

The Great Grid Upgrade

Grimsby to Walpole

Preliminary Environmental Information Report

Volume 2 Part B Section Specific Assessments

Section 4 New Lincolnshire Connection Substation B to Refined
Weston Marsh Substation Siting Zone

Chapters 1 to 13

June 2025



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Grimsby to Walpole

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Preface

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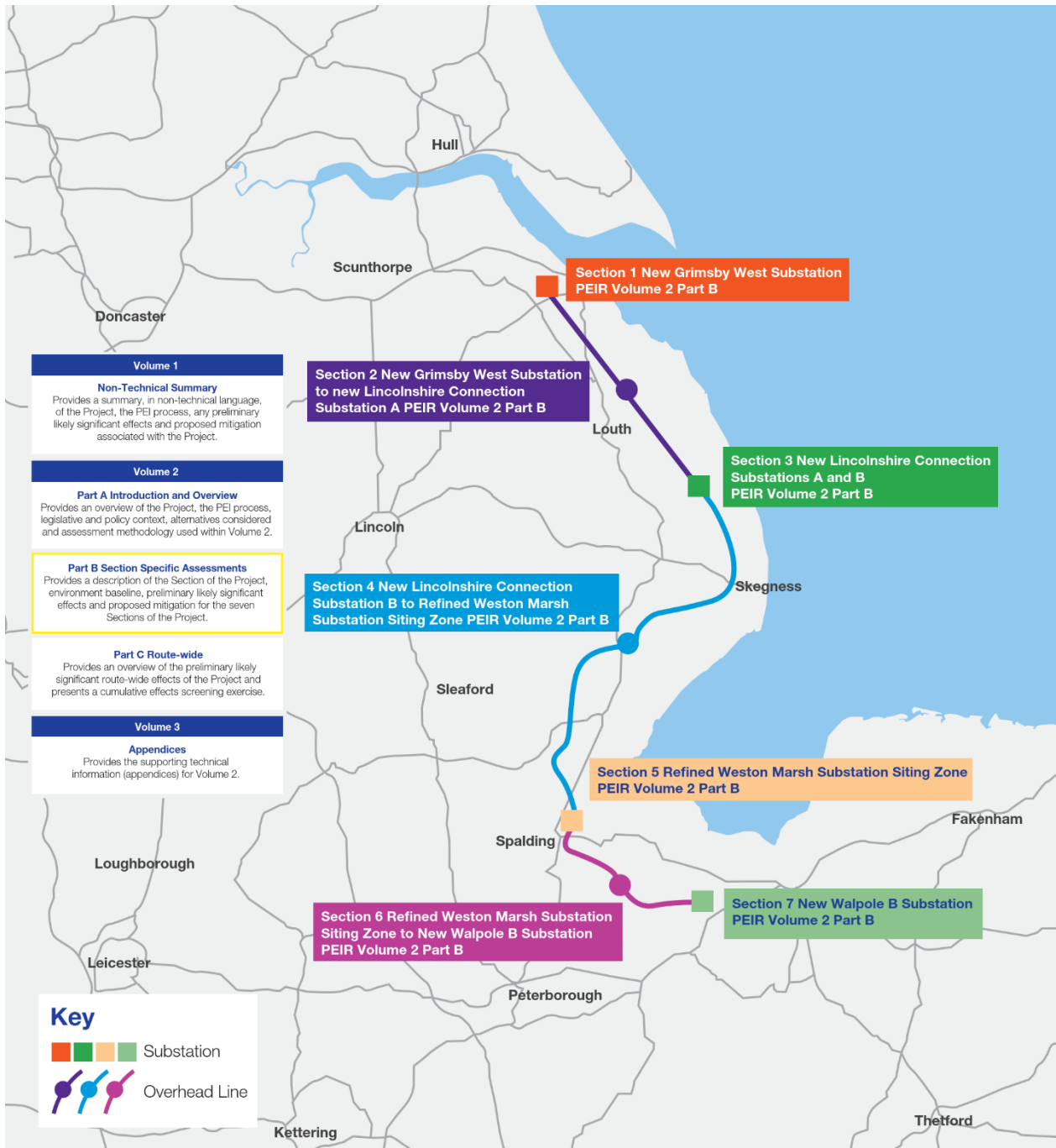
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1. Part B Preface

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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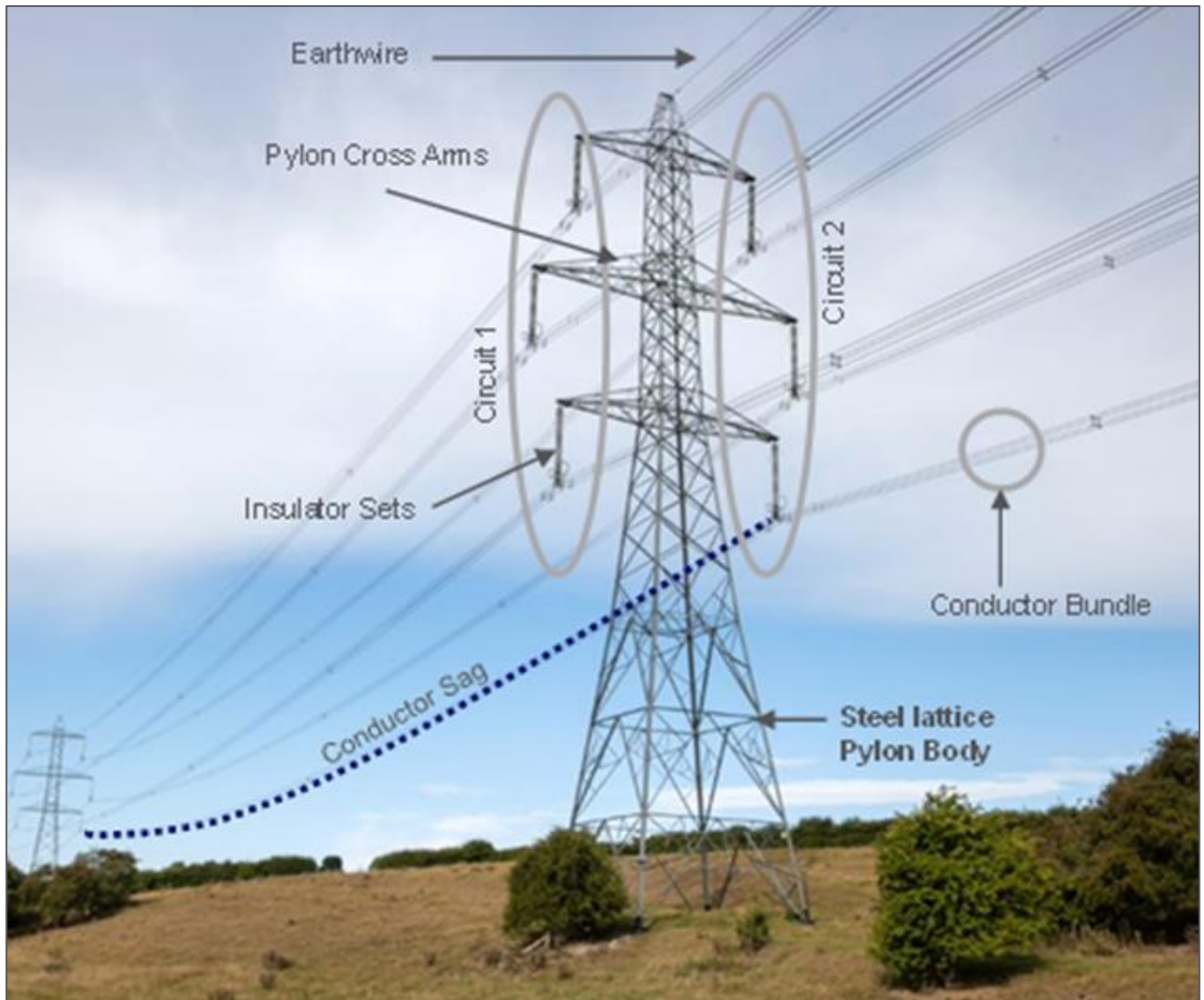
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1. Overview of the Section and Description of the Project

