, pylon fittings, such as insulators, dampers, spacers, and clamps, are designed and procured in accordance with a series of National Grid Electricity Transmission plc (National Grid) Technical Specifications and must be type registered (rigorously tested) to ensure the fitting conforms to National Grid standards. These design, testing, and procurement processes reduce the potential for audible noise and tones to occur from all types of fittings, including insulators. Where noise does occur, it is likely to be localised and of short duration. If this is due to a fault, action can be taken to rectify it. Where noise from fittings does occur which



results in a complaint, appropriate action can be taken to seek to remedy the cause of the noise where practicable, usually through cleaning or replacing the relevant fitting.

## Control Mitigation Measures

- 10.6.5 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Noise and Vibration assessment of Section 3 include:
- i. GG01: The Project will be compliant with all relevant legislation, consents and permits.
  - ii. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced EnvCoW(s) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
  - iii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
    - pollution prevention and pollution incident response;
    - dust management and control measures;
    - location and protection of sensitive environmental sites and features;
    - adherence to protected environmental areas around sensitive features;
    - working hours and Noise and Vibration reduction measures;
    - working with potentially contaminated materials;
    - waste management and storage;
    - flood risk response actions;
    - agreed traffic routes, access points, etc.;
    - soil management; and
    - drainage management.
  - iv. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP), a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (WSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), Drainage Management Plan (DrMP) along with a Soil Management Plan (SMP)

will be produced prior to construction. These are collectively referred to as 'the environmental control Plans.'

- v. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans.
- vi. GG10: The name and contact details for the Project will be displayed at the entrance to all compounds. This will include an emergency number.
- vii. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
- viii. GG13: Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. Electric, or other low carbon plant and equipment should be used where available and where practicable.
- ix. GG14: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including excavated materials, drop heights will be limited.
- x. GG24: Working areas will be appropriately fenced. The type of fencing installed will depend on the area to be fenced and will take into consideration the level of security required in relation to the surrounding land and public access, rural or urban environment and arable or stock farming. For some locations the fence used may also serve to provide acoustic and visual screening of the work sites and reduce the potential for disturbance of users in the surrounding areas. Fencing will be regularly inspected and maintained and removed as part of the demobilisation unless otherwise specified.
- xi. GG25: Members of the community and local businesses will be kept informed regularly of the works through active community liaison and groups with local membership. This will include notification of noisy activities, heavy traffic periods and start and end dates of key phasing. A contact number will be provided which members of the public can use to raise any concerns or complaints about the Project. All construction related complaints will be logged in a complaints register, together with a record of the responses given and actions taken.
- xii. TT03: The CTMP will set out measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. It will also provide suitable control for the means of access and egress to the public highway and set out measures for the maintenance and upkeep of the public highway. The plan will also identify access for emergency vehicles. It will also set out measures to reduce safety risks through construction vehicle and driver quality standards and measures to manage abnormal loads.
- xiii. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises

Noise and Vibration at all times. Best practicable means (BPM) to reduce construction noise will be set out within the CEMP.

- xiv. NV02: BPM measures, as defined by The Control of Pollution Act 1974 and detailed in BS 5228-1:2009+A1:2014 Code of practice for Noise and Vibration control on construction and open sites – Part 1: Noise, and Part 2: Vibration, will be identified within the CoCP and may include consideration of construction plant and methods, siting semi-static equipment as far as reasonably practicable away from sensitive areas, screening, enclosures, and temporal restrictions.
- xv. NV03: The contractor will conduct detailed construction noise and vibration assessments to determine whether there are likely to be any new or different significant adverse effects at noise and vibration sensitive receptors (NSR) and therefore whether additional measures, including site-specific BPM, may be required.

### **Control of Pollution Act 1974**

- 10.6.6 The Control of Pollution Act 1974 (CoPA) (Ref 9) sets out the framework for the legislative control of construction Noise and Vibration on any given site. It also sets out the principle of BPM (as defined in section 72 of the Act) and how that should be applied to construction activity noise. BS 5228-1 and BS 5228-2 gained Approved Code of Practice status in England under the powers conferred by sections 71(1)(b), (2) and (3) of CoPA 1974, as enacted under The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 (Ref 10). Compliance with the best practice noise and vibration mitigation requirements stated within BS 5228-1 and BS 5228-2 became a statutory obligation under the Act. Compliance with the requirements of the CoPA would be secured via control measure NV02, included within the Preliminary CoCP.
- 10.6.7 Section 61 of the CoPA states that consent may be sought from the relevant local authorities prior to the construction works commencing. If prior consent is sought, the relevant local authorities will need to be provided with information about the proposed construction works and how construction noise will be managed, including the use of BPM.

### **Additional Mitigation Measures**

- 10.6.8 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 10.6.9 Additional mitigation measures are not anticipated to be required in relation to Noise and Vibration effects. However, this will remain under review during the completion of further assessment and development of the ES

## **10.7 Preliminary Assessment of Effects**

- 10.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Section 3 Study Area, as a result of construction, maintenance and/or operational activities.
- 10.7.2 The preliminary assessment of effects reported below takes into account the Design and Control Measures previously described. No additional mitigation measures have

been assumed within the preliminary assessment of effects reported in the following sections.

- 10.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 10.4**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 10.7.4 Where it has been concluded that effects are not significant, but may still be considered notable from a stakeholder perspective, a more detailed explanation is provided in support of the summaries included within **Table 10.4**. Examples include consideration of receptors of particularly high sensitivity or effects which have been identified of interest during previous consultation and engagement.
- 10.7.5 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

- 10.7.6 Based upon the preliminary assessment, no significant effects have been identified due to construction noise and vibration, assuming the implementation of the embedded measures set out in section 10.6. The assessment is discussed in further detail below in relation to likely non-significant effects.

### Operation

- 10.7.7 No significant effects have been identified due to noise and vibration during operation and maintenance of the Project in Section 3. The assessment is discussed in further detail below in relation to likely non-significant effects.

## Likely Non-Significant Effects

### Construction

#### Construction noise

- 10.7.8 The construction noise assessment is based on the construction noise data presented in **PEI Report Volume 3 Part B Section 3 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which in Section 3 include:
- i. Preparation and establishment of temporary access/egress to the Site and haul roads;
  - ii. Establishment and operation of construction compounds and laydown areas;
  - iii. Construction of pylon foundations and erection of pylons;
  - iv. Stringing of overhead line;

- v. Construction of the proposed New LCS A and the New LCS B;
- vi. Ancillary works, such as drainage; and
- vii. Removal of compounds and haul roads and site reinstatement.

- 10.7.9 Although BPM to reduce construction noise impacts would be employed by the contractor for all work areas, for the purposes of the assessment, it is assumed that no noise mitigation, such as screening, is included. This is so that potential noise 'hot-spots' can be identified which would require specific mitigation measures to avoid significant adverse effects. However, BPM to reduce construction noise impacts would be employed by the contractor for all work areas, as discussed in section 10.6 Control Mitigation Measures.
- 10.7.10 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 3 Figure 10.3 Initial Construction Noise Assessment Outputs** and are summarised in **Table 10.2**.

Table 10.2 Summary of construction noise assessment

NSR Type/Sensitivity	Total Number of NSR in Study Area	Number of NSR experiencing magnitude of impact:			
		Negligible	Small	Medium	Large
Residential	89	59	30	0	0
High sensitivity non-residential	0	0	0	0	0
Medium sensitivity non-residential	3	1	2	0	0
Low sensitivity non-residential	1	0	1	0	0

- 10.7.11 The assessment indicates that the magnitude of impact from construction noise without specific mitigation measures is negligible or small at all residential and medium sensitivity non-residential NSR, and small at the one low sensitivity non-residential NSR. As such, there are no likely significant adverse effects from construction noise in Section 3, even without specific BPM mitigation measures in place. This is due to the distance between proposed construction works and nearby NSR being relatively large and noise levels reducing accordingly with distance from construction activities.

#### Construction vibration

- 10.7.12 The construction vibration assessment is based on the construction vibration data presented in in **PEI Report Volume 3 Part B Section 3 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which include
- i. Construction of access tracks (compaction);

- ii. Construction and operation of construction compounds (compaction);
- iii. Construction of the proposed New LCS A and New LCS B; and
- iv. Construction of pylons (piling).

#### Construction vibration on people in buildings

- 10.7.13 Although BPM to reduce construction vibration impacts would be employed by the contractor for all work areas, the assessment assumes no vibration mitigation is included, such as the use of alternative construction methods. Additionally, on a precautionary basis, the assessment assumes typical worst-case methodologies, such as use of percussive piling for pylon foundation construction. As with the noise assessment, this is so that potential vibration 'hot-spots' can be identified which would require specific mitigation measures to avoid significant adverse effects.
- 10.7.14 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 3 Figure 10.4 Initial Construction Vibration Assessment Outputs** and are summarised in **Table 10.3**.

Table 10.3 Summary of construction vibration assessment

NSR Type/Sensitivity	Total Number of NSR in Study Area	Number of NSR experiencing magnitude of impact:			
		Negligible	Small	Medium	Large
Residential	40	38	2	0	0
High sensitivity non-residential	0	0	0	0	0
Medium sensitivity non-residential	2	0	2	0	0
Low sensitivity non-residential	1	0	1	0	0

- 10.7.15 The assessment indicates that the magnitude of impact from construction vibration without specific mitigation measures is negligible or small at all NSR. As such, there are no likely significant adverse effects from construction vibration in Section 3, even without specific BPM mitigation measures in place. This is principally due to the distance between proposed construction works and nearby NSR.

#### Construction vibration on buildings and structures

- 10.7.16 No buildings or structures have been identified within the threshold distances of applicable construction activities where the level of construction vibration has the potential to cause damage. Therefore there are no likely significant effects from construction vibration on buildings and structures in the Section 3 Study Area. This will be reviewed further at ES stage and by the contractor prior to starting works.



## Construction Traffic Noise

- 10.7.17 The initial construction noise assessment outputs are presented in **PEI Report Volume 3 Part B Section 3 Appendix 10B Initial Construction Traffic Noise Assessment**.
- 10.7.18 Construction traffic noise impacts have been assessed on eight construction traffic road links in Section 3 where data is available. The assessment indicates that construction traffic would lead to the following impacts:
- i. no change in noise level on two road links; and
  - ii. a negligible increase in noise level on three road links;
  - iii. a small magnitude increase on three road links (none of which include NIAs).
- 10.7.19 No medium or large magnitude construction traffic noise impacts are expected in Section 3. Additionally, there are no small magnitude impacts in locations which include NIAs (where a small magnitude impact may be considered significant). Therefore, there are no likely significant effects from construction traffic noise in Section 3 Study Area.

## Operation and Maintenance

### Operational and maintenance: Noise and Vibration

- 10.7.20 As noted in section 10.3, noise impacts from standard operational and maintenance activities are scoped out of the assessment. However, there may be instances where more substantial activity would be required as part of maintenance, such as replacement of components of the Project, such as overhead line re-stringing, or transformer replacement. Such activities would be expected to be similar to those during the construction phase, as assessed above. As such, there are no likely significant adverse effects from noise and vibration generated during operational maintenance in Section 3, even without specific BPM mitigation measures.

## Summary

- 10.7.21 For completeness, **Table 10.4** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Noise and Vibration effects.

Table 10.4 Preliminary summary of non-significant Noise and Vibration effects – Section 3

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Construction</b>					
All residential noise sensitive receptors (NSR) within the Section 3 Study Area	Construction noise	Residential	Negligible to small	Negligible to Minor adverse. Not significant	Due to the distance between proposed construction activities and receptors, construction noise levels would be below the threshold for potential significant adverse effects at all nearby residential NSR, even without specific noise mitigation measures.
Non-residential NSR within the Section 3 Study Area	Construction noise	Low to Medium	Negligible to small	Negligible to Minor adverse. Not significant	Due to the distance between proposed construction activities and receptors, construction noise levels would be below the threshold for potential significant adverse effects at all nearby non-residential NSR, even without specific noise mitigation measures.
All NSR within the Section 3 Study Area	Construction vibration	Residential, and high sensitivity non-residential	Negligible to small	Negligible to Minor adverse. Not significant	Due to the distance between proposed construction activities and receptors, construction vibration levels would be below the threshold for potential significant adverse effects at all nearby NSR, even without specific vibration mitigation measures.
Buildings and structures	Construction vibration	Buildings and structures	Below threshold for	Not significant	Due to the distance between proposed construction activities

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
within the Section 3 Study Area			potential damage		and receptors, construction vibration levels would be below the threshold for potential significant adverse effects at all nearby buildings and structures, even without specific vibration mitigation measures.
All NSR within the Section 3 Study Area	Construction traffic noise	Medium	Negligible to small	Negligible to Minor adverse. Not significant	No medium or large magnitude construction traffic noise impacts are expected in Section 3. Additionally, there are no small magnitude impacts in locations which include NIAs (where a small magnitude impact may be considered significant). Therefore, there are no likely significant effects from construction traffic noise in Section 3.
<b>Operation</b>					
All NSR within the Section 3 Study Area	Operational noise.	Residential, and high sensitivity non-residential	Negligible	Negligible to minor adverse. Not significant	Operational noise from overhead lines is scoped out of the assessment as a low noise conductor system is proposed. Additionally, noise generating equipment (such as transformers) are not proposed within the proposed New LCS A and B. Operational noise is therefore scoped out of the assessment in this Section.

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
All NSR within the Section 3 Study Area	Operational noise and vibration from substantial maintenance activities	Residential, and medium and low sensitivity non-residential	Negligible to small	Negligible to minor adverse. Not significant	Operational noise and vibration from substantial maintenance activities is expected to be similar to that during construction, and would incorporate best practicable means to reduce the effects of noise and vibration. The effects of substantial maintenance during operation are therefore expected to be not significant.

## 10.8 Monitoring

- 10.8.1 The following processes and monitoring would be undertaken in the management of Noise and Vibration in accordance with the Preliminary CoCP:
- i. Further detailed construction Noise and Vibration assessments will be conducted by the contractor based on their specific proposed construction methodologies prior to construction.
  - ii. Based on the findings of the contractor's detailed construction Noise and Vibration assessments, specific BPM mitigation measures will be determined to avoid significant adverse effects and reduce and minimise adverse effects.
- 10.8.2 It is anticipated that the Preliminary CoCP will be secured through DCO requirements.
- 10.8.3 If appropriate, through consultation with the local authority, the contractor may apply for prior approval under section 61 of the CoPA (Ref 9) for certain construction activities.
- 10.8.4 Further detailed operational substation noise assessments will be undertaken as the design progresses, with appropriate mitigation specified where required to avoid significant adverse effects and reduce and minimise adverse effects.

# References

- Ref 1 East Lindsey District Council (2018) East Lindsey Local Plan Core Strategy [online]. Available at: [https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final\\_Version\\_of\\_Core\\_Strategy\\_2018.pdf?m=1546595473230](https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230) [Accessed 31 January 2025].
- Ref 2 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 3 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 4 BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, British Standard Institution, 2014.
- Ref 5 BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration, British Standard Institution, 2014
- Ref 6 Department for Transport (1988). Calculation of Road Traffic Noise.
- Ref 7 Highways England et al. (2020). Design Manual for Roads and Bridges LA 111 Noise and vibration.
- Ref 8 Grimsby to Walpole Corridor Preliminary Routeing and Siting Study. January 2024 [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 18 September 2024].
- Ref 9 Control of Pollution Act 1974 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40/contents> [Accessed 18 September 2024].
- Ref 10 The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 [online]. Available at: <https://www.legislation.gov.uk/ukxi/2015/227> [Accessed 21 January 2025].
- Ref 11 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 12 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].



# 11. Socio- economics, Recreation and Tourism

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# 11. Socio-economics, recreation and tourism

## 11.1 Introduction

- 11.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Socio-economics, recreation and tourism assessment for the Section 3 New Lincolnshire Connection Substations A and B (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 11.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 11.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislation, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and the subsequent scope of the Socio-economics, recreation and tourism assessment (section 11.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Scoping Opinion Responses**;
  - iv. A high level summary of the methodology of the Socio-economics, recreation and tourism within Section 3 (section 11.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the Socio-economics, recreation and tourism assessment (section 11.5);
  - vi. A description of mitigation measures included for the purposes of the Socio-economics, recreation and tourism assessment reported within the PEI Report (section 11.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Socio-economics, recreation and tourism effects arising during construction and operation of the Project within Section 3 based upon the assessment completed to date; (section 11.7), and
  - viii. An outline of the proposed monitoring requirements in relation to Socio-economics, recreation and tourism (section 11.8).
- 11.1.2 Further supporting information is set out in **Table 11.1** below, including supporting figures and technical appendices.

Table 11.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	<p><b>Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area</b></p> <p><b>Figure 11.2 Development Land Allocations and Open Space Within the Study Area</b></p> <p><b>Figure 11.3 PRoW and Promoted/Recreational Routes Within the Study Area</b></p>
<b>Project Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	Provides a summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information. A summary of the works within Section 3 is also provided within <b>PEI Report</b>

Supporting Information	Description
	<b>Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project.</b>
<b>PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice</b>	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

- 11.1.3 There are also interrelationships between the potential effects on Socio-economics, recreation and tourism and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 3 Visual**, should be consulted in relation to amenity effects on users of Public Rights of Way (PRoWs) and promoted/recreational routes;
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 8 Agriculture and Soils**, in regard to effects on agricultural landholdings;
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement**, should be consulted in relation to impacts on access, PRoWs and promoted/recreational routes;
  - iv. **PEI Report Volume 2 Part B Section 3 Chapter 10 Noise and Vibration**, should be consulted in relation to effects on noise and vibration sensitive receptors. This includes residential and community receptors, local businesses, and users of PRoWs and promoted/recreational routes;
  - v. **PEI Report Volume 2 Part B Section 3 Chapter 12 Air Quality**, should be consulted in relation to effects on residential and community receptors, and local businesses;
  - vi. **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment;
  - vii. **PEI Report Volume 2 Part C Route Wide Assessment Chapter 7 Socio-economics, recreation and tourism**, should be consulted in relation to the assessment of impact on affected communities, the labour market and effects on tourism bedspaces, and strategic visitor attractions;
  - viii. **PEI Report Volume 2 Part C Route Wide Assessment Chapter 8 Health and Wellbeing**, should be consulted in relation to the indirect amenity effects on population and users of PRoWs and promoted/recreational routes; and
  - ix. **PEI Report Volume 2 Part C Route-wide Assessment, Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for

cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 11.2 Legislation and Policy Framework

### Legislation and National Policy

- 11.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part Legislative, Regulatory and Planning Policy Context** and supporting appendices, the details of which are set out in **Table 11.1**.

### Regional and Local Policy

- 11.2.2 Regional and local plans or policies relevant to this assessment are as follows.
- i. Lincolnshire County Council Minerals and Waste Local Plan (Ref 1)
    - Lincolnshire Minerals and Waste Local Plan: Core Strategy and Development Management Policies - this policy outlines the principles for the future working of minerals and the form of waste management, including the criteria under which applications are considered.
    - Lincolnshire Minerals and Waste Local Plan Site Locations - includes specific proposals and policies for the provision of land for mineral and waste development.
  - ii. East Lindsey District Council Local Plan (Ref 2)
    - Strategic Policy 3 – Housing Growth and the Location of Inland Growth: The Council will seek to deliver housing growth across the Authority at key locations.
    - Strategic Policy 13 – Inland Employment: The Council will support growth and diversification of the local economy by identifying and protecting additional land employment uses.
    - Strategic Policy 26 – Open Space, Sport and Recreation: The Council will safeguard, expand, enhance and promote access to sports and recreational facilities and open spaces.
    - Strategic Policy 27 – Renewable and Low Carbon Energy: Renewable and low carbon energy which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation amenity.

## 11.3 Scope of Assessment

- 11.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 3) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 4). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Socio-economics, recreation and tourism chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Scoping Opinion Responses**. A summary



of the stakeholder engagement undertaken to date is provided in the **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.

- 11.3.2 Non statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 11.3.3 The scope of the construction assessment covers the following receptor groups:
- i. Local businesses;
  - ii. Development land;
  - iii. Community facilities;
  - iv. Open space;
  - v. Users of PRoW and promoted recreational routes; and
  - vi. Aviation.
- 11.3.4 Where effects may be felt regionally, such as those relating to the local labour market (including employment, supply chain effects, training and apprenticeship opportunities, as well as any impact on tourism bedspace from the construction workforce), affected communities (local communities including populations of towns and villages) and strategic visitor attractions that are of importance to the economy during construction, this is considered in **PEI Report Volume 2 Part C Route-wide Assessment, Chapter 7 Socio-economics, recreation and tourism**.
- 11.3.5 As outlined in the Scoping Report (Ref 4), the effects of the Projects operation and maintenance phases on the receptor groups outlined above are not likely to give rise to significant effects and are therefore scoped out of the assessment. However, acknowledging the Scoping Opinion (Ref 3), where significant effects have the potential to be felt, this is reported on as appropriate.

## 11.4 Assessment Methodology

- 11.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Socio-economic, recreation and tourism assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components are outlined below.
- 11.4.2 There is limited technical guidance available for Socio-economic, recreation and tourism assessments. As such, the methodology for assessing impacts has followed standard EIA guidance and entails:
- i. assessment of the likely scale, permanence and significance of effects associated with Socio-economics, recreation and tourism receptors; and
  - ii. an assessment of the potential cumulative impacts with other projects within the surrounding area.

### Assessment Assumptions and Limitations

- 11.4.3 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment**

**Methodologies and Scope.** There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 3.

- 11.4.4 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 11.5 Baseline Conditions

### Study Area

- 11.5.1 The Study Area for the assessment of Socio-economic, recreation and tourism effects varies dependent on the likely spatial extent of the effect under consideration, as agreed via the Scoping Opinion (Ref 3).
- 11.5.2 The proposed Study Areas for Section 3 is shown on:
- PEI Report Volume 2 Part B Section 3 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area;**
  - PEI Report Volume 2 Part B Section 3 Figure 11.2 Development Land Allocations and Open Space Within the Study Area;** and
  - PEI Report Volume 2 Part B Section 3 Figure 11.3 PRoW and Promoted Recreational Routes Within the Study Area.**
- 11.5.3 Professional judgement has been applied to determine the Study Area for each receptor type and is consistent with other similar linear nationally significant infrastructure projects.
- 11.5.4 **Table 11.2** below summarises the Study Areas considered for each receptor type that are considered within this Chapter.

Table 11.2 Study Areas

Receptor Type	Study Area
Local businesses – Indirect effects	Within 500 m of the draft Order Limits
Development land – Direct effects	Within the draft Order Limits
Development land – Indirect effects	Within 500 m of the draft Order Limits
Community facilities – Indirect effects	Within 500 m of the draft Order Limits
Open space – Direct effects	Within the draft Order Limits
Open space – Indirect effects	Within 500 m of the draft Order Limits
PRoW of local significance – Direct effects	Within the draft Order Limits
PRoW of local significance – Indirect effects	Within 500 m of the draft Order Limits
Users of promoted recreational routes – Direct effects	Within the draft Order Limits

Receptor Type	Study Area
Users of promoted recreational routes – Indirect effects	Within 500 m of the draft Order Limits
Aviation – Indirect effects	Within 5 km of the proposed overhead line alignment

- 11.5.5 The study area for aviation receptors is 5 km from the proposed overhead line infrastructure, as opposed to the draft Order Limits in their entirety. This is because of the nature of this specific receptor group, and the subsequent elements of the Project that has the potential to cause adverse or beneficial effects being limited to the placement of overhead line infrastructure only.
- 11.5.6 For the purposes of this assessment, direct effects can be defined as that which involve loss or severance of land and property. Indirect effects can be defined as impacts on the environment as a result of the Project. For example, a change in a persons' experience of a place.
- 11.5.7 The local labour market, effects on the construction workforce and tourism bed spaces, affected communities and strategic tourism attractions will be considered as part of the **PEI Report Volume 2 Part C Route Wide Chapter 7 for Socio-economics, recreation and tourism**, owing to the nature of the impacts which will be felt at a regional level.

## Data Collection

- 11.5.8 The following data has been used to inform the baseline conditions:
- Lincolnshire County Council Local Minerals and Waste Plan (Ref 1);
  - East Lindsey District Council Local Plan (Ref 2);
  - Ordnance Survey (OS) Open Greenspace (Ref 5);
  - OS Local Important Buildings (Ref 6);
  - OS AddressBase (Ref 7);
  - Traffic count data from surveys undertaken by Traffic and Movement, which include pedestrians, cyclists and equestrians;
  - Designated non-motorised user (NMU) routes and PRoWs from Sustrans (Ref 8 and Ref 9) and Local Authority Definitive Maps where applicable; and
  - Lincolnshire County Council definitive maps (Ref 10).

## Existing Baseline

- 11.5.9 The following section outlines the Socio-economics, recreation and tourism baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2**:
- PEI Report Volume 2 Part B Section 3 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area;**

- ii. **PEI Report Volume 2 Part B Section 3 Figure 11.2 Development Land Allocations and Open Space Within the Study Area;** and
- iii. **PEI Report Volume 2 Part B Section 3 Figure 11.3 PRow and Promoted Recreational Routes Within the Study Area.**

### Local businesses

- 11.5.10 **Table 11.3** identifies the local businesses, including farms and tourist accommodation, which fall within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 3 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area.**
- 11.5.11 Generally, local businesses in this area possess some economic value, with potential for substitution, and as such are assigned a Medium sensitivity.

**Table 11.3** Local businesses within the Study Area

Receptor	Description	Sensitivity
The Camping and Caravanning Club	At its closest point, this receptor is approximately 75 m from the draft Order Limits. The receptor is situated along Rye Lane.	Medium
Cottage Nurseries	At its closest point, this receptor is approximately 55 m from the draft Order Limits. The receptor is situated along 'The Lane' off of the A1104.	Medium
High Ash Boarding Kennels	At its closest point, this receptor is approximately 5 m from the draft Order Limits. The receptor is situated along Sutton Road.	Medium
Woodthorpe Leisure Park	At its closest point, this receptor is approximately 450 m from the draft Order Limits. The receptor is situated west of the B1373.	Medium

### Development land

- 11.5.12 For the purposes of assessment, 'development land' includes existing and proposed land used for above ground renewable energy generation (solar and onshore wind farms), alongside development land allocations set out in local planning policy.
- 11.5.13 **Table 11.4** identifies key development land allocations and above-ground renewable energy generation infrastructure (solar and onshore wind farms) which fall within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 3 Figure 11.2 Development Land Allocations and Open Space Within the Study Area.**
- 11.5.14 The Adapted Local Zone Coastal Development Order is considered to be strategic in nature, with limited potential for substitution, however as it is a planning tool used to

streamline development processes for holiday park development and associated facilities/works, it is considered to have a High sensitivity.

Table 11.4 Development land allocations, solar and onshore wind farms within the Study Area

Receptor	Description	Sensitivity
East Lindsey District Council Adapted Local Zone Coastal Development Order	The Adapted Local Zone Coastal Development Order is a planning tool used to streamline development processes in coastal areas. The allocation partly sits within the south east section of the draft Order Limits.	High

### Community facilities

- 11.5.15 **Table 11.5** below identifies the community facility which falls within the Study Area. This is also shown on **PEI Report Volume 2 Part B Section 3 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area**.
- 11.5.16 The identified community facility possesses some social and/or community value and would likely have limited potential for substitution in the immediately surrounding area. It is therefore considered to have a High sensitivity.