1.1 Overview of the Section

- 1.1.1 This Chapter presents an overview of the Grimsby to Walpole Project (the Project) within Section 4 New Lincolnshire Connection Substation (LCS) B to Refined Weston Marsh Substation Siting Zone (Section 4) and has informed the preliminary environmental assessments reported in subsequent **Chapters 2 to 13** within **PEI Report Volume 2 Part B Section 4**.
- 1.1.2 Section 4 is located in the central part of the Project and principally comprises the new 400 kilovolt (kV) overhead line, as well as associated temporary works required for construction.
- 1.1.3 The draft Order Limits for Section 4 are presented in **PEI Report Volume 2 Part B Section 4 Figure 1.1 Draft Order Limits**. The draft Order Limits commence at the route section break for Section 4 at pylon no. LW5 and extend initially in a south easterly direction towards Burgh le Marsh before heading in a south west direction, concluding at the route Section break for Section 5 Refined Weston Marsh Substation Siting Zone (Section 5) at pylon no. LW199.
- 1.1.4 Section 4 is located within the local authority areas of East Lindsey, Boston and South Holland. There are a number of water bodies in this Section including the River Witham and the River Lymn. Principal highways in this Section include the A16, the A52, the A158 and the A1121. Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages.
- 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 4 is provided in section 1.2 below. For the purpose of reporting within this PEI Report, pylons located within Section 4 have been assigned a nominal code with the prefix 'LW', followed by a number. These can be seen on **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operational Features**.

Image 1.1 Components of a typical transmission connection



1.2 Proposed Project

Proposed Overhead Line Route

Design and overview

- 1.2.1 A section of the proposed new 400kV overhead line route measuring approximately 66 km is included within Section 4. The proposed route is illustrated in **PEI Report Volume 2 Part B Section 4 Figure 1.1 Draft Order Limits**.
- 1.2.2 Section 4 starts on agricultural land located approximately 1.35 km east of Bilsby. The proposed overhead line route commences at the route section break for Section 4 at pylon no. LW5 and heads south for approximately 2.5 km until pylon no. LW12, near Farlesthorne. Here the route changes direction slightly, heading broadly south east for 6.2 km, crossing Willoughby High Drain and passing Cumberworth and Sloothby. At pylon no. LW30 the route once again heads predominantly south for approximately 4.4 km, crossing multiple small roads until it reaches the A158 at pylon no. LW42. Here, the route continues in a south west direction until pylon no. LW50,

where the route heads in a predominantly west direction until pylon no. LW89. The route then continues south, crossing Bell Water Drain Bank and Fodder Dike Bank, until pylon no. LW99. At this point, the route continues south west, crossing the A16, until pylon no. LW127. Here, the route once again continues broadly south towards pylon no. LW165. Some of the notable features that the route crosses along this stretch include the River Witham, South Forty Foot Drain, Old Hammond Beck, the A1121, the A52, and the B1391. The route also crosses several unnamed ordinary watercourses throughout Section 4.

- 1.2.3 At pylon no. LW165, the route continues in a south west direction for approximately 3.3 km until pylon no. LW175. From here, it continues south for approximately 1.2 km towards pylon no. LW179, crossing the A17. At this point, the route takes a south east direction until pylon no. LW187, before heading south for approximately 1.9 km towards pylon no. LW193. Along this part of Section 4, the route crosses Kit Cat Lane, and East Drain. From pylon no. LW193, the route continues in a south east direction, crossing the A16, before reaching the final pylon in Section 4, pylon no. LW199 and the route Section break for Section 5, where Section 4 concludes. The end of the Section is located on agricultural land approximately 125 m north east of the River Welland, approximately 2.66 km east of Surfleet Seas End.
- 1.2.4 Along the approximately 66 km stretch of new 400 kV overhead line in Section 4, there are 194 structures which are assumed to comprise of steel lattice 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 will depend on the ground conditions encountered. A typical pylon operating at 400kV is approximately 50 m in height, however, this varies across the proposed overhead line route. Within Section 4, pylons range from a height of 49 m to 75¹ m (including LoD).
- 1.2.5 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 Limits of Deviation (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.
- 1.2.6 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.
- 1.2.7 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. Within Section 4, for pylon no. LW199 where the overhead line crosses the River Welland, a vertical LoD of up to 20 m is applied, to allow for the pylon height to be increased in order to increase ground clearances over notable features.

¹ This custom pylon height is where the Project crosses the A1121, railway and South Foot Drain (which is navigable).

- 1.2.8 Further detail on the evolution of the design of Section 4 can be found in the **Grimsby to Walpole Design Development Report**.