Table 11.5 Community facilities within the Study Area

Receptor	Description	Sensitivity
St Margarets Church	At its closest point, this receptor is approximately 385 m from the draft Order Limits. The receptor is situated along Church Lane.	High

### Open space

- 11.5.17 Open space, which includes all open space of public value, can take many forms, from formal sports pitches to open areas within a development, linear corridors and country parks (Ref 11).
- 11.5.18 **Table 11.6** below identifies the single area of open space, either allocated via the relevant local development plan or recognised as an area of green space by local communities, within the Study Area. This is also shown on **PEI Report Volume 2 Part B Section 3 Figure 11.2 Development Land Allocations and Open Space Within the Study Area**.
- 11.5.19 The Open Space surrounding Saleby Methodist Church falls within the Lincolnshire County Council administrative boundary. It should be noted that Saleby Methodist Church is currently disused and is therefore not considered a community facility. However, the grounds surrounding the disused church could be considered open space.
- 11.5.20 The identified Open Space surrounding Saleby Methodist Church possesses some social and/or community value with potential for substitution, and as such should be considered to have a Medium sensitivity.

- 11.5.21 It should be noted that the land at St Margaret's Church could also be considered to be an open space. However, it forms part of the religious grounds of the church, which has been considered a community facility in this assessment. As such, the open space has not been assessed again here to avoid double counting.

Table 11.6 Open space within the Study Area

Receptor	Description	Sensitivity
Open Space surrounding the disused Saleby Methodist Church	At its closest point, this receptor is approximately 15 m from the draft Order Limits. The receptor is situated along Rose Lane.	Medium

### Users of Public Rights of Way (PRoW) and promoted/recreational routes

- 11.5.22 This section of the baseline considers people using PRoW for walking, wheeling, cycling and horse-riding. PRoW have the same legal status and protection as highways and remain in existence until legally closed, diverted or extinguished. Routes are as identified through the Lincolnshire County Council definitive maps (Ref 10). These are also shown on **PEI Report Volume 2 Part B Section 3 Figure 11.3 PRoW and Promoted Recreational Routes Within the Study Area**.
- 11.5.23 Promoted recreational routes generally involve national cycle routes, the local cycle network, long-distance paths and national trails, which have also been identified within the Study Area. These have also been identified through the use of East Lindsey District Council (Ref 2) and Lincolnshire County Council (Ref 1) definitive maps, and desk-top research. Such routes, paths and trails generally follow alignments utilising combinations of PRoW.
- 11.5.24 PRoW are typically considered as:
- Public footpaths, open to walkers only.
  - Public bridleways, open to walkers, cyclists and horse-riders.
  - Restricted byways, open to walkers, cyclists, horse-riders, and drivers and riders of non-mechanically propelled vehicles (such as horse-drawn carriages).
  - Byways open to all traffic (BOATs), open to all including motor vehicles.
- 11.5.25 People using wheelchairs or mobility scooters can use all of the above designations.
- 11.5.26 Considering the potential sensitivity of these receptors, generally:
- National trails have a very high sensitivity because they are likely to be used for both commuting and recreational purposes, with daily/frequent use and the route has limited potential for substitution.
  - Other promoted recreational routes have a high sensitivity because they are likely to be well signed long distance/regional trails used daily/frequently for recreation.
  - Bridleways, footpaths, restricted byways and byways open to all traffic (BOATS) have a medium or low sensitivity because of their value to communities and subject to available alternative routes.



- 11.5.27 Relevant transport surveys are ongoing, which are reported in **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement**. At ES stage survey results will help further inform our consideration of sensitivity of routes by providing information about usage and condition, which are relevant to determining value and potential for substitution.
- 11.5.28 **Table 11.7** identifies the PRow in this Section by local authority area, its unique reference number relevant to the local authority definitive map(s), its proximity to the Project and its sensitivity. It should be noted that some PRow and recreational routes cross Section boundaries and they are reported within each of the Sections they are present within. To avoid the double counting of likely significant effects, where practicable, a receptor will only be assessed within the Section where there is the most adverse effect. Preliminary effects upon PRow during construction of the Project are assessed within **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement**.
- 11.5.29 All PRow below are within the East Lindsey District of Lincolnshire County and no additional promoted recreational routes have been identified within Section 3.

Table 11.7 PRow within the Study Area

Parish area	Receptor	Description	Sensitivity
<b>Lincolnshire County Council</b>			
Beesby with Saleby	Two Footpaths; Sale/281/1, Sale/290/1	There are two footpaths in Beesby with Saleby which interact with the draft Order Limits.	Medium
Beesby with Saleby	Eight Footpaths; Sale/284/3, Sale 284/1, Sale/280/1, Sale/284/1, Sale/281/2, Sale/284/2, Sale/281/3 and Sale/284/4	There are eight footpaths located within the Beesby with Saleby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Bilsby	Three Footpaths; Bils/74/3, Bils/74/1 and Bils/74/2	There are three footpaths located within the Bilsby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

### Aviation

- 11.5.30 No aviation receptors were identified within the Section 3 Study Area.

### Future Baseline

- 11.5.31 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and



operation are assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.

- 11.5.32 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. . This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 11.5.33 Population projections relevant to the local labour market and affected communities is considered as part of **PEI Report Volume 2 Part C Chapter 9 Socio-economics, recreation and tourism**, owing to the nature of the impacts which will be felt at a regional level.
- 11.5.34 The future baseline for local businesses, community facilities, open spaces, solar and wind farms, and visitor attractions over the medium to longer-term is uncertain beyond where allocated and planned development sites have been identified. Due to this uncertainty, it is assumed the future baseline for the Study Area would be unchanged from the current baseline to the completion of the Project, except where new development is expected to be delivered in line with allocated and planned development sites as set out above.

## 11.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 11.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 12) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 13) which apply to the design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 14) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 11.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project.

### Control Mitigation Measures

- 11.6.3 A Preliminary Code of Construction Practice (CoCP) is provided in **PEI Report Volume 3 Appendix 5A Draft Outline Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Socioeconomic, recreation and tourism assessment of Section 3 are:

- i. TT02 – All affected Public Rights of Way (PRoWs) will be identified, and any potential permanent or temporary closures detailed in the DCO. All designated PRoWs crossing the working area will be managed with access only closed for periods while construction activities occur. Any required diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns and will be subject to a PRoWMP. PRoWs crossing the working areas will be managed in discussion with the relevant local authorities and potential temporary closures applied for discussed with the relevant local authority. Access disruption would be reduced as reasonably practicable while construction activities occur.
- ii. NV01 - Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the CEMP.
- iii. GG08 - Land used temporarily will be reinstated where practicable to its pre-construction condition (including ALC grade) and use. Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, in consultation with the landowner.
- iv. GG11 - Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.

## Additional Mitigation Measures

- 11.6.4 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 11.6.5 Additional mitigation measures are not anticipated to be required in relation to Socio-economics, recreation and tourism effects. However, this will remain under review during the completion of further assessment and development of the ES.

## 11.7 Preliminary Assessment of Effects

- 11.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors identified within the Study Area, as a result of construction, operation and/or maintenance activities within Section 3 .
- 11.7.2 The preliminary assessment of effects reported below take into account the Design and Control mitigation measures previously described.
- 11.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 11.8**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 11.7.4 This PEI Report has assumed that following the implementation of all Design, Control and Mitigation Measures there is unlikely to be a significant intra-project cumulative

effect upon the amenity value of any Socio-economics, recreation and tourism receptors. This will be reviewed and updated accordingly at ES stage.

- 11.7.5 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction, Operation and Maintenance

- 11.7.6 No likely significant Socio-economic, recreation and tourism effects are expected as a result of the construction or the operation and maintenance of the Project within Section 3.

## Likely Non-Significant Effects

- 11.7.7 For completeness, **Table 11.8** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Socio-economics, recreation and tourism effects.
- 11.7.8 As outlined in the Scoping Report (Ref 4), the effects of the Project's operation and maintenance phases on the receptor groups outlined in **Table 11.2** are not likely to give rise to significant effects and are therefore scoped out of the assessment. However, acknowledging the Scoping Opinion (Ref 3) and the request to report on significant effects resulting from the Projects operation and maintenance phases where they do arise, National Grid has considered this as part of this assessment.
- 11.7.9 Owing to the nature of the operational and maintenance phases of the Project and acknowledging the mitigation that will be in place to ensure continued access, it is considered that there would be a negligible impact on all receptors assessed as part of Section 3. This is due to the fact that access will be maintained or reinstated for all receptors and amenity impacts will be minimised through the implementation of mitigation.
- 11.7.10 An assessment of the direct effects of the Project on users of PRoW and promoted recreational routes in relation to diversions, closures and management measures will be presented at ES stage in **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement**. This Socio-economics, recreation and tourism assessment, also at ES stage, will consider the in-combination effects of any proposed diversions and/or closures and changes to amenity value resulting from noise, visual and air quality impacts. The likely significance of effects will be determined at ES stage when the necessary information from all relevant topic specialists is available and confirmed, to help inform determination of the receptors' magnitude of change.

Table 11.8 Preliminary summary of non-significant Socio-economic, recreation and tourism effects – Section 3

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Local businesses</b>					
The Camping and Caravanning Club, Rye Lane	At its closest point, this receptor is located approximately 75 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a Medium sensitivity. It is anticipated that there would be a Small change likely given this receptors proximity to a proposed passing place, and a change in visual amenity owing to its location opposite the New LCS A. However, it is unlikely to impact the viability of its operations, and it is further assumed that access would be maintained at all times.
Cottage Nurseries The Lane	At its closest point, this receptor is located approximately 55 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a Medium sensitivity. It is anticipated that there would be a Small

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	impacts during construction.				change likely given its proximity to a proposed maintenance access line and other construction activities in the surrounding areas. It is assumed that access would be maintained at all times.
High Ash Boarding Kennels, Sutton Road	At its closest point, this receptor is located approximately 150 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a Medium sensitivity. It is anticipated that there would be a Small change likely by virtue of its proximity to the draft Order Limits and a proposed construction compound. It is assumed that access would be maintained at all times.
Woodthorpe Leisure Park	At its closest point, this receptor is approximately 450 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a Medium sensitivity. It is anticipated that there would be a Small change likely by virtue of its

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	impacts during construction.				proximity to the draft Order Limits and a proposed construction compound. It is assumed that access would be maintained at all times.
<b>Development land</b>					
Adapted Local Zone Coastal Development Order (grants planning permission for types of development including Holiday Park uses and ancillary facilities)	At its closest point, this receptor is located approximately 130 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore considered to have limited potential for substitution, and as such this receptor has been assigned a High sensitivity. It is anticipated that there would be a Small change likely by virtue of its proximity within the draft Order Limits, although it is not anticipated that this would affect the viability of the allocation following construction. It is also assumed that access would be maintained at all times.
<b>Community facilities</b>					
St Margarets Church, Church Lane	At its closest point, this receptor is located approximately 385 m from the draft Order Limits and may be	High	Small, adverse	Minor adverse, not significant	Community facilities have some social and/or community value and would likely have limited potential for substitution in

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				the immediate surrounding area and are therefore assigned a High sensitivity. It is anticipated that a Small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
<b>Open space</b>					
Open Space surrounding the disused Saleby Methodist Church, Rose Lane	At its closest point, this receptor is located approximately 35 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a Medium sensitivity. It is anticipated that there would be a Small change felt, given a proposed maintenance access route and other construction activities in the surrounding areas. It is assumed that access would be maintained at all times.



## **11.8 Monitoring**

- 11.8.1 The control measures set out in section 11.6 will secure a PRoWMP as part of the Preliminary CoCP. No further monitoring requirements have been identified at the time of writing over and above this requirement for the Socioeconomic, recreation and tourism assessment. This will be reviewed and updated accordingly as part of the ES.

# References

- Ref 1      Lincolnshire County Council, 2016. Lincolnshire Minerals and Waste Local Plan [online]. Available at: <https://www.lincolnshire.gov.uk/downloads/file/2361/core-strategy-and-development-management-policies> [Accessed 10 December 2024].
- Ref 2      East Lindsey District Council, 2018. East Lindsey District Council Local Plan [online]. Available at: [https://www.e-lindsey.gov.uk/media/9791/CoreStrategy/pdf/Final\\_Version\\_of\\_Core\\_Strategy\\_2018.pdf?m=1546595473230](https://www.e-lindsey.gov.uk/media/9791/CoreStrategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230) [Accessed 10 December 2024].
- Ref 3      The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 4      National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 5      Ordnance Survey, 2024. OS Open Greenspace [online]. Available at: <https://www.ordnancesurvey.co.uk/products/os-open-greenspace> [Accessed 24 September 2024].
- Ref 6      Ordnance Survey, 2024. OS OpenMap Local Important Buildings [online]. Available at: <https://www.ordnancesurvey.co.uk/products/os-open-map-local> [Accessed 24 September 2024].
- Ref 7      Ordnance Survey, 2024. OS AddressBase [online]. Available at: <https://www.ordnancesurvey.co.uk/products/addressbase> [Accessed 24 September 2024].
- Ref 8      Sustrans (no date). Temporary diversions of National Cycle Network routes [online]. Available at: <https://www.sustrans.org.uk/for-professionals/infrastructure/temporary-diversions-of-national-cycle-network-routes/> [Accessed October 2024]
- Ref 9      Sustrans (no date) Sustrans traffic-free routes and greenways design guide [online]. Available at: <https://www.sustrans.org.uk/for-professionals/infrastructure/sustrans-traffic-free-routes-and-greenways-design-guide/> [Accessed October 2024].
- Ref 10     Lincolnshire County Council (no date). Lincolnshire Public Rights of Way [online]. Available at: <https://www.lincolnshire.gov.uk/coast-countryside/public-rights-way/2?documentId=129&categoryId=20101> [Accessed 5 March 2025].
- Ref 11     Department for Levelling Up, Housing and Communities (2014). Guidance: Open space, sports and recreation facilities, public rights of way and local green space [online]. Available at: <https://www.gov.uk/guidance/open-space-sports-and-recreation-facilities-public-rights-of-way-and-local-green-space> K [Accessed 20 February 2025].

- Ref 12 National Grid (no date) The Holford Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 13 March 2025].
- Ref 13 National Grid (no date) Horlock Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 13 March 2025].
- Ref 14 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 3 March 2025].

# 12. Air Quality

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# 12. Air Quality

## 12.1 Introduction

- 12.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Air Quality assessment for the New Lincolnshire Connection Substations A and B Section (Section 3) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (Section 12.1);
  - ii. Identification of key local and regional policy relevant to the assessment (section 12.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
  - iii. A summary of the assessment scoping process and resulting scope of the Air Quality assessment (section 12.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
  - iv. A high-level summary of the methodology of the Air Quality assessment within Section 3 (section 12.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
  - v. A description of the environmental baseline within the Section 3 Study Area relevant to the assessment (section 12.5);
  - vi. A description of mitigation measures included for the purposes of the assessment reported within the PEI Report (section 12.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
  - vii. The likely significant and non-significant Air Quality effects arising during construction and operation of the Project within the Section 3 Study Area, based upon the assessment completed to date (section 12.7); and
  - viii. An outline of the proposed monitoring requirements in relation to Air Quality (section 12.8).
- 12.1.2 Further supporting information is set out in **Table 12.1**, including supporting figures and technical appendices.

Table 12.1 Supporting documentation

Supporting Information	Description
<b>Topic Specific Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Figures	Figure 12.1 Construction Dust Study Area Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations
<b>Project Supporting Documentation</b>	
PEI Report Volume 2 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 3, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2.1Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific Sections of the Project.
PEI Report Volume 3 Part A Appendix 2.2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	A summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.
PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice	Sets out control and management measures that will be undertaken during construction of the Project if granted consent. The final Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application



- 12.1.3 There are also interrelationships between the potential effects on Air Quality and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 3 Chapter 4 Ecology and Biodiversity** assesses the potential for changes in Air Quality to effect ecological receptors, such as increases in pollutant concentrations or dust deposition.
  - ii. **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement** assesses the potential change in traffic movements during construction and operation, which are relevant to the assessment of Air Quality effects associated with vehicle emissions.
  - iii. **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** assesses potential effects upon local businesses and recreational areas that could be affected by changes in air quality acting in combination with other impacts to result in effects upon amenity.
  - iv. **PEI Report Volume 2 Part B Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
  - v. **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** assesses the potential effects of changes in Air Quality upon health and wellbeing.
  - vi. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

## 12.2 Legislation and Policy Framework

### Legislation and National Policy Framework

- 12.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 3 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, details of which are set out in **Table 12.1**.

### Regional and Local Policy

- 12.2.2 Regional and local plans or policies relevant to this assessment are as follows.
- i. East Lindsey Council Local Plan Core Strategy (Adopted 2018) (Ref 1):
    - Strategic Policy 24 (SP24) – Biodiversity and Geodiversity: which, while it does not seek to control local Air Quality or emissions to air, recognises that protected ecological sites may be highly susceptible to changes in air pollution from increased traffic movements.

## 12.3 Scope of Assessment

- 12.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 2) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). A summary of the Scoping Opinion together with a response against each point of relevance to the Air Quality chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**.
- 12.3.2 Non statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 12.3.3 The scope of the assessment considers the impact of:
- i. Dust from on-site construction activities (including enabling works) and off-site trackout by construction vehicles on sensitive (human and ecological) receptors. The main potential impacts are dust soiling (which can lead to the loss of amenity) and the deterioration of human health (as a result of increases in concentrations of Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)).
  - ii. Vehicular tail-pipe emissions containing air pollutants released by construction, operation and maintenance vehicles associated with the Project using the local road network. The emissions from vehicles include but are not limited to Nitrogen Oxides (NO<sub>x</sub>) (comprising Nitrogen Monoxide, NO, and Nitrogen Dioxide, NO<sub>2</sub>), Ammonia (NH<sub>3</sub>) and Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Emissions from vehicles also include those associated with brake and tyre wear.
- 12.3.4 The projected number, type and location of plant and Non-Road Mobile Machinery (NRMM), as well information on the duration and change in traffic flows associated with planned diversions including proposed routes, are yet to be determined. An assessment of any associated effects will be included in the ES, in accordance with the Scoping Opinion (Ref 2). However, these details are not included within the PEI Report and as such no assessment of NRMM emissions and planned traffic diversions has been completed at this stage.

## 12.4 Assessment Methodology

- 12.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Air Quality assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned in the assessment. A summary of the key components is outlined below.
- 12.4.2 This PEI Report chapter presents a baseline appraisal of Air Quality within Section 3. It assesses the impact of dust and PM<sub>10</sub> on human and ecological receptors before concluding whether the effects are likely to be significant or not.
- 12.4.3 The assessment of construction dust impacts has been undertaken in line with IAQM Guidance on the Assessment of Dust from Demolition and Construction (Ref 4). This guidance provides a risk-based approach to the assessment of the potential for dust impacts from four types of activities taking account of the sensitivity of the environment surrounding the works: demolition; earthworks; construction; and trackout (the movement of dust/mud onto the public highway via construction vehicles) on sensitive (human and ecological) receptors.

- 12.4.4 For the purposes of the PEI report, an initial screening assessment of construction traffic flows has been completed based upon preliminary construction traffic projections. Projected changes Annual Average Daily Traffic (AADT) flows for both Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) have been screened to determine where detailed assessment (using dispersion modelling) is likely to be required, the findings of which will be reported in the ES submitted with the DCO application. This screening exercise is intended to provide an indication of where there is greatest potential for changes in Air Quality as a result of construction traffic, but it is noted that no dispersion modelling has been completed at this stage.
- 12.4.5 The impact of construction traffic vehicle emissions on sensitive (human and ecological) receptors within 200 m of affected roads will be considered, beyond this distance no significant effects are expected (Ref 5).
- 12.4.6 Where changes in traffic flows resulting from the construction of the Project meet the assessment criteria within the EPUK/IAQM Land Use Planning & Development Control guidance (Ref 6) and set out below, then detailed dispersion modelling will be undertaken to determine the impact on existing human sensitive receptors:
- i. a change in Light Duty Vehicle (LDV)<sup>1</sup> flows of more than 100 AADT, vehicles/day within or adjacent to an Air Quality Management Area (AQMA) or more than 500 AADT elsewhere; and
  - ii. a change in Heavy Duty Vehicle (HDV) (>3.5 tonnes)<sup>2</sup> flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere.
- 12.4.7 Based on an initial review of the draft Order Limits and the existing road network that may be used by construction traffic to access the Project, the assessment of vehicle emission impacts on ecological sensitive receptors within 200 m of the affected roads may be required as there are a number of road links where the predicted change in HDV flows (of 200 AADT) exceeds the change criteria outlined within the IAQM's Guide to the assessment of Air Quality Impacts on Designated Nature Conservation Sites (Ref 7). There are no road links where the projected change in total traffic (LDV + HDV) flows exceeds the 1000 AADT criteria also given in the IAQM guidance.
- 12.4.8 An initial review of operation/maintenance vehicle movements associated with the Project has also been undertaken against the EPUK/IAQM screening criteria described above (Ref 6) for human sensitive receptors and the IAQM criteria (Ref 7) for ecological sensitive receptors.
- 12.4.9 Once updated construction and operational/maintenance traffic data is made available, projected changes in traffic flows as a result of the Project will be re-screened against the criteria within the EPUK/IAQM and IAQM guidance. A detailed assessment of impacts will be undertaken where traffic flows exceed the criteria and reported within the ES.

## Assessment Assumptions and Limitations

- 12.4.10 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment**

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<sup>1</sup> Light Duty Vehicles = cars and Light Goods Vehicles (LGVs)

<sup>2</sup> Heavy Duty Vehicles = Heavy Goods Vehicles (HGVs) plus Public Service Vehicles, e.g., buses and coaches.

**Methodologies and Scope.** There are no additional limitations and assumptions that have been identified within this Section.

- 12.4.11 These key parameters and assumptions will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

## 12.5 Baseline Conditions

### Study Area

#### Construction Dust

- 12.5.1 For construction phase dust impacts, the Study Area has been defined by the screening criteria from the IAQM guidance (Ref 4) and additional guidance given by Natural England during the Scoping Opinion (Ref 2). The construction dust Study Area is shown within **PEI Report Volume 2 Part B Section 3 Figure 12.1 Construction Dust Study Area** and is dictated by the screening criteria below:
- human receptors within the draft Order Limits plus those within the surrounding area extending 250 m from the draft Order Limits, or within 50 m of the proposed routes used by construction traffic on the public highway or up to 250 m from a site entrance; and
  - ecological designated sites within the draft Order Limits plus those within the surrounding area extending 200 m from the draft Order Limits, or within 50 m of the proposed routes used by construction traffic on the public highway or up to 250 m from a site entrance. The 200 m screening distance from the draft Order Limits is more conservative than that stipulated in the IAQM guidance (Ref 4), and has been used following the advice given by Natural England within their Scoping Opinion consultation response (Ref 2).
- 12.5.2 Background NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations presented in the baseline assessment for the existing and future years have been extracted from Defra's background maps<sup>3</sup> (Ref 8) for the area extending 500 m from the draft Order Limits.
- 12.5.3 Where ecological receptors have been identified within 200 m of the draft Order Limits, baseline data for pollutants which affect nutrient nitrogen deposition, such as NH<sub>3</sub> concentrations and nitrogen deposition rates, have been taken from Air Pollution Information System (APIS) (Ref 9) along with acid deposition rates and the relevant critical levels and loads for the designated sites.
- #### Road Traffic Emissions
- 12.5.4 The Section 3 Study Area for the assessment of impacts upon human receptors due to road traffic emissions associated with the Project has been defined with reference to the criteria given in the EPUK/IAQM guidance described in section 12.4

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<sup>3</sup> Defra's background maps of modelled air pollutant concentrations are provided on a 1 km x 1 km basis for the whole of the UK. To capture the grid squares that fall within the draft Order Limits boundary and those immediately adjacent, a 500 m buffer has been applied.

Methodology (Ref 6). The Section 3 Study Area comprises any roads where these criteria are exceeded, and any human receptors within 200 m of these roads. The Section 3 Study Area described within this chapter will be updated as required for the ES, based upon further analysis of traffic projections for the Project.

- 12.5.5 The Section 3 Study Area for the assessment of impacts upon ecological receptors due to road traffic emissions associated with the Project includes ecological sensitive receptors within 200 m of any road links where the projected changes in traffic flow exceed IAQM guidance thresholds (Ref 7).
- 12.5.6 Roadside concentrations from local authority monitoring sites within 200 m of the routes within the Section 3 Study Area that are expected to be used by construction and operational/maintenance traffic have therefore been used to determine baseline conditions.

## Data Collection

- 12.5.7 The following data has been used to inform the baseline conditions along with those outlined in **PEI Report Volume 2 Part A Chapter 5 Project Description**:
- i. Defra's Background Maps (based on a 2021-base year) (Ref 8)
  - ii. Air Pollution Information System (APIS) (Ref 9);
  - iii. Defra's AQMA dataset (Ref 10);
  - iv. Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref 11);
  - v. Local Air Quality Management Reports (Ref 12);
  - vi. Ordnance Survey (OS) AddressBase Plus dataset;
  - vii. Google Earth Imagery; and
  - viii. Data on Part A1<sup>4</sup> Permitted Installations held by the Environment Agency and Part A2 and B<sup>5</sup> Installations held by the local authorities within the Section 3 Study Area (Ref 13, Ref 14).
- 12.5.8 As previously stated, preliminary projections of changes in traffic flows as a result of the project have been used to complete an initial screening exercise. Further detail regarding traffic data is provided within **PEI Report Volume 2 Part B Section 3 Chapter 9 Traffic and Movement** and supporting appendices.

## Existing Baseline

- 12.5.9 The following section outlines the Air Quality baseline for the Section 3 Study Area. There are two main potential sources of air pollution associated with the Project, construction dust emissions and construction road traffic emissions. The baseline presented is therefore based upon an assessment of likely background

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<sup>4</sup> Large-scale industrial processes emitting to land, air and/or water.

<sup>5</sup> This would relate to smaller industrial processes regulated by the Local Authority under the Pollution Prevention and Control guidance, including Part A2 processes (which may release to land, air and water) or Part B processes (which only release to air).



concentrations of NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> taken from Defra modelled data and a review of available local authority monitoring data.

- 12.5.10 The baseline section should be read in conjunction with **PEI Report Volume 2 Part B Section 3 Figure 12.1 Construction Dust Study Area**.
- 12.5.11 The Section 3 Study Area is rural in nature and land use largely consists of open agricultural (arable) land. There are human sensitive receptors within the Section 3 Study Area and these are generally located within small settlements in proximity to the draft Order Limits. For example, there are human sensitive receptors within the villages of Saleby and Thoresthorpe which are located to the north and south respectively, at the approximate mid-point of the overhead line linking the New LCS A and the New LCS B. The New LCS B is located to the north east of human sensitive receptors within the village of Bilsby. The New LCS A site is located within a more remote location south of Rye Lane. Human sensitive receptors in this locality are limited to individual properties associated with agricultural land holdings.
- 12.5.12 There is a designated ecological site which is sensitive to effects due to construction dust, Mother and Greenfield Woods (Local Wildlife Site) and Hornby/Mother Woods (Ancient Woodland) adjacent to the New LCS A.