Mitigation measures

- 1.2.9 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 EIA has identified a requirement to further reduce significant environmental effects.
- 1.2.10 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). This is 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.
- 1.2.11 Additional environmental mitigation measures that have been incorporated into the design of Section 4 include the following:
- i. Planting of native hedgerows and trees to aid landscape integration at multiple locations throughout Section 4;
 - ii. Planting of woodland to act visual screening, located west of pylon no. LW37 and in between pylons no. LW52 and LW53;
 - iii. Replacement woodland planting to aid landscape integration, located at multiple locations throughout Section 4;
 - iv. Creation of space for water vole mitigation to aid nature conservation and biodiversity net gain efforts, located at multiple locations throughout Section 4;
 - v. Creation of habitat for birds to aid nature conservation, located to the south of pylons no. LW55 and LW56;
 - vi. Improvements to existing habitat for birds to aid nature conservation, also located to the south of pylons no. LW55 and LW56;
 - vii. Replacement of scrub habitat to aid nature conservation, located to the north of pylon no. LW142; and
 - viii. Space for ditch mitigation, located to the south of pylon no. LW62.
- 1.2.12 These mitigation areas can be seen on **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operational Features**.

Construction

- 1.2.13 Subject to gaining development consent in 2028, it is anticipated that access and 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).
- 1.2.14 The construction of the 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 pylon 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.
- 1.2.15 In regard to temporary construction requirements, there are three construction compounds located within Section 4. This includes the following:
- i. a main yard construction compound located to the north of the A158, with an area of approximately 5 ha;
 - ii. a satellite construction compound located to the east of the A16 with an area of approximately 1.5 ha; and

- iii. a main yard construction compound located to the west of the A16, with an area of approximately 4.6 ha.
- 1.2.16 The land on which construction compounds are located would be reinstated upon completion of construction.
- 1.2.17 In regard to construction access points, there would 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 stabilisation². These are access points where construction traffic will access/egress the construction corridor.
- 1.2.18 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.
- 1.2.19 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.
- 1.2.20 Within Section 4, there are 54 locations where the construction accesses, including construction access points, haul road crossover points, and some smaller accesses to scaffolding areas interface with the public highway. Construction access points to the construction compounds are located to the north of the A158 (in proximity to pylon no. LW42), to the east of the A16 (in proximity to pylon no. LW108), and to the west of the A16 (in proximity to pylon no. LW195). Construction access points for the proposed 400 kV overhead line route stem from a number of roads. Principal highways from which construction access points stem include the A158 (in proximity to pylons no. LW42 and LW43), the A16 (in proximity to pylons no. LW108 and LW195), the A52 (in proximity to pylon no. LW155), and the A17 (in proximity to pylon no. LW176).
- 1.2.21 Other roads that construction access points connect to, in order from north to south, include the B1449, Sloothby High Lane, Marsh Lane, Ingoldmells Road, Low Road, the B1195, Lymn Bank, Station Road, Spilsby Road, Scarborough Bank, Fodder Dike Bank, the B1183, Northlands, Westville Road, the B1184, Mere Booth Road, Punchbowl Lane, the B1192, Fen Drive, the B1391, Asperton Road, Hipper Lane, and the B1397.
- 1.2.22 Within Section 4, there are also 33 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.
- 1.2.23 **PEI Report Volume 2 Part B Section 4 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 4 in place as part of construction for the proposed 400 kV overhead line route and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on what the construction of the proposed 400 kV overhead line route entails.

² Soil stabilisation is the process of altering the physical or chemical properties of soil to enhance its engineering performance.

Operation

- 1.2.24 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.
- 1.2.25 The overhead line within Section 4 forms part of this reinforcement by providing a high capacity power transmission route between the New LCS B and the Refined Weston Marsh Substation Siting Zone. 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 4, 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.
- 1.2.26 **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 4 in place as part of operation for the proposed 400 kV overhead line route and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on what the operation, inspection and maintenance of the proposed overhead line route entails.

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 of the New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone (Section 4) 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 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 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 4 (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 4 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 4 (section 2.7), based upon the assessment completed to date; 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 2.1 Landscape Designations and Features</p> <p>Figure 2.2 Landform and Drainage</p> <p>Figure 2.3 National Character Areas</p> <p>Figure 2.4 Regional and Local Landscape Character Areas</p> <p>Figure 3.2 Zone of Theoretical Visibility (ZTV)</p>
PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline	Description of the landscape character baseline across the route of the Project.
Project Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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.

Supporting Information	Description
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.

- 2.1.3 There are also interrelationships between 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 4 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 4 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 4 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 4 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 4 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 4 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 support the assessment of effects on recreation and tourism.
 - vii. **PEI Report Volume 2 Part B Section 4 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 Route-wide Chapter 2 Landscape** will be cross referenced 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)).
- 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 for Section 4 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 Route-wide 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.
- 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 The following character areas within the Study Area have been scoped out primarily due to distance and lack of potential for significant effects:
- i. East Midlands RLCT 1A Coastal Saltmarshes and Mudflats;
 - ii. East Midlands RLCT 1B Coastal Dunes, Beach and Intertidal Sand Flats;
 - iii. East Midlands RLCT 1C Shallow Coastal Water; and
 - iv. East Midlands RLCT 1E Offshore Industries, Fisheries and Navigations.
- 2.3.7 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 defined and assigned to the assessment. A summary of the key components are 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 size/scale, geographical extent, duration and reversibility of the predicted change. They 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 in 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 variables that 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 4.
- 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 Landscape assessment is shown on **PEI Report Volume 2 Part B Section 4 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 new 400 kV overhead line [1]. 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 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 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 4 Figure 3.2 Zone of Theoretical Visibility (ZTV)**. Based on pylon locations provided by design engineers, the ZTV identifies areas from where the proposed 400 kV overhead line may theoretically be visible. It also helped 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 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)

¹ 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.

- 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, as found within **PEI Report Volume 2** and **Volume 3**:

- i. **PEI Report Volume 2 Part B Section 4 Figure 2.1 Landscape Designations and Features**;
- ii. **PEI Report Volume 2 Part B Section 4 Figure 2.2 Landform and Drainage**;
- iii. **PEI Report Volume 2 Part B Section 4 Figure 2.3 National Character Areas**;
- iv. **PEI Report Volume 2 Part B Section 4 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 4 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 4.