#### **Local authority Air Quality monitoring data**

- 12.5.13 East Lindsey District Council (ELDC) only monitors NO<sub>2</sub> concentrations (Ref 12). The Council's 2024 Annual Status Report (ASR) (Ref 12) states that there are no AQMAs within their administrative area.
- 12.5.14 ELDC monitors NO<sub>2</sub> concentrations exclusively using 10 passive diffusion tubes (including two triplicate sites). Whilst none of the monitoring sites are located within 200 m of construction traffic routes, the available data indicate NO<sub>2</sub> concentrations are below the annual mean AQO. Therefore, it is anticipated that levels within 200 m of the construction traffic routes (where monitoring is not currently undertaken) will also be below the AQO of 40 µg/m<sup>3</sup>.
- 12.5.15 No automatic NO<sub>2</sub> monitoring is undertaken nor are PM<sub>10</sub> and PM<sub>2.5</sub> monitored, therefore current baseline (2024) concentrations have been derived from modelled estimates of background concentrations provided by Defra (**Table 12.2**). These are unlikely to be fully representative of roadside NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> concentrations, but given prevailing levels are lower than the standards, it is unlikely that roadside concentrations would exceed the relevant objectives.
- 12.5.16 A review of permitted industrial sources within 2 km of the draft Order Limits has been undertaken (Ref 13, Ref 14). 20 industrial sources were identified within the Section 3 Study Area however, they are unlikely to substantially contribute to dust and PM<sub>10</sub> levels within the Section 3 Study Area as those present will have limits on emissions to air imposed by the relevant regulator. These sources are represented within the background concentrations outlined within **Table 12.2**.

#### **Background Air Quality data**

- 12.5.17 **Table 12.2** displays the arithmetic mean, minimum and maximum of modelled annual mean background pollutant concentrations of NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for 2024 within the Section 3 Study Area (Ref 8).

Table 12.2 2024 modelled Defra background concentrations within the Section 3 Study Area

Average (Minimum - Maximum) 2024 Annual Mean Concentration (µg/m³)			
NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
7.2 (7.1 - 7.3)	5.7 (5.6 - 5.8)	12.5 (11.5 - 13.0)	5.5 (5.4 - 5.7)

- 12.5.18 The background concentrations of NO<sub>2</sub> and PM<sub>10</sub> are generally low within the Section 3 Study Area, which is under half of the limit value of 40 µg/m³ for both pollutants.
- 12.5.19 The background NO<sub>x</sub> concentrations (relevant to ecological receptors) are also generally low within the Section 3 Study Area. There is one ecological site of local, national or international importance within Section 3, this is Hornby/Mother Woods (Ancient Woodland) which is located on the northwestern border of the draft Order limits. The average NO<sub>x</sub> concentration across the Section 3 Study Area is 7.2 µg/m³ which falls below the critical level for the protection of vegetation of 30 µg/m³.
- 12.5.20 Concentrations of PM<sub>2.5</sub> are below the relevant limit value (20 µg/m³) where the average concentration within the Section 3 Study Area is 5.5 µg/m³. PM<sub>2.5</sub> is the pollutant for which background concentrations are closest to the limit value in 2024.
- 12.5.21 **Table 12.3** below shows the NH<sub>3</sub> critical level and concentration, nitrogen and acid deposition rates and critical loads relevant to the assessment of Air Quality effects upon ecological sensitive receptors (Hornby/Mother Woods Ancient Woodland and Mother and Greenfield Woods Local Wildlife Site) identified within the Section 3 Study Area. Both sites are situated across the same grid squares (Ref 9) and are classified as broadleaved, mixed and yew woodland. As such they are presented together in **Table 12.4**.



Table 12.3 Ammonia critical level and concentration, nitrogen and acid deposition rates and critical loads for the ecological sites within the Section 3 Study Area

Ecological Site (Grid Reference X, Y)	2020 - 2022 Average Concentration					
	Ammonia Critical Level ( $\mu\text{g}/\text{m}^3$ )*	Ammonia Concentration ( $\mu\text{g}/\text{m}^3$ )	Nitrogen Deposition Rate (kg N/ha/yr)	Nitrogen Deposition Critical Load Range (kg N/ha/yr)	Acid Deposition Rate (keq/ha/yr)	Acid Deposition Critical Load (CLmaxS/CLminN/CLmaxN) (keq/ha/yr)
<b>Hornby/Mother Woods (Ancient Woodland) and Mother and Greenfield Woods (Local Wildlife Site)<sup>1</sup></b>						
542500, 378500	1 - 3	1.52	28.49	10 - 15	1.78 (N:2.04   S: 0.17)	2.29/0.357/2.647
543500, 377500	1 - 3	1.55	28.57	10 - 15	1.78 (N:2.04   S: 0.17)	2.289/0.357/2.646
543500, 378500	1 - 3	1.56	28.46	10 - 15	1.78 (N:2.03   S: 0.16)	2.288/0.357/2.645
<p>Note:</p> <p>*The <math>\text{NH}_3</math> critical level is <math>3 \mu\text{g}/\text{m}^3</math> unless lichens and bryophytes are known to be present in which case it reduces to <math>1 \mu\text{g}/\text{m}^3</math>.</p> <p><sup>1</sup>The habitat has been defined as broadleaved mixed and yew woodland for which the corresponding Critical Levels and Loads are reported.</p>						

- 12.5.22 **Table 12.3** shows that the average NH<sub>3</sub> concentration is above the lower critical level of 1 µg/m<sup>3</sup>. The predicted nitrogen deposition rate exceeds the upper critical load. The total acid deposition is below the minimum critical level.

### Summary

- 12.5.23 Overall, the Air Quality in the Section 3 Study Area is very good. There are no exceedances of the annual mean NO<sub>2</sub> objective in the Local Authority monitoring data and the background concentrations within the Section 3 Study Area are low in comparison to the Air Quality objectives.
- 12.5.24 The current predicted NH<sub>3</sub> concentrations and nutrient nitrogen deposition rates are above their respective lower critical level and upper critical load for the designated site identified within the Section 3 Study Area. Acid deposition rates are below the respective critical load.

### Future Baseline

- 12.5.25 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be completed prior to construction of the Project.
- 12.5.26 At this preliminary stage, a full assessment of the implications of any committed developments with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Chapter 4 Approach to Preliminary Environmental Information Annex I Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES.
- 12.5.27 Projected background air pollutant concentrations available from a base year of 2021 (Ref 8) have been used to determine future baseline conditions. Levels of NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are predicted to improve over time due to reductions in emissions resulting from:
- reductions in transport exhaust gas pollutants due to improvements in fuel efficiency and the uptake of low emission vehicles;
  - the reduction in the use of fossil fuels prior to the ban on the sale of new petrol and diesel cars in the UK by 2030;
  - reductions in pollutant emissions from agricultural sources due to improvements in management envisaged in the 2019 Clean Air Strategy (Ref 15); and
  - improved emission standards for NRMM and static generators.
- 12.5.28 As concentrations of air pollutants are projected to decrease with time, the earlier the assessment year the higher the level of projected background pollution. Therefore, the earlier the assumed opening year, the more conservative the assessment result. The earliest year by which the Project could potentially be operational is 2033 and construction is predicted to begin in 2029. Therefore, 2029 air pollutant data have

been used to provide a conservative representation of opening year background concentrations (Ref 8).

- 12.5.29 The arithmetic mean, minimum and maximum of predicted pollutant concentrations for the future baseline Section 3 Study Area for 2029, is shown in **Table 12.4**. There are reductions in both NO<sub>2</sub> and NO<sub>x</sub> levels within the Section 3 Study Area compared to the 2024 forecast as shown in **Table 12.2**. There is a steady reduction in both NO<sub>x</sub> and NO<sub>2</sub> concentrations of about 0.8 – 1.1 µg/m<sup>3</sup>, whilst there is a reduction in PM<sub>10</sub> and PM<sub>2.5</sub> of 0.3 – 0.4 µg/m<sup>3</sup>.

Table 12.4 2029 modelled Defra background concentrations within the Section 3 Study Area

Average (Minimum - Maximum) 2029 Annual Mean Concentration (µg/m <sup>3</sup> )			
NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
6.1 (6.0 - 6.2)	4.9 (4.8 - 4.9)	12.1 (11.1 - 12.6)	5.2 (5.1 - 5.3)

## 12.6 Design, Control and Additional Mitigation Measures

### Design Mitigation Measures

- 12.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the ‘Holford Rules’ (Ref 17) applicable to routing of new overhead lines and the ‘Horlock Rules’ (Ref 18) which apply to design and siting of substations. These approaches are explained in further detail within the **Corridor Preliminary Routeing and Siting Study (CPRSS)** (Ref 16) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 12.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 3. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- maximising separation between sensitive receptors and the proposed temporary and permanent access roads as far as practicable. This evolving process has ensured that the number of receptors exposed to impacts associated with the Project has been minimised:
  - rerouting of a haul road and movement of a pylon location around a priority habitat area. This limited the potential impact on the priority habitat area from pollutants from vehicle emissions and dust associated with the construction of the overhead line.
- 12.6.3 Where required, Environmental Mitigation Areas have also been embedded in the design based upon an iterative process informed by ongoing environmental assessment. Such measures typically constitute the inclusion of additional features

which specifically serve a mitigation function, to reduce the scale of potential impacts. For Air Quality such measures include:

- i. Screening and filtering vegetation which, while primarily included to limit visual intrusion (for landscaping purposes), may also have a benefit to Air Quality in terms of screening receptors and minimising the impact of dust and air pollutants emitted by construction site activities.

## Control Mitigation Measures

12.6.4 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The general control measures relevant included within the Preliminary CoCP relevant to the Air Quality assessment for Section 3 include:

- i. GG01: The Project will be compliant with all relevant legislation, consents and permits.
- ii. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerks of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The Environmental Clerks of Works will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The Environmental Clerks of Works will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
- iii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
  - pollution prevention and pollution incident response;
  - dust management and control measures;
  - location and protection of sensitive environmental sites and features;
  - adherence to protected environmental areas around sensitive features;
  - working hours and noise and vibration reduction measures;
  - working with potentially contaminated materials;
  - waste management and storage;
  - flood risk response actions;
  - agreed traffic routes, access points, etc.;
  - soil management; and
  - drainage management.
- iv. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management

Plan (MWMP), a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (WSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), DrMP along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans.'

- v. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans.
- vi. GG10: The name and contact details for the Project will be displayed at the entrance to all compounds. This will include an emergency number.
- vii. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
- viii. GG13: Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. Electric, or other low carbon plant and equipment should be used where available and where practicable
- ix. GG14: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including excavated materials, drop heights will be limited.
- x. GG18: Wheel washing facilities will be provided at each main compound, where appropriate. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- xi. GG19: Earthworks and stockpiled soil will be managed as per the SMP.
- xii. GG20: Bonfires and the burning of waste material will be prohibited.

12.6.5 The control and management measures included within the Preliminary CoCP specific to Air Quality include:

- i. AQ01: Dust management measures will be set out in the Dust Management Plan (DMP) as part of the CEMP. This will be specific to particular phases of the Project. The DMP, will include, but not be limited to the following:
  - Communications to include display of the name and contact details of person(s) accountable for Air Quality and dust issues on the site boundary.
  - Daily on-site and off-site inspections will be undertaken by the Contractor(s), where receptors are nearby, to monitor dust. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of the site boundary, with cleaning to be provided if necessary. The frequency of site inspections will be increased by the person accountable for Air Quality and dust issues on-site when activities with a high potential to

produce dust are being carried out, during prolonged dry or windy conditions or in response to complaints or an incident resulting in dust emissions. Inspection results will be recorded, and an inspection log made available to the local authority upon request.

- Site management will document all dust and Air Quality complaints, identify causes and take measures to reduce emissions in a timely manner, and record the measures taken.
  - Preparation and management of the site ensuring that machinery and dust causing activities are located as far as possible away from receptors, screens/barriers are erected around dusty activities/materials and are at least as high as any stockpiles, use wet methods to keep site fencing, barriers and scaffolding clean, remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site where they must be covered, seeded, or fence stockpiles used to prevent wind whipping.
  - Monitoring and inspections to include evolving evaluation of Project phases as required and practicable.
  - Construction operations will only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, for example, suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- ii. AQ03: During construction, bulk cement and other fine powder materials are to be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. Sand and other aggregates are to be stored in bunding areas and not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate control measures to reduce dust are in place. For smaller supplies of fine powder materials, bags are to be sealed after use and stored appropriately. Scabbing (roughening of concrete surfaces) will be avoided if possible.
- iii. AQ04: The contractor is to inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- iv. AQ05: To minimise the impact from trackout, on-site activities will:
- Impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures, subject to the approval of the nominated undertaker and in agreement with the local authority, where appropriate).



- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
  - Avoid dry sweeping of large areas.
  - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
  - Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
  - Record all inspections of haul routes and any subsequent action in the site log book.
  - Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
  - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
  - Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
  - Access gates to be located at least 10 m from receptors where possible.
- v. AQ06: Dust pollution from earthworks activities will be limited through the use of the following measures, as appropriate:
- Topsoil will be stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with run-off or dust generation.
  - Hessian, mulches, or tackifiers will be used where it is not possible to re-vegetate or cover with topsoil as soon as practicable.
  - Materials will be compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats.
  - Cover will only be removed in small areas during work and not all at once.
  - Soil spreading, seeding, planting or sealing of completed earthworks will be undertaken as soon as reasonably practicable following completion of the earthworks.
- vi. AQ07: Operating vehicle/machinery will follow the below:
- Construction vehicles will be required to meet Euro VI emissions standards which reduce NO<sub>x</sub> and PM<sub>10</sub> emissions.
  - All NRMM with an engine power rating of 37 kW to 560 kW will be required to meet Euro Stage IV standards as a minimum.
  - Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable to limit emissions from plant and NRMM.