Landscape Character

2.5.12 The following landscape character areas cover the Study Area for Section 4.

- i. Natural England - National Character Area Profiles (NCA)
 - NCA 42 Lincolnshire Coast and Marshes;
 - NCA 43 Lincolnshire Wolds;
 - NCA 44 Central Lincolnshire Vale; and
 - NCA 46 The Fens.
- ii. East Midlands Region Landscape Character Areas (RLCT)

- RLCT 2A Settled Fens and Marshes is considered to be of medium value and medium susceptibility to the Project;
- RCTL 2B Planned and Drained Fens is considered to be of medium value and medium susceptibility to the Project;
- RLCT 2C Fen and Marsh Margin Farmlands is considered to be of high value and medium susceptibility to the Project;
- RLCT 7A Chalk Wolds is considered to be of very high value and very high susceptibility to the Project; and
- RLCT 7B Wolds Scarps, Ridges and Valleys is considered to be of 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, 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.
- 2.5.14 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 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.
- 2.5.15 Ash trees (*Fraxinus excelsior*) within the Study Area for Section 4 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), applicable to 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 the ongoing design refinement of the Project within Section 4. This has further contributed to the avoidance or reduction of the Project's potential environmental impacts. Specific examples relevant to the assessment include amendments to locations of access tracks and bellmouths and overhead line proposed 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 Ecological 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 4 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

Construction

- 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 4 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 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 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.
 - 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 Plans (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 on the 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 4 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 4 for Landscape include:
 - i. areas of woodland planting to replace those affected by the Project would also help strengthen integration of Section 4 into the local landscape's character; and
 - ii. introduction of tree planting on field boundaries and roadsides to screen and filter views of the Project for people as they move around their communities would also help strengthen the pattern of the landscape as defined by field boundaries.
- 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 Section 4 Study Area, as a result of construction, operational and/or maintenance activities.
- 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 embedded into 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 4 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 The Landscape 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).
- 2.7.5 As explained in section 2.3.4 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.
- 2.7.6 Where an effect is reported in this PEI Report it is an adverse effect unless stated otherwise.
- 2.7.7 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.
- 2.7.8 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

- 2.7.9 Based upon the preliminary assessment, no significant effects are predicted for Landscape receptors within Section 4, as a result of the construction phase of the Project.

Operation

- 2.7.10 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

- 2.7.11 The Lincolnshire Wolds National Landscape (AONB) overlaps the western side of the Study Area for Section 4.
- 2.7.12 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 Route-wide 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 Areas

RLCT 2C Fen and Marsh Margin Farmlands

- 2.7.13 RLCT 2C Fen and Marsh Margin Farmlands, which is located within the Study Area for Section 4, is also located in:
- Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A; and
 - Section 3 New Lincolnshire Connection Substations A and B.
- 2.7.14 The preliminary assessment of the effects on RLCT 2C: Fen and Marsh Margin Farmland presented below considers the part of the RLCT that is located within the Study Area for Section 4.
- 2.7.15 RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the Project. Approximately 6 km of new 400 kV overhead line (pylons LW5 to LW22) would cross the eastern part of the RLCT between Bilsby and Sloothby. The RLCT would also be indirectly affected by the presence of the new 400 kV overhead line, which would run close to and broadly parallel to the eastern edge of the RLCT between Sloothby and Thorpe Fendykes. It would affect an area of settled farmland that partly lies within the setting of Lincolnshire Wolds National Landscape (AONB) and is currently unaffected by high voltage electricity infrastructure. The size/scale of change resulting from the Project's construction would diminish the farmland'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 4.
- 2.7.16 When considering the operational phase of the Project, in its entirety across all Sections, the overall magnitude of predicted change increases to large as the Project would extend through the centre of the RLCT for approximately 40 km. 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.

Likely Non-Significant Effects

- 2.7.17 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.
- 2.7.18 The preliminary assessment of effects below considers receptors that are not significantly affected in Section 4 but, when evaluated as a whole across all the Sections in which they occur, would experience a likely significant effect

Construction

- 2.7.19 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 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 reinstated².

East Midlands Regional Landscape Character Areas

RLCT 2A Settled Fens and Marshes

- 2.7.20 RLCT 2A Settled Fens and Marshes which is located within the Study Area for Section 4, is also located in:
- i. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A;
 - ii. Section 3 Lincolnshire Connection Substations A and B;
 - iii. Section 5 Refined Weston Marsh Substation Siting Zone;
 - iv. Section 6 Refined Weston Marsh Substation Siting Zone to Walpole B Substation to Walpole B Substation; and
 - v. Section 7 New Walpole B Substation.
- 2.7.21 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 4.
- 2.7.22 RLCT 2A Settled Fens and Marshes would be directly impacted by the construction of approximately 32 km of overhead line including pylons LW23-LW70 and LW153-LW199, the presence of two construction compounds and a haul road. It would also be indirectly affected by the construction of pylons in the remainder of the RLCT and by construction of the new substation(s) in Section 5 to the south. The construction works would affect a landscape which is largely an area of settled farmland. A small working area would be required around each pylon, which would be accessed by temporary routes and bellmouths. Most work would occur at ground level, with some limited at-height tasks requiring mobile cranes, which will help to minimise the scale of change. The works would add to existing movement and disturbance in this settled landscape but would not fundamentally alter its character or how it is perceived, reducing the size/scale of effect. Overall, the 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 4 are unlikely.
- 2.7.23 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.

RLCT 2B Planned and Drained Fens

- 2.7.24 RLCT 2B Planned and Drained Fens, which is located within Section 4, is also located in Section 6 Refined Weston Marsh Substation Siting Zone to Walpole B Substation. The preliminary assessment of the effects on RLCT 2B Planned and

² 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.

Drained Fens presented below considers the part of the RLCT that is located within the Study Area for Section 4.

2.7.25 RLCT 2B Planned and Drained Fens would be directly impacted by the construction of approximately 28 km of new overhead line including pylons LW71 to LW152 and indirectly affected by construction of pylons in the remainder of the RLCT. The works in the RLCT would extend across the northeastern part of the RLCT between Thorne Fendykes and the A1121 near Hubbert's Bridge. A small working area would be required around each pylon, which would be accessed by temporary routes and bellmouths. A temporary satellite construction compound is also located in this RLCT. Most work would occur at ground level, with some limited at-height tasks requiring mobile cranes, minimising the scale of change. The works would add to existing movement and disturbance in the settled farmland north and west of Boston but would not fundamentally alter the perception or character of the landscape. Overall, the 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 4 are unlikely.

2.7.26 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 2B Planned and Drained Fens, the Project would result in a likely significant effect.

RLCT 2C Fen and Marsh Margin Farmlands

2.7.27 RLCT 2C Fen and Marsh Margin Farmlands, which is located within the Study Area for Section 4, is also located in:

- i. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A; and
- ii. Section 3 Lincolnshire Connection Substations A and B.

2.7.28 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 4.

2.7.29 RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the construction of approximately 6 km of new overhead line including pylons LW5-LW22 and by minor road works to facilitate access along Ingoldmells Road near Burgh le Marsh and the B1195 near Irby in the Marsh. It would also be indirectly affected by the construction of pylons in the remainder of the RLCT and by construction of the Lincolnshire Connection Substation B in Section 3 to the north. A small working area would be required around each pylon, which would be accessed by temporary routes and bellmouths. Most work would occur at ground level, with some limited at-height tasks requiring mobile cranes, minimising the scale of change. The works would add to existing movement and disturbance in the settled farmland but would not fundamentally alter the perception or character of the landscape. Overall, the magnitude of predicted change is small. Combined with the landscape's high value and medium susceptibility, significant effects on the part of the RLCT in Section 4 are unlikely.

2.7.30 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. 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 on the part of the RLCT in Section 4.

RLCT 7A Chalk Wolds

- 2.7.31 RCTL 7A Chalk Wolds, which is in the Study Area for Section 4, 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 3 New Lincolnshire Connection Substations A and B.
- 2.7.32 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 4.
- 2.7.33 There would be no direct impacts on RLCT 7A Chalk Wolds. While the Project (pylons LW3-LW43 approximately) may be present in views east of this elevated RLCT, most of the works would be obscured by the intervening woodland. Some of the high level activity, including the presence of tall cranes may be visible but would only be present for a very short period at each pylon location. The works would also be more than 4 km distant, 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, this is unlikely to result in a significant effect on the part of the RLCT in Section 4.
- 2.7.34 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 Areas

RLCT 2A Settled Fens and Marshes

- 2.7.35 RLCT 2A Settled Fens and Marshes which is located in the Study Area for Section 4, is also located in:
- iv. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A;
 - v. Section 3 Lincolnshire Connection Substations (LCS) A and B;
 - vi. Section 5 Refined Weston Marsh Substation Siting Zone;
 - vii. Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation; and
 - viii. Section 7 New Walpole B Substation.
- 2.7.36 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 4.

2.7.37 RLCT 2A Settled Fens and Marshes would be directly impacted by the Project. Approximately 32 km of new 400 kV overhead line (pylons LW23-LW70 and LW153-LW199) would cross the RLCT between the A1121 near Hubbert's Bridge and the River Welland near Surfleet Seas End. The RLCT would also be indirectly affected by the presence of the new 400 kV overhead line in the remainder of this Section and by views of the new substation(s) in Section 5 to the south. The character of the landscape within this long route section is already affected by proximity to settlements such as Skegness and Boston, as well as by wind turbines, overhead lines and other discordant elements and features. The new 400 kV overhead line would contribute to these urbanising elements but would not fundamentally alter the perception or character of the landscape, reducing 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 4 are unlikely.

2.7.38 When considering the operational 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.

RLCT 2B Planned and Drained Fens

2.7.39 RLCT 2B Planned and Drained Fens, which is located within the Study Area for Section 4, is also located in Section 6: Refined Weston Marsh Substation Siting Zone to New Walpole B Substation. The preliminary assessment of the effects on RLCT 2B Planned and Drained Fens presented below considers the part of the RLCT that is located within the Study Area for Section 4.

2.7.40 RLCT 2B Planned and Drained Fens would be directly impacted by the Project. Approximately 28 km of new 400 kV overhead line (pylons LW70 to LW152) would cross the northeastern part of the RLCT between Thorne Fendykes and the A1121 near Hubbert's Bridge. The RLCT would also be indirectly affected by the presence of the new 400 kV overhead line in the remainder of this Section. The character of the area is already affected by development along the A16, proximity to Boston to the south and by wind turbines, overhead lines and other discordant elements and features. The new 400 kV overhead line would contribute to these urbanising elements but would not fundamentally alter the perception or character of the landscape. 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 4 are unlikely.

2.7.41 When considering the operational 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 2B Planned and Drained Fens, the Project would result in a likely significant effect.

RLCT 7A Chalk Wolds

2.7.42 RCTL 7A Chalk Wolds, which is located within the Study Area for Section 4, 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 3 New Lincolnshire Connection Substations A and B.

- 2.7.43 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 4.
- 2.7.44 There would be no direct impacts on RLCT 7A Chalk Wolds. While the new 400 kV overhead line (pylons LW3-LW43) may be visible in elevated easterly views, the high woodland cover on the lower slopes of the Wolds, between Well and Welton Marsh, would obscure the lower parts of many of the pylons, leaving only upper parts of the lattice structures visible above the trees. Also, the pylons would be located over 4 km away and would be seen in the context of the large offshore wind turbines at Inner Dowsing Wind Farm, which would further diminish the perceived size/scale of change. Although the new 400 kV overhead line may slightly detract from the rural character of views from the Wolds, the overall magnitude of the predicted change is small. Even given the landscape's very high value and susceptibility, significant effects on the part of the RLCT in Section 4 are unlikely.
- 2.7.45 When considering the operational 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.

Table 2.2 Preliminary Summary of non-significant Landscape effects – Section 4

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
East Midlands Region Landscape Character Assessment					
RLCT 2A Settled Fens and Marshes	Directly affected by construction of approximately 32 km of overhead line including pylons LW23-LW70 and LW153-LW199.	Value – Medium Susceptibility – Medium	Small – Construction	Not significant - Construction	RLCT 2A Settled Fens and Marshes would be directly impacted by construction of pylons LW23-69 and LW153-LW199, the presence of two construction compounds and a haul road. It would also be indirectly affected by construction of pylons in the remainder of the RLCT and by construction of Weston Marsh Substation A in Section 5 to the south. The works would affect an area of settled farmland. A small working area would be required around each pylon, which would be accessed by temporary routes and bellmouths. Most work would occur at ground level, with some limited at-height tasks requiring mobile cranes, minimising the scale of change. The construction activity would contribute to existing movement and disturbance in this settled landscape but would not fundamentally alter its character or how it is perceived, reducing the size/scale of effect. Overall, the 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 4 are unlikely.

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
	Directly affected by the operation of approximately 32 km of overhead line including pylons LW23-70 and LW153-LW199.	Value – Medium Susceptibility – Medium	Small – operation	Not significant – Operation	RLCT 2A Settled Fens and Marshes would be directly impacted by the Project. The new 400 kV overhead line (pylons LW23-69 and LW153-LW199) would cross the RLCT between the A1121 near Hubbert's Bridge and the River Welland near Surfleet Seas End. The RLCT would also be indirectly affected by the presence of the new 400 kV overhead line in the remainder of this Section and by views of a new substation(s) in Section 5 to the south. The character of the landscape within this long route Section is already affected by proximity to settlements such as Skegness and Boston, as well as by wind turbines, overhead lines and other discordant elements and features. The new 400 kV overhead line would contribute to these urbanising elements but would not fundamentally alter the perception or character of the landscape, reducing 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 4 are unlikely.
RLCT 2B Planned and Drained Fens	Directly affected by construction of approximately 28 km of overhead	Value – Medium Susceptibility – Medium	Small – Construction	Not significant – Construction	RLCT 2B Planned and Drained Fens would be directly impacted by the construction of pylons LW70 to LW152 and indirectly affected by construction of pylons in the