- Low and zero emission vehicles will be used where possible for site use.
- Produce a Construction Logistics Plan to manage the sustainability of goods and materials.
- Implement a Construction Workforce Travel plan to support and encourage sustainable travel.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- All vehicles, plant and NRMM will be regularly inspected, serviced and maintained.

## Additional Mitigation Measures

- 12.6.6 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 12.6.7 Additional mitigation measures are not anticipated to be required in relation to Air Quality effects. However, this will remain under review during the completion of further assessment and development of the ES.
- 12.6.8 It is however noted that additional environmental mitigation which has been proposed to reduce effects upon visual amenity and ecology and biodiversity may also reduce impacts upon Air Quality. This includes screening vegetation which, while primarily included to limit visual intrusion (for landscaping purposes), may further reduce potential Air Quality in impacts by filtering dust and air pollutants emitted by construction site activities.
- 12.6.9 No additional mitigation measures specifically relating to Air Quality effects have been assumed within the Preliminary Assessment of Effects reported in the following section.

## 12.7 Preliminary Assessment of Effects

- 12.7.1 The following section presents the findings of the preliminary assessment of effects upon the relevant Air Quality receptors identified within the Section 3 Study Area, as a result of construction, maintenance and/or operational activities within Section 3.
- 12.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described.
- 12.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 3 Part B Section 3 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 12.10**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**
- 12.7.4 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project. This is particularly relevant to the further assessment of the likely Air Quality effects of changes in traffic flow due to the Project. A full assessment will be included within the ES submitted with the DCO application.

## Likely Significant Effects

### Construction

#### Construction Dust

- 12.7.5 The preliminary assessment presented indicates that no significant effects are likely due to construction dust and PM<sub>10</sub>. Further rationale is provided in the following sections in relation to non-significant effects.

#### Construction Traffic Emissions

- 12.7.6 The methodology followed for predicting the construction traffic flows is given in **PEI Report Part B Volume 2 Section 3 Chapter 9 Traffic and Movement**. Construction traffic flows (in terms of LGVs and HGVs) have been provided for the current year of 2024 and 2031, which is anticipated to be the busiest period of vehicle movements.
- 12.7.7 Initial screening of the projected construction traffic flows against the EPUK/IAQM change criteria (for human sensitive receptors) and the IAQM criteria (for ecological sensitive receptors) has been undertaken. The road links where the criteria are exceeded in ELDC local authority area are shown in **PEI Report Volume 2 Part B Section 3 Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations** and presented in **Table 12.5**.
- 12.7.8 Based on the initial screening, 19 road links which form parts of the A16, A158, A18, A1104, A157 and A1111 are expected to exceed the EPUK/IAQM criteria for human sensitive receptors. Given these links are located outside an AQMA, the relevant criteria are:
- i. a change in LDV flows of more than 500 AADT; and/or
  - ii. a change in HDV flows of more than 100 AADT.
- 12.7.9 The initial screening has also identified road links which exceed the IAQM screening criteria for ecological sensitive receptors. The relevant criteria are:
- i. a change in total traffic flows greater than or equal to 1000 AADT; and/or
  - ii. a change in HDV flows greater than or equal to 200 AADT.

Table 12.5 Road Links exceeding the relevant assessment criteria – Construction Traffic

Link ID	Road Name	2024 Baseline		2031 Future Baseline		2031 Construction		
		AADT (total vehicles/day)	HGV (vehicles/day)	AADT (total vehicles/day)	HGV (vehicles/day)	Change in AADT Flows (total vehicles/day)	Change in LGV Flows (vehicles/day)	Change in HGV Flows (vehicles/day)
CR7	A16	7666	547	8238	588	414	58	356
CR8	A16	5136	468	5519	502	513	173	340
CR25	A158	7117	365	7648	392	360	20	340
CR6-1	A16	17509	1005	18814	1080	455	115	340
CR6-2	A16	12065	886	12964	952	453	113	340
CR6-3	A16	13149	890	14128	956	536	196	340
CR6-4	A16	9000	830	9671	892	564	225	340
CR9-2	A16	11306	638	12148	685	310	146	164
CR9-1	A16	8663	707	9309	760	319	155	164
CR9-3	A16	5592	425	6008	457	242	78	164
CR18-1	A18	3621	466	3854	496	506	22	484
LK8	A1104	9440	360	10143	387	608	331	278
LK7	A1104	6804	888	7311	955	554	276	278
LK5	A157	6745	340	7248	365	305	189	116
LK11	A158	10589	358	11378	385	124	2	122
LK10	A1111	0	0	0	0	458	293	165

Link ID	Road Name	2024 Baseline		2031 Future Baseline		2031 Construction		
		AADT (total vehicles/day)	HGV (vehicles/day)	AADT (total vehicles/day)	HGV (vehicles/day)	Change in AADT Flows (total vehicles/day)	Change in LGV Flows (vehicles/day)	Change in HGV Flows (vehicles/day)
LK80	A1111	2336	285	2510	306	461	320	141
LK9-1	A1104	4624	481	4969	517	202	89	113
LK81-1	A158	20683	488	22224	524	111	11	100

Note:

All traffic data presented in the table has been rounded to the nearest whole number.

- 12.7.10 Human and ecological sensitive receptors adjacent to road links where the projected change in traffic flows due to construction of the Project do not exceed the EPUK/IAQM and IAQM criteria have been screened out of any further assessment and therefore significant effects at these locations are unlikely.
- 12.7.11 Finalised traffic projections produced in support of the ES will, however, be rescreened to confirm that changes in traffic flows due to construction of the Project exceed the relevant criteria. Where this is the case, a detailed assessment involving dispersion modelling will be undertaken and reported in the ES, based upon the methodology summarised in section 12.5 and detailed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 12.7.12 It is noted that vehicle movements during construction of the Project will vary throughout the construction programme, with relatively short peaks in LGV and HGV movements, associated with workforce travel and the import/export of construction materials respectively. It is assumed that any peak in HGV movements will be short in duration.
- 12.7.13 Notwithstanding, at receptors within 200m of those road links identified in **Table 12.5**, significant effects due to changes in Air Quality cannot be ruled out at this stage, in the absence of detailed dispersion modelling results.

### Operation

It is currently predicted that the operational and maintenance traffic flows will fall below the EPUK/IAQM change criteria (for human sensitive receptors) and the IAQM criteria (for ecological sensitive receptors). However, screening against both the EPUK/IAQM and IAQM screening criteria will be undertaken at the ES Stage.

## Likely Non-Significant Effects

### Construction dust assessment

- 12.7.14 **PEI Report Volume 2 Part B Section 3 Figure 12.1 Construction Dust Study Area** shows the construction dust Study Area. The construction of the new 400 kV overhead line and substations would generally follow the sequence outlined in **PEI Report Volume 3 Part B Section 3 Chapter 1 Overview of the Section and Description of the Project**
- 12.7.15 Construction activities (including the construction of an new overhead line between the new Grimsby West Substation to the New LCS A) that have the potential to generate and/or re-suspend dust and PM<sub>10</sub> include:
- site surveys and preparation;
  - enabling works, including localised utility works;
  - establishment of temporary access/egress to the Site and haul roads;
  - establishment of construction compounds;
  - earthworks, including the groundworks (soil stripping and excavation for pylon foundations);
  - materials handling, storage, stockpiling and disposal;

- vii. construction of foundations and substation aprons;
- viii. construction of buildings and areas of hardstanding alongside fabrication processes;
- ix. construction of buildings, roads and areas of hardstanding alongside fabrication processes;
- x. exhaust emissions from site plant and NRMM, especially when used at the extremes of their capacity and during mechanical breakdown;
- xi. pylon assembly;
- xii. establishment of scaffolding and crossing protection;
- xiii. conductor stringing;
- xiv. demobilisation of construction compounds and temporary accesses; and
- xv. site reinstatement.

- 12.7.16 The majority of the dust releases during construction are likely to occur in the 'working week', during which construction activities are undertaken. However, for some potential release sources (e.g. exposed soil stockpiles), in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day, 7 days per week, until such works are complete and areas reinstated.
- 12.7.17 The construction dust assessment methodology adopts a worst-case approach and treats all receptors within the Section 3 Study Area consistently. There will however be considerable variation in the magnitude of dust emissions throughout the construction phase dependant on specific construction activities being undertaken at any one time. This includes, for example, variation in the number of vehicles throughout the construction programme, which will affect the trackout of dust emissions.
- 12.7.18 Therefore, the risk of impacts to local amenity will vary throughout construction and will be greater during certain periods (e.g. during the peak of earthwork activities). Several receptors within the Section 3 Study Area will also be influenced by construction activities for shorter periods than others. For example, a sensitive receptor location in proximity to a pylon location is likely to experience impacts for a shorter period than a receptor in proximity to the substation sites. This is due to the greater scale and duration of construction activities associated with the substation relative to the activities required to upgrade the existing overhead line. This assessment will be refined further as more detail is available in the ES submitted with the DCO application.

#### Assessment of potential dust emission magnitude

- 12.7.19 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM<sub>10</sub> sources: demolition; earthworks; construction; and trackout. The findings of the assessment are presented below.

##### Demolition

- 12.7.20 Demolition works within the Section 3 Study Area will be limited to localised enabling works to existing electricity supply infrastructure crossed by the overhead line route.

To facilitate the new overhead line, this is anticipated to include the removal of existing poles and pylons over short sections of existing line to be replaced by underground cable.

- 12.7.21 Based upon a precautionary assumption embedded in the IAQM guidance (Ref 4), the total volume of assumed works is more than 75,000 m<sup>3</sup> and is therefore defined as large.

#### Earthworks

- 12.7.22 The main earthworks that will be undertaken are localised preparation for haul roads, pylon foundation construction and landscaping. The soil type, and thus friability, varies throughout the Section 3 Study Area. The soil types are Holderness, Burlingham 2, Newchurch 2 and Fladbury 2. These are predominately loamy/clayey soils which will be prone to suspension when dry due to their small grain size. More information on each soil type is given within **PEI Volume 2 Section 3 Chapter 8 Agriculture and Soils**.

- 12.7.23 The total area of the draft Order Limits falls within the IAQM range for large sites (over 110,000 m<sup>2</sup>). Therefore, the potential dust emission magnitude is judged to be large for earthwork activities given the scale of the site and the soil types present.

#### Construction

- 12.7.24 The total volume of buildings<sup>6</sup> (pylons and construction compounds) to be constructed on the Site will be above 75,000 m<sup>3</sup> with potentially dusty construction materials being used, such as aggregates required to construct the substation aprons. Therefore, the potential dust emission magnitude is judged to be large for construction activities.

#### Trackout

- 12.7.25 There will be more than 50 HDV outward movements in any one day, travelling over potentially dusty surface material. It is considered that the potential dust emission magnitude is large for trackout.
- 12.7.26 **Table 12.6** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

**Table 12.6 Potential Dust Emission Magnitude**

Activity	Dust Emission Magnitude
Demolition	Large
Earthworks	Large
Construction	Large
Trackout	Large

<sup>6</sup> For the purposes of the assessment, pylons have been defined as buildings. The Building Act 1984 defines the word “building” as “any permanent or temporary building, and, unless the context otherwise requires, it includes any other structure or erection of whatever kind or nature (whether permanent or temporary)”.



Assessment of Sensitivity of the Study Area

- 12.7.27
- The prevailing wind direction is from the south west. Therefore, receptors located to the north east of the draft Order Limits (specifically properties within the Saleby area) are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase, relative to receptors up wind of the working area.
- 12.7.28
- Hornby/Mother Woods Ancient Woodland and Mother and Greenfield Woods Local Wildlife Site is situated less than 10 m west of the draft Order Limits. As per the IAQM guidance (Ref 4), Ancient Woodland and Local Wildlife Sites are deemed to be low sensitivity receptors.
- 12.7.29
- Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. This area mainly comprises arable land with receptor counts outlined in **Table 12.7**. There are also human sensitive receptors along construction routes within 250 m of the Site that may be sensitive to trackout. These include residential properties along Rose Lane and within Thoresthorpe. Background PM<sub>10</sub> levels are predicted to be well below the annual mean objective (**Table 12.2**).

Table 12.7 Count of human sensitive receptors within defined distances

Section Number	Distance from draft Order Limits				
	0-20 m	0-50 m	0-100 m	0-200 m	0-250 m
3	5	16	32	60	72

- 12.7.30
- Taking the above number and sensitivity into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust and PM<sub>10</sub> has been derived for each of the construction activities considered. The results are shown in **Table 12.8**.

Table 12.8 Sensitivity of the Section 3 Study Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low
Ecological	Low	Low	Low	Low

Assessment of Dust Risk to Define Site-Specific Mitigation

- 12.7.31
- The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 12.9** below provides a summary of the risk of dust impacts

for the Project. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 12.9 Summary dust risk table

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	Medium	Medium	Medium
Human Health	Medium	Low	Low	Low
Ecological	Medium	Low	Low	Low

- 12.7.32 Control measures relevant to dust impacts during construction are set out within the Preliminary CoCP and summarised in section 12.6. Based upon the identified risk, an appropriate suite of dust management measures will be specified within the DMP to be included in the CEMP, which will be adhered to during construction (Preliminary CoCP measure AQ1). Based upon the application of the DMP and the further management measures included within Preliminary CoCP, it is not considered likely that there would be significant effects associated with dust generated during construction.

### Construction Traffic Emissions

- 12.7.33 Where projected changes in vehicle movements due to construction are below the EPUK/IAQM thresholds and IAQM thresholds, changes in Air Quality at relevant receptor locations are unlikely to be significant. However, the change in HGV vehicle trips will be rescreened and assessed as per the EPUK/IAQM guidance (Ref 6) and IAQM guidance (Ref 7) and the outcomes reported within the ES.