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
	line including pylons LW71-LW152.				remainder of the RLCT. The works in the RLCT would extend across the northeastern part of the RLCT between Thorne Fendykes and the A1121 near Hubbert's Bridge. A small working area would be required around each pylon, which would be accessed by temporary routes and bellmouths. A temporary satellite construction compound is also located in this RLCT. Most work would occur at ground level, with some limited at-height tasks requiring mobile cranes, minimising the scale of change. The construction activity would add to existing movement and disturbance in the settled farmland north and west of Boston but would not fundamentally alter the perception or character of the landscape. Overall, the 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 4 are unlikely.
	Directly affected by the operation of approximately 28 km of overhead line including pylons LW71-LW152.	Value – Medium Susceptibility – Medium	Small – operation	Not significant – Construction	RLCT 2B Planned and Drained Fens would be directly impacted by the Project. The new 400 kV overhead line (pylons LW70 to LW152) would cross the northeastern part of the RLCT between Thorne Fendykes and

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					the A1121 near Hubbert's Bridge. The RLCT would also be indirectly affected by the presence of the new 400 kV overhead line in the remainder of this Section. The character of the area is already affected by development along the A16, proximity to Boston to the south and by wind turbines, overhead lines and other discordant elements and features. The new 400 kV overhead line would contribute to these urbanising elements but would not fundamentally alter the perception or character of the landscape, reducing 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 4 are unlikely.
RLCT 2C Fen and Marsh Margin Farmlands	Directly affected by construction of approximately 6 km of overhead line including pylons LW5-LW22.	Value – High Susceptibility – Medium	Small – Construction	Not significant – Construction	RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the construction of pylons LW5-LW22 and by minor road works to facilitate access along Ingoldmells Road near Burgh le Marsh and the B1195 near Irby in the Marsh. It would also be indirectly affected by construction of pylons in the remainder of the RLCT and by construction of the New Lincolnshire Connection Substation B in Section 3 to the

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					north. A small working area would be required around each pylon, which would be accessed by temporary routes and bellmouths. Most work would occur at ground level, with some limited at-height tasks requiring mobile cranes, minimising the scale of change. The construction activity would add to existing movement and disturbance in the settled farmland but would not fundamentally alter the perception or character of the landscape. Overall, the magnitude of predicted change is small. Combined with the landscape's high value and medium susceptibility, significant effects on the part of the RLCT in Section 4 are unlikely.
RCTL 7A Chalk Wolds	Indirectly affected by construction of pylons LW3-LW43 approximately.	Value – Very high Susceptibility – Very high	Small - Construction	Not Significant - Construction	There would be no direct impacts on RLCT 7A Chalk Wolds. While the Project (pylons LW3-LW43 approximately) may be present in views east of this elevated RLCT, most of the works would be obscured by the intervening woodland. Some of the high level activity, including the presence of tall cranes may be visible but would only be present for a very short period at each pylon location. The works would also be more than 4 km distant, 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

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					and susceptibility, significant effects on the part of the RLCT in Section 4 are unlikely.
RLCT 7B Wolds Scarps, Ridges and Valleys	Indirectly affected by construction of pylons LW23-LW121 approximately.	Value – High Susceptibility – Very high	Small - Construction	Not Significant - Construction	There would be no direct impacts on RLCT 7b Wolds Scarps, Ridges and Valleys. While the Project (pylons LW23-LW121 approximately) may be present in elevated views from the southeastern edge of this RLCT, other than some minor road works to facilitate access south along Gunby Lane and the B1195 from the A158, most of the works would be more than 4 km distant and would be obscured by the intervening settlements and woodlands which are scattered throughout the intervening farmland. The overall magnitude of predicted change is small. Combined with the landscape's high value and very high susceptibility, significant effects on the part of the RLCT in Section 4 are unlikely.
	Indirectly affected by the operation of pylons LW23-LW121 approximately.	Value – High Susceptibility – Very high	Small - Operation	Not Significant - Operation	There would be no direct impacts on RLCT 7b Wolds Scarps, Ridges and Valleys. While the new 400 kV overhead line may be present in elevated views from the southeastern edge of this RLCT, the presence of the pylons (LW23-LW121 approximately) would not fundamentally alter the character or perception of the landscape within the RLCT. This is because the many small woodlands and settlements dispersed throughout the intervening

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					<p>farmland would obscure the lower parts of many of the pylons, leaving only the upper parts of the lattice structures visible above the trees. Also, the pylons would be located over 4 km away and would be seen in the context of the large offshore wind turbines at Inner Dowsing and Lynn Wind Farms, which would further diminish the perceived size/scale of change. Although the new 400 kV overhead line may slightly detract from the rural character of views from the Wolds, the overall magnitude of the predicted change is small. Combined with the landscape's high value and very high susceptibility, significant effects on the part of the RLCT in Section 4 are unlikely.</p>

2.8 Monitoring

- 2.8.1 No Landscape monitoring is currently proposed for Section 4, 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.

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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 for the New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 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 Visual assessment (section 3.3). 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 Visual assessment within Section 4 (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 4 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 the Section 4 Study Area, based upon the assessment completed to date (section 3.7); and
 - 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 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.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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
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.

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 4 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 4 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 4 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 4 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 4 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 4 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 4 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 Route-wide 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 **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.
- iii. South East Lincolnshire Local Plan 2011 – 2036 (adopted 2019) (Ref 3).
 - Policy 27: Climate Change and Renewable and Low Carbon Energy. The development of renewable energy facilities, associated infrastructure and the integration of decentralised technologies on existing or proposed structures will be permitted provided, individually, or cumulatively, there would be no significant harm to visual amenity (amongst other factors).

3.3 Scope of Assessment

- 3.3.1 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 Visual 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**.
- 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:
- 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
 - 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.

3.4 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 6) *“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 paragraph 6.31 - 6.32 of GLVIA3 (Ref 6), 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 8) to document the existing visual characteristics of Section 4. 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 GLVIA 3 (Ref 6), 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 6), evaluations of the sensitivity of a visual receptor 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 6), judgements on the magnitude of visual change are informed by balanced 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 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 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 9). 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 4.
- 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 used within that 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 4 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 line¹. 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.

¹ 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 Study Area for the preliminary cumulative visual assessment extends 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 existing, consented, and/or proposed 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 4 Figure 3.2 Zone of Theoretical Visibility (ZTV)**. Based on pylon locations provided by design engineers, the ZTV identifies areas where the proposed 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:
- Ordnance Survey (OS) 1:10,000, 1:25,000, 1:50,000 and 1:250,000 base mapping;
 - OS Terrain® 50 mid-resolution and LIDAR Composite 2017 – 50 cm Digital Terrain Model (DTM);
 - Google Earth Pro aerial photography, and Google Maps Street View;
 - Base mapping from ArcGIS Map Service;
 - Open source Geographic Information System (GIS) data;
 - Central Lincolnshire Local Plan (Adopted April 2023) (Ref 1); and
 - 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:
- PEI Report Volume 2 Part B Section 4 Figure 3.1 Visual Receptors and Viewpoints;**
 - PEI Report Volume 2 Part B Section 4 Figure 3.2 Zone of Theoretical Visibility (ZTV);**

- iii. **PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints;** and
- iv. **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 4. The viewpoint numbers refer to the representative viewpoints used to inform the assessment.

3.5.11 The people within the communities listed below are all 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. Ashby with Scremby | v. Revesby |
| ii. Candlesby with Gunby (VP56) | vi. Ulceby with Fordington (VP21) |
| iii. Claxby St Andrew | vii. Welton le Marsh (VP56) |
| iv. Farlesthorpe | |

3.5.12 The people within the communities listed below are all 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. Addlethorpe (VP158, VP159) | xvii. Firsby (VP59) |
| ii. Algarkirk | xviii. Fishtoft |
| iii. Amber Hill (VP72) | xix. Fosdyke (VP121, VP122) |
| iv. Anderby (VP165) | xx. Frampton (VP132, VP133) |
| v. Bicker | xxi. Friskney (VP146) |
| vi. Bilsby (VP44, VP45, VP46) | xxii. Frithville and Westville (VP137, VP138, VP139) |
| vii. Bratoft (VP57) | xxiii. Gosberton (VP80, VP81) |
| viii. Burgh le Marsh (VP55) | xxiv. Great Steeping |
| ix. Carrington (VP66) | xxv. Halton Hologate (VP60) |
| x. Chapel St. Leonards | xxvi. Hogsthorpe (VP160, VP161) |
| xi. Croft (VP151, VP153, VP154) | xxvii. Holland Fen with Brothertoft (VP71, VP73) |
| xii. Cumberworth (VP163) | xxviii. Huttoft (VP166, VP167, VP168) |
| xiii. Donington | xxix. Ingoldmells |
| xiv. East Keal (VP63) | xxx. Irby in the Marsh (VP58) |
| xv. East Kirkby | |
| xvi. Eastville (VP144) | |

- xxxi. Kirton (VP74, VP75, VP127, VP128)
- xxxii. Langrивille (VP68, VP69, VP70, VP134)
- xxxiii. Leverton
- xxxiv. Little Steeping (VP60)
- xxxv. Midville (VP145)
- xxxvi. Mumby (VP162, VP164)
- xxxvii. New Leake (VP143, VP144)
- xxxviii. Old Leake (VP142, VP143)
- xxxix. Orby (VP53)
 - xl. Quadring (VP79)
 - xli. Sibsey (VP140, VP141)
 - xlii. Stickford (VP64)
 - xliii. Stickney (VP65)
 - xliv. Surfleet (VP82, VP83)
 - xlv. Sutterton (VP123, VP124, VP125)
- xlvi. Swineshead (VP75, VP76)
- xlvii. Thornton le Fen (VP67, VP68)
- xlviii. Thorpe St. Peter (VP150)
- xlix. Toynton All Saints (VP62)
 - i. Toynton St Peter (VP61)
 - ii. Wainfleet All Saints (VP148)
 - iii. Wainfleet St Mary (VP147)
 - liii. West Fen
 - liv. West Keal (VP63)
- lv. Wigtoft (VP77, VP78, VP126)
- lvi. Wildmore
- lvii. Willoughby with Sloothby (VP48, VP49, VP50, VP51, VP52)
- lviii. Wrangle
- lix. Wyberton (VP131, VP133)

3.5.13 For people living within Boston (VP135) and Skegness (VP155, VP157), the susceptibility to visual change is medium due to the built up nature of those communities, while the characteristics of the landscape indicate that the value of the views is assessed as medium.

3.5.14 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 Receptors

- 3.5.15 People using the following recreational routes and receptors have been identified within Section 4.
- i. Greenwich Meridian Trail – A 440 km long distance trail which broadly follow the Greenwich Meridian Line between East Sussex and East Yorkshire. It crosses the Study Area in Sections 2, 4, 5 and 6. As views contribute to the landscape setting enjoyed by people using the trail, their susceptibility to the Project is high. In Section 4, the trail crosses the Study Area between Fosdyke Bridge and Hagnaby. The trail follows a 132 kV overhead line between Fosdyke Bridge and Boston and therefore pylons are prominent in views. To the north of Boston there are fewer detractors as the trail passes across the flat landscape before becoming more elevated to the north towards the Wolds. Within Section 4, the value of the sequential views is considered to be of medium value due to the presence of existing detractors to the south and a lack of notable features to the north;

- ii. The Macmillan Way – A 290-mile trail from Boston to Abbotsbury in Dorset, which follows footpaths, bridleways, byways, and minor roads, showcasing diverse English landscapes. It also crosses the Study Area of Section 5 Refined Weston Marsh Substation Siting Zone. In Section 4, the trail runs through South Holland’s fenland, including a scenic stretch through arable farmland from Fosdyke Bridge along the River Welland. To the west of Fosdyke Bridge, the path passes beneath an existing 400 kV overhead line. To the east of Fosdyke Bridge, it passes beneath the existing 132 kV overhead power line and broadly follows this overhead line all the way to Boston. The pylons dominate the views along the route, diminishing the scenic quality of the surrounding farmland. Consequently, the views are considered to be of medium value, within Section 4;
- iii. National Cycle Route 1 – A 2,000 km cycle route between Dover and John O’Groats up the eastern side of England and Scotland. The route is located within Sections 2, 4, 5, 6 and 7 of the Project. As views contribute to the landscape setting enjoyed by people using these sections of the cycle route, their susceptibility to the Project is high. In Section 4, the route crosses the flat landscape between Fosdyke Bridge and Holland Fen. The cycle route broadly follows a 132 kV overhead line between Fosdyke Bridge and Boston and therefore pylons are prominent in views. Within Section 4, the value of the sequential views is considered to be medium due to the presence of existing detractors to the south and a lack of notable features to the north;
- iv. River Witham – The River Witham flows between Lincoln and Boston and crosses Section 4 between Langrick Bridge and Anton’s Gowt. It is managed by the Canals and Rivers Trust and is used for recreation. As views contribute to the landscape setting enjoyed by people using the waterway for recreation, their susceptibility to the Project is high. Within Section 4, the value of the sequential views is considered to be medium due to a lack of notable features. Due to the flat landscape and embankments either side of the river, there are few longer distance views, views contained within the river corridor itself; and
- v. Black Sluice Navigation - The Black Sluice Navigation, also known as South Forty Foot Drain allows for 31 km of navigable waterway west of Boston and crosses Section 4 between Boston and Hubbert’s Bridge. It is managed by the Environment Agency, the waterway was reopened in 2009 to boats. As views contribute to the landscape setting enjoyed by people using the waterway for recreation, their susceptibility to the Project is high. Within Section 4, the value of the sequential views is considered to be medium due to a lack of notable features. The A1121 and railway line follow the waterway to the north. Due to the flat landscape and embankments either side of the waterway, there are few longer distance views, views contained within the corridor itself.