### Operation and maintenance

- 12.7.34 The operational traffic flows of the New LCS and the New LCS B are anticipated to comprise vehicles associated with routine visits and fault maintenance only. It is anticipated that there would typically be two visits per month by two people. With regards to operational visits for the overhead line, based upon existing precedent and current estimates, typical routine maintenance vehicle movements would comprise approximately two vehicle trips per permanent pylon, per year (i.e. one arrival and departure respectively). The movement itself could comprise a LGV access via the permanent access route. Whilst there may be occasional variation in traffic flows associated with maintenance or refurbishment as required, the projected volume of traffic is predicted to be low.
- 12.7.35 The projected vehicle movements during operation and maintenance of the Project are below both the EPUK/IAQM and IAQM screening criteria. Therefore, no likely significant effects are expected upon Air Quality during operation of the Project.
- 12.7.36 This will be confirmed within the ES following re-screening of any updated operational traffic volumes against the screening criteria.

## Summary

- 12.7.37 For completeness, **Table 12.10** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Air Quality effects.

Table 12.10 Preliminary summary of non-significant Air Quality effects – Section 3

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Construction</b>					
Human Health Receptors sensitive to construction dust impacts	Without mitigation, there may be adverse impacts to human health owing to construction dust impacts.	There are less than 10 high sensitivity receptors within 20 m of the draft Order Limits, therefore, according to the IAQM guidance, the area sensitivity is classified as low.	Negligible	Not significant	With the appropriate mitigation in place as described in the chapter and as would be secured in the CoCP, construction dust impacts are not considered significant.
Ecological Receptors sensitive to construction dust impacts	Without mitigation, there may be adverse impacts to ecological sites owing to construction dust impacts.	There is one Ancient Woodland within 200 m of the draft Order Limits, therefore according to the IAQM guidance, the receptor sensitivity is low.	Negligible	Not significant	With the appropriate mitigation in place as described in the chapter and as would be secured in the CoCP, construction dust impacts are not considered significant.
Receptors sensitive to amenity loss from construction dust	Without mitigation, there may be adverse impacts to receptors sensitive to amenity loss within 250 m of the draft Order Limits.	There are less than 10 high sensitivity receptors within 20 m of the draft Order Limits, therefore, according to the IAQM guidance, the area sensitivity is classified as medium.	Negligible	Not significant	With the appropriate mitigation in place as described in the chapter and as will be secured in the CoCP, construction dust impacts are not considered significant.

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
<b>Operation and Maintenance</b>					
Human Health Receptors sensitive to changes in Air Quality	Changes in pollutant concentrations due to operation/maintenance vehicle emissions associated with the Project.	No road links have been identified which exceed the relevant criteria.	Negligible	Not significant	Projected changes in traffic flow during operation and maintenance of the Project are low and are not predicted to exceed the relevant assessment criteria. Therefore, changes in pollutants concentrations due to operational/maintenance traffic are not predicted to be significant.
Ecological Receptors sensitive to changes in Air Quality					

## **12.8 Monitoring**

- 12.8.1 As part of the CoCP, a CEMP will be prepared which will include dust management measures as outlined above. Control Mitigation Measure AQ01 includes for daily on-site and off-site visual inspections which will be undertaken by the Contractor(s) to monitor dust levels. These inspection findings will be recorded in the site log.
- 12.8.2 The proposed Control Mitigation Measures are anticipated to minimise the impacts such as that no significant effect would be expected. Consequently, no Air Quality monitoring beyond on-site and off-site visual inspections will be required during the construction and operational phases of the Project.

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# 13. Summary

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# 13. Summary for Section 3 New Lincolnshire Connection Substations A and B

## 13.1 Introduction

- 13.1.1
- This chapter summarises the findings of the preliminary assessment of likely significant environmental effects arising from the construction, operation and maintenance of the Project within the New Lincolnshire Connection Substations A and B Section (Section 3). The full preliminary assessments, including the rationale as to why an effect is considered to be significant or not significant can be found in **PEI Report Volume 2 Part B Section 3 Chapter 2 to 12**.
- 13.1.2
- The likely significant effects summarised in **Table 13.2** and **Table 13.3** take into account the design and embedded mitigation measures and control mitigation measures described within Chapter 2 to 12. Where additional mitigation measures have been determined, these are taken into account, however it is noted that the identification and design of additional mitigation measures is ongoing. As such, likely significant effects identified in **Table 13.2** and **Table 13.3** are based upon confirmed additional mitigation measures only.
- 13.1.3
- Baseline data is also still being collected, surveys are still being undertaken, and the design of the Project will be refined prior to the Development Consent Order (DCO) application being submitted. As such, a confidence rating has been introduced in the summary tables below which provides a rating of high, moderate or low confidence in the prediction of the significance of effects. Definitions of the confidence ratings are provided in **Table 13.1**.
- 13.1.4
- As the design evolves mitigation measures and environmental assessments will be further developed and reported within the Environmental Statement (ES) submitted with the DCO application.

Table 13.1 Confidence level definitions

Confidence Level	Definition
High Confidence	<div>A high level of confidence in the prediction of significant effects can be justified through:<ul style="list-style-type: none"><li>The consideration of, and routeing and/or siting of the Project away from, designated features and high sensitivity receptors;</li><li>Complete baseline data to inform the prediction;</li><li>Mitigation measures are fully defined and/or the application of mitigation measures has proven to be effective in similar projects; and</li><li>A thorough understanding of Project activities.</li></ul></div>

Confidence Level	Definition
Moderate Confidence	<p>A moderate level of confidence in the prediction of significance of effects can be justified through:</p> <ul style="list-style-type: none"> <li>• Particular surveys or assessments are incomplete at this stage, but it is possible to extrapolate results;</li> <li>• Mitigation measures will continue to be developed up to the submission of the application for consent; and</li> <li>• A general understanding of the Project activities being undertaken, and the associated impacts based on other Projects, while more detailed information will be provided later.</li> </ul>
Low Confidence	<p>A low level of confidence in the prediction of significance of effects can be justified through:</p> <ul style="list-style-type: none"> <li>• Only limited baseline data is available at this stage;</li> <li>• Input assessments (e.g. modelling outputs) are unavailable or limited, to the extent it is not possible to confidently identify the effect and its significance.</li> <li>• Exact project activities are unknown;</li> <li>• Mitigation measures remain in the early stages of development; and</li> <li>• Where this is the case, a precautionary, worst-case approach is taken.</li> </ul>

Table 13.2 Summary of significant effects during the construction phase

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<b>Landscape</b>				
The Regional Landscape Character Type (RLCT) 2C Fen and Marsh Margin Farmlands would be directly impacted by the construction of the New LCS A and the New LCS B, presence of two construction compounds a haul road and 4.5 km of the proposed overhead line including pylons GL119, GL120 and GL122, LB2, LB3, LB5-LB18 and LB20 and LW2, LW4-LW5, resulting in changes in the landscape character and perception of the landscape.	The New Lincolnshire Connecting Substation (LCS A) and the New Lincolnshire Connection Substation B (LCS B) and associated works have been located close to areas of existing vegetation to screen views of the substation(s) and associated works and the location of access tracks, bellmouths and the overhead line alignment refined to minimise loss of mature vegetation.  Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).	Areas of supplementary woodland planting and tree planting on field boundaries around the New LCS A and the New LCS B to provide further visual screening.	Adverse effect	High
<b>Visual</b>				
The community of Beesby with Saleby Parish would be directly impacted by the construction of the New	The New LCS A has been located close to areas of existing vegetation to screen views of the substation and associated works and the location of access tracks,	Areas of supplementary woodland planting and tree planting on field boundaries around the New LCS A to	Adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
LCS A, a construction compound, pylons GL119-GL120, GL122, LB2-LB3 and LB5-LB15 and indirectly impacted by construction activities in Section 2 and to the south of Section 3, resulting in changes to views.	bellmouths and the overhead line alignment refined to minimise loss of mature vegetation. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.	provide further visual screening.		
The community of Bilsby Parish would be directly impacted by the construction of the New LCS B, a construction compound, haul road and approximately 1.4 km over overhead line and indirectly impacted by construction activities in Section 3 and 4 presence of construction activities, resulting in changes to views.	The New LCS B has been located close to areas of existing vegetation to screen views of the substation and associated works and the location of access tracks, bellmouths and overhead line alignment refined to minimise loss of mature vegetation. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.	Areas of supplementary woodland planting and tree planting on field boundaries around the New LCS B to provide further visual screening.	Adverse effect	High
<b>Ecology and Biodiversity</b>				
<b>Designated Sites</b>				
Bird species which are qualifying features of the following European Designated Sites may be impacted by construction	The positioning of pylons and associated haul roads (temporary access routes) has sought to avoid or reduce direct and indirect impacts on notable	The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be	Significant Adverse effects cannot be excluded at this stage.	Low - further assessment is required once surveys are completed and data



Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>activities within functionally linked land resulting in disturbance, temporary displacement and/or habitat degradation. These are:</p> <ul style="list-style-type: none"> <li>• The Humber Estuary Special Protection Area (SPA) and Ramsar Site; and</li> <li>• Gibraltar Point SPA and Ramsar;</li> <li>• The Wash SPA and Ramsar Site; and</li> <li>• Saltfleetby – Theedlethorpe Dunes Site of Special Scientific Interest (SSSI)</li> </ul>	<p>species and habitats, including woodland and trees.</p> <p>Construction related impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>confirmed. These measures will be informed by ongoing survey and assessment and are likely to include the creation of replacement habitats where required to avoid significant effects.</p>		<p>assessed. The potential for LSE upon these designated sites will be assessed within the Report to inform the Habitat Regulations Assessment and will be informed by discussions with Natural England and other statutory bodies.</p>
<p>Saltfleetby – Theedlethorpe Dunes (including Gibraltar Point) Special Area of Conservation (SAC), may indirectly impacted by construction activities resulting in changes in water quantity, level and flow, or impacts upon species, within watercourses which are</p>	<p>The positioning of the New LCS A and the New LCS B, pylons and associated haul roads (temporary access routes) has sought to avoid or reduce direct and indirect impacts on high value aquatic habitats.</p> <p>Where new culverts are unavoidable, these would either be arch culverts, leaving the natural bed undisturbed, or they</p>			

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>hydrologically linked to the SAC.</p> <p>River lamprey and sea lamprey which are qualifying features of The Humber Estuary Special Area of Conservation (SAC) and Ramsar site may be impacted by construction activities within functionally linked land (including hydrologically linked watercourses), resulting in temporary displacement and/or habitat degradation.</p>	<p>would be installed with the invert set below the natural bed level for a semi-natural bed to establish within the culvert.</p> <p>Construction related impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			
<p>Habitats and fauna (e.g. bats, birds) associated with the Mother and Greenfield Woods Local Wildlife Site (LWS) may be impacted by construction activities, potentially resulting in habitat loss and degradation (through changes in air quality and hydrology).</p>	<p>The positioning of the substations, pylons and haul roads (temporary access routes) has sought to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction related impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			<p>Low - Survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures.</p>

## Habitats

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>Terrestrial habitats would be directly impacted by construction activities associated with the New LCS A and the New LCS B Substations, haul road and access routes, potentially resulting in temporary loss and severance. Terrestrial habitats would be indirectly impacted through the release of pollutants during construction.</p>	<p>The positioning of the New LCS A and the New LCS B, pylons and haul roads (temporary access routes) has sought to avoid or reduce direct and indirect impacts on terrestrial habitats, including woodland and trees.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed. These measures will be informed by ongoing survey and assessment and are likely to include the creation of replacement terrestrial habitats, where required to avoid significant effects.</p>	<p>Significant Adverse effects cannot be excluded at this stage.</p>	<p>Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures.</p>
<p>Aquatic habitats (Woldgrift Drain Main River) would be directly impacted by construction activities associated with overhead line water crossings resulting in temporary loss or damage to watercourse and ditch habitats and indirectly from disturbance from noise and vibration and drainage installations during construction.</p>	<p>The positioning of the New LCS A and the New LCS B, pylons and haul roads (temporary access routes) has sought to avoid or reduce direct and indirect impacts on high value aquatic habitats.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed. These measures will be informed by ongoing survey and assessment and are likely to include the creation of replacement ditch habitats, where required to avoid significant effects..</p>	<p>Significant Adverse effects cannot be excluded at this stage.</p>	<p>Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures.</p>

## Protected and Notable Species

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>The following species may be impacted by construction activities resulting in loss, damage or fragmentation of suitable habitats, disturbance due to noise and vibration; and/or death/injury:</p> <ul style="list-style-type: none"> <li>• Terrestrial Invertebrates;</li> <li>• Great Crested Newts (GCN);</li> <li>• Reptiles;</li> <li>• Wintering and breeding birds;</li> <li>• Badgers;</li> <li>• Bats;</li> <li>• Otters;</li> <li>• Fish</li> <li>• Water Vole;</li> <li>• Notable fish species:</li> <li>• Aquatic macroinvertebrates; and</li> <li>• Aquatic macrophytes.</li> </ul>	<p>The positioning of pylons and haul roads (temporary access routes) has sought to avoid or reduce direct and indirect impacts on notable habitats, including woodland, ponds and hedgerows. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed. These measures will be informed by ongoing survey and assessment and are likely to include the creation of replacement habitats where required to avoid significant effects.</p>	<p>Significant adverse effects cannot be excluded at this stage</p>	<p>Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures.</p>
<b>Historic Environment</b>				
<b>Designated Assets</b>				