Future Baseline

- 3.5.16 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.
- 3.5.17 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.

- 3.5.18 Ash trees (*Fraxinus excelsior*) within the Study Area for Section 4 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 visual 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 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.
- 3.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 4. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include amendments to locations of access tracks and bellmouths and micrositing of pylons 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 Ecological 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.
- 3.6.4 A detailed mitigation plan for Section 4 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

Construction

- 3.6.5 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 Visual assessment of Section 4 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 BS 5837:2012: Trees in relation to design, demolition, and construction (Ref 15). 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.
- 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

- 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 4 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 4 for Visual include:
- i. Areas of woodland planting to replace those affected by the Project which would also help to filter views for people as they move around their communities; and
 - ii. Introduction of tree planting on field boundaries and roadsides to filter views of the Project for people as they move around their communities, for example on field boundaries to the east of Burgh le Marsh, adjacent the war memorial to the wets of Northlands, to the east of the B1192 at Brothertoft and to the east of Hubbert's Bridge.
- 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 4.
- 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 4 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 4). As agreed in the Scoping Opinion adopted by the Secretary of State on 10 September 2024 (Ref 4), 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 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 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

- 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 reinstated².

Communities

- 3.7.9 One community has been identified as experiencing likely significant effects during construction of the Project in Section 4. 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 communities that would experience a greater effect from the Project during construction. These will be identified and reported at the ES stage as part of the Residential Visual Amenity Assessment (RVAA).

Bilsby

- 3.7.10 Bilsby Parish is located within Section 4, however a large part of the community including Thurlby is also located within Section 3 New Lincolnshire Connection Substations A and B. 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 4.
- 3.7.11 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.
- 3.7.12 This parish would be directly impacted by the construction of approximately 1.4 km of overhead line including pylons LW5-LW8 and would therefore have close proximity views of the Project. Views out of the parish to the north would also be affected by construction activities associated with the New LCS B, a construction compound, haul road, and the proposed 400 kV overhead line in Sections 3. The works would be viewed in at close range and overall, this would result in a large magnitude of change and likely significant effects.
- 3.7.13 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains medium, the main

² 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.

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

- 3.7.14 No significant effects for recreational routes or receptors have been identified in Section 4 during construction. Effects which have been judged to be not significant are included in **Table 3.2**.

Operation

- 3.7.15 The potential effects that could result from the operation of the Project are the effects on views 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 are considered permanent.

Communities

- 3.7.16 Forty-one of the 67 community areas have been identified as being significantly affected during operation of the Project in Section 4. All other communities would experience effects which have been judged to be not significant. There may be individual properties within communities that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the RVAA.

Amber Hill

- 3.7.17 The community of Amber Hill 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.
- 3.7.18 While the parish would not be directly impacted by the Project, views out from the parish to the south and east would be affected by the presence of pylons outside the community area in Sections 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Although the Project would appear distant from much of the parish, pylons would remain noticeable in the wide open views out to the east. Overall, this would result in a medium magnitude of change and likely significant effects.

Bilsby

- 3.7.19 Bilsby Parish is located within Section 4, however a large part of the community including Thurlby is also located within Section 3 New Lincolnshire Connection Substations A and B. The preliminary assessment of the effects on people living and moving around Bilsby Parish presented below considers the part of Bilsby that is located within the Study Area for Section 4.
- 3.7.20 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.
- 3.7.21 The parish would be directly impacted by the operation of approximately 1.4 km of overhead line including pylons LW5-LW8 and would therefore have close proximity views of the Project as well as being indirectly affected by views of pylons outside the

community area in Sections 3 and 4. The New Lincolnshire Connection Substation B (LCS-B) would also be visible to the north in Section 3. 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.

- 3.7.22 When considering the operational phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains large. Although 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.

Bratoft

- 3.7.23 The community of Bratoft 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 The parish would be directly impacted by the operation of approximately 1.8 km of overhead line including pylons LW51-LW55 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and south. The Project introduces new 400 kV overhead line through the eastern edge of this community area and in views to the north and south which have no existing overhead lines. Overall, this would result in a medium magnitude of change and likely significant effects.

Bicker

- 3.7.25 The community of Bicker 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.
- 3.7.26 Although not directly impacted, the new 400 kV overhead line outside the community area would be noticeable in views to the south east of this community area. Views are already affected by the existing 400 kV overhead line to the south, however, the Project would spread the effects of overhead line infrastructure across a wider area, increasing the numbers of pylons visible for people living and moving around the parish, particularly for those visual receptors south of the A52. Overall, this would result in a medium magnitude of change and likely localised significant effects in the southern parts of this community.

Burgh le Marsh

- 3.7.27 The community of Burgh le Marsh 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.
- 3.7.28 The parish would be directly impacted by the operation of approximately 3.4 km of overhead line including pylons LW36-LW46 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and south. The Project introduces new 400 kV overhead line to the east of Burgh le Marsh and in views to the north and south which have no existing overhead lines. Although this would not affect views

from Burgh le Marsh towards the Lincolnshire Wolds National Landscape (AONB) which is to the west of this parish, the Project would change the character of views east. The Project passes close to recreational receptors including three caravan parks to the east of Burgh le Marsh. Overall, this would result in a medium magnitude of change and likely significant effects.

Carrington

- 3.7.29 The community of Carrington 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.
- 3.7.30 The parish would be directly impacted by the operation of approximately 2 km of overhead line including pylons LW118-LW123 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south. The project would introduce a new 400 kV overhead line in views to the west and south which have no existing overhead lines. Overall, this would result in a medium magnitude of change and likely significant effects.

Croft

- 3.7.31 The community of Croft 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 The parish would be directly impacted by the operation of approximately 1.6 km of overhead line including pylons LW47-LW50 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and west. Views are already affected by the existing 132 kV overhead line in the centre of the parish and two wind turbines at the Hollies Solar Farm to the west, however, the Project would spread the effects of overhead line infrastructure across a wider area, increasing the numbers of pylons visible for people living and moving around the parish. Overall, this would result in a medium magnitude of change and likely