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
The Site of St Mary's Priory (NHLE 1008687) would be temporarily impacted due to construction noise and traffic, resulting in temporarily altering the setting of the scheduled monument.	Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
The Site of St Mary's Priory (NHLE 1008687) would permanently be impacted by the introduction of new pylons, resulting in permanent changes to the setting of the monument.	The New LCS A and the New LCS B has been located to avoid direct physical impacts upon designated assets. Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
The Site of Markby Priory (NHLE 1004987) would be temporarily	Temporary impacts on the setting of heritage assets may be lessened or avoided through	No additional mitigation measures have been identified	Moderate adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
impacted due to construction traffic, cranes and plant movement resulting in temporarily altering the setting of the scheduled monument.	<p>consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	for this preliminary assessment.		
The Site of Markby Priory (NHLE 1004987) would be permanently impacted from the presence of the New LCS A and the New LCS B, pylons and overhead line resulting in permanent changes to the setting of the scheduled monument.	The New LCS A and the New LCS B has been located to avoid direct physical impacts upon designated assets. Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
The grade II* listed Church of St Andrew (NHLE 1308650) would be temporarily impacted by construction activities resulting in temporary	Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
changes to the setting of this asset	<p>structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			
The grade II* listed Church of St Andrew (NHLE 1308650) would be permanently impacted due to the presence of the New LCS A and associated pylons, resulting in permanent changes to the setting of the asset.	The New LCS A and the new LCS B has been located to avoid direct physical impacts upon designated assets. Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
The grade II listed Manor Farmhouse (NHLE 1063012) would be temporarily impacted by construction activities resulting in temporary changes to the setting of this asset.	Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High



Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
	<p>submitted with the DCO application.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			
<p>The grade II listed Manor Farmhouse (NHLE 1063012) would be permanently impacted due to the presence of the new infrastructure, including the substations and the pylons resulting in permanent changes to the setting of the asset.</p>	<p>The New LCS A and the New LCS B has been located to avoid direct physical impacts upon designated assets. Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Moderate adverse effect</p>	<p>High</p>
<p>The grade II listed Manor House (NHLE 1308599), Stable Block at Thoresthorpe Manor House (NHLE 1063013) and Barn at Thoresthorpe Manor House (NHLE 1308602) would be temporarily impacted by construction activities resulting in temporary changes to</p>	<p>Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Moderate adverse effect</p>	<p>High</p>

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
the setting of these assets.	Construction impacts would be managed through the measures outlined within the Preliminary CoCP.			
The grade II listed Manor House (NHLE 1308599), Stable Block at Thoresthorpe Manor House (NHLE 1063013) and Barn at Thoresthorpe Manor House (NHLE 1308602) would be permanently impacted by the presence of the new infrastructure, resulting in . permanent changes to the setting of these assets.	The New LCS A and the New LCS B has been located to avoid direct physical impacts upon designated assets. Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
<b>Non Designated Assets</b>				
The shrunken medieval village of Saleby (MLI42524) would be permanently impacted due to the presence of New pylons and the New LCS A and the New LCS B Substations, resulting in permanent changes to the setting of this asset.	The New LCS A and the new LCS B has been located to avoid direct physical impacts upon designated assets. Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment	<ul style="list-style-type: none"> <li>• Appropriate archaeological investigation prior to construction works; and</li> <li>• Establishing a process for dealing with the discovery of archaeological remains.</li> </ul>	Moderate adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Thoresthorpe Shrunkon Village (MLI42527) would be permanently impacted, by the presence of new pylons and the New LCSA and the New LCS B resulting in permanent changes to the setting of this asset.	chapter of the ES submitted with the DCO application.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
Unknown anomalies, including a small rectilinear enclosure and linear feature (AEC300) would be permanently impacted by construction activities associated with the construction of the New LCS B resulting in damage or removal of this asset.		<ul style="list-style-type: none"> <li>• Appropriate archaeological investigation prior to construction works; and</li> <li>• Establishing a process for dealing with the discovery of archaeological remains.</li> </ul>	Moderate adverse effect	High
The redeveloped 19 <sup>th</sup> century farmstead, Galley Hill (MLI116907) would be temporarily impacted by construction activities associated with the New LCS A , pylons and proposed overhead line resulting in temporary changes to the setting of this asset.	Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
	<p>submitted with the DCO application.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			
<p>Bilsby deserted medieval village (MLI41489) would be permanently impacted by the New LCS B, pylons and the proposed overhead line infrastructure, resulting in permanent changes to the setting of this asset.</p>	<p>Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Moderate adverse effect</p>	<p>High</p>
<p>The moated site in Saleby shrunken medieval village (MLI42525) would be impacted by construction activities causing temporary changes to the setting of this asset.</p>	<p>Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Moderate adverse effect</p>	<p>High</p>

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
The moated site in Saleby shrunken medieval village (MLI42525) would be permanently impacted by the presence of new pylons and overhead line infrastructure, resulting in permanent changes to the setting of this asset.	<p>Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p> <p>Construction impacts would be managed through the control measures outlined within the Preliminary CoCP.</p>	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High

### Water Environment and Flood Risk

No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.

### Geology and Hydrogeology

No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.

### Agriculture and Soils

#### Agricultural Land Classification

178.5 ha (assumed to be BMV land) would be temporarily impacted by construction activities including establishment of haul roads and temporary compounds resulting in temporary loss of agricultural land.	The Project has been designed to minimise the extent of land take required to construct, operate and maintain the proposed assets and position infrastructure (such as pylons and haul roads) as close as is practicable to field boundaries to minimise impacts to agricultural operations.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
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Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
66.9 ha (assumed to be BMV land) would be permanently impacted by the construction of operational infrastructure including the New LCS A and the New LCS B and associated accesses and pylon foundations resulting in the permanent loss of agricultural land.	Construction impacts would be managed through the measures outlined within the Preliminary CoCP.		Major adverse effect	High
<b>Soil Function</b>				
Soils within the Section 3 draft Order Limits would be temporarily impacted by construction activities including topsoil/subsoil stripping and storage, resulting in temporary effects on soil quality and ecosystem services	The Project has been designed to minimise the extent of land take required to construct, operate and maintain the proposed assets and position infrastructure (such as pylons and haul roads) as close as is practicable to field boundaries to minimise impacts to agricultural operations.	No additional mitigation measures have been identified for this preliminary assessment.	Major, Moderate or Minor adverse effect	High
66.9 ha of soils would be permanently impacted by the by the construction of the operational infrastructure including the New LCS A and the New LCS B and associated accesses and pylon foundations,	Construction impacts would be managed through the measures outlined within the Preliminary CoCP.		Major adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
resulting in loss of soil quality and ecosystem function.				
<b>Traffic and Movement</b>				
<b>Users of Highway Links</b>				
<p>Drivers (all vehicles including HGVs and Emergency Services) may be impacted where projected increases in traffic flows exceed the relevant Institute of Environmental Management Assessment (IEMA) thresholds. Where this is the case, change in traffic flow may result in severance, changes in journey time, driver delay and highway safety effects.</p> <p>Bus passengers may be impacted on those routes where projected increases in traffic flows exceed the IEMA thresholds, potentially resulting in delays due to congestion.</p>	<p>Identified construction traffic routes are based upon classified roads as far as practicable. Haul roads would be used to reduce construction traffic movements on local roads.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Significant adverse effects cannot be excluded at this stage.</p>	<p>Moderate- Baseline data for some of the identified construction traffic routes is not currently available. Detailed assessment of severance, delay, highway safety and feed and intimidation has yet to be undertaken to determine the magnitude of impacts upon identified road links.</p>



Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>Pedestrians and cyclists may be impacted on those routes where projected increases in traffic flows exceed the relevant Institute of Environmental Management and Assessment thresholds, potentially resulting in severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects</p>				
<b>Noise and Vibration</b>				
No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.				
<b>Socioeconomics, Recreation and Tourism</b>				
No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.				
<b>Air Quality</b>				
Human sensitive receptors (including schools, care homes and hospitals) which are within 200 m of road links projected to experience increases in traffic flow which are	The Project will be designed to maximise the separation between sensitive receptors and the proposed	No additional mitigation measures have been identified for this preliminary assessment.	Significant adverse effects cannot be excluded at this stage.	Low - Dispersion modelling will be undertaken for the ES and will inform further assessment of impacts and effects and the design of any required mitigation measures

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
above the Environmental Protection UK/Institute of Air Quality Management and Assessment thresholds, could be exposed to increased pollutant concentrations during the construction phase.	temporary and permanent access roads as far as reasonably practicable. Construction related impacts would be managed through the measures outlined within the Preliminary CoCP.			

Table 13.3 Summary of significant effects during the operation and maintenance phase

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<b>Landscape</b>				
The RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the presence of the New LCS A and the New LCS B and approximately 4.5 km of overhead line, including pylons GL119-GL122, LB2-LB5, LB18, LB20 and LW2-LW5, resulting in changes in the character and perception of the landscape character.	The New LCS A and LCS B have been located close to existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the New LCS A and the New LCS B to provide visual screening.	Adverse effect	High
The RLCT 7A Chalk Wolds would be directly impacted by the pylons (GL119, GL120 and GL122, LB2, LB3, LB5-LB18 and LB20 and LW2, LW4-LW5), resulting in changes in the character and perception of the landscape character.	The New LCS A and the New LCS B have been located close to areas of existing vegetation to screen views of the substation and associated works and the location of access tracks, bellmouths and overhead line alignment refined to minimise loss of mature vegetation to help retain existing landscape character.	Areas of supplementary woodland planting and tree planting on field boundaries to provide visual screening.	Adverse effect	High
<b>Visual</b>				

<b>Description of potential impact</b>	<b>Key embedded and control measures</b>	<b>Proposed additional mitigation measures</b>	<b>Preliminary likely significant effects</b>	<b>Confidence rating (high/moderate/low)</b>
The community area of Aby with Greenfield Parish would be impacted by the presence of the New LCS B and pylons outside the community area, resulting in changes to views from receptor locations	The New LCS B has been located close to existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the New LCS B to provide visual screening.	Adverse effect	High
The community area of Alford Parish would be impacted by the presence of the New LCS A and the New LCS B; and pylons, resulting in changes to views from receptor locations.	The New LCS B and LCS B have been located close to existing vegetation to provide screening of views of the substations.	Areas of supplementary woodland planting and tree planting on field boundaries around the New LCS A and the New LCS B to provide visual screening.	Adverse effect	High
The community area of Beesby with Saleby Parish would be impacted by the presence of the New LCS A and pylons GL120-GL121 and LB3-LB13, resulting in changes to views from receptor locations.	The New LCS A has been located close to existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the new LCS A Substation to provide visual screening.	Adverse effect	High
The community area of Bilsby Parish would be directly impacted by the presence of the New LCS B and approximately 1.4 km of overhead line including pylons LB16-LB18, LB20, LW2, and LW4-LW5, resulting in	The New LCS B has been located close to existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the new LCS B Substation to provide visual screening.	Adverse effect	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
changes to views from receptor locations.				
The community area of Hannah cum Hagnaby Parish would be indirectly impacted by the pylons in Section 3 and the presence of the New LCS B, resulting in changes to views from receptor locations.				
The community area of Markby Parish would be indirectly impacted by the pylons in Section 3 and the presence of the New LCS B, resulting in changes to views from receptor locations.				
The community area of Rigsby with Ailby Parish would be indirectly impacted by the pylons in Section 3 and the presence of the New LCS A, resulting in changes to views from receptor locations.	The New LCS A has been located close to existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the new LCS A Substation to provide visual screening.	Adverse effect	High
Users of The Lindsey Loop would be impacted by the presence of overhead line, pylons and the New LCS A, resulting in changes to views from receptor locations.				

## Ecology and Biodiversity

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<b>Designated Sites</b>				
<p>Bird species which are qualifying features of the following designated sites may be impacted by the presence of pylons and overhead line resulting in collision mortality:</p> <ul style="list-style-type: none"> <li>• The Greater Wash SPA;</li> <li>• Humber Estuary SPA, Ramsar site;</li> <li>• The Wash SPA and Ramsar Site; and</li> <li>• Saltfleetby – Theedlethorpe Dunes SSSI.</li> </ul>	<p>The New LCS A and the New LCS B, pylons and permanent access routes have been positioned to avoid or reduce direct and indirect impacts on notable habitats, as far as reasonably practicable</p>	<p>Additional mitigation measures are in the early stages of development and may include the use of bird diverters to reduce collision risk.</p>	<p>Significant adverse effects cannot be excluded at this stage.</p>	<p>Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures. The potential for LSE upon Internationally statutorily designed sites will be assessed within the Report to Inform the Habitat Regulations Assessment, informed by discussions with Natural England other statutory bodies.</p>
<p>Saltfleetby – Theedlethorpe Dunes (including Gibraltar Point) SAC and the Humber Estuary SAC and Ramsar may be indirectly impacted by the presence of the New LCS A and the New LCS B and associated infrastructure resulting in changes in water quality, water depth and water flow rates, resulting in impacts of altered flow regimes that can directly affect habitats and species.</p>	<p>The positioning of the New LCS A and the New LCS B, pylons and permanent access routes have been positioned to avoid high value aquatic habitats, as far as reasonably practicable.</p>	<p>Additional mitigation measures are in the early stages of development and may include the creation of replacement habitats.</p>		

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<b>Protected and Notable Species</b>				
Wintering and breeding birds impacted by the presence of pylons and overhead line resulting in collision mortality.	The New LCS A and the New LCS B Substations, pylons and permanent access routes have been positioned to avoid or reduce direct and indirect impacts on notable habitats, as far as reasonably practicable.	Additional mitigation measures are in the early stages of development and may include the use of bird diverters to reduce collision risk.	Significant adverse effects cannot be excluded at this stage.	Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures.
<b>Historic Environment</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary.				
<b>Water Environment and Flood Risk</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
<b>Geology and Hydrogeology</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
<b>Agriculture and Soils</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
<b>Traffic and Movement</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
<b>Noise and Vibration</b>				



Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
<b>Socioeconomics, Recreation and Tourism</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
<b>Air Quality</b>				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				

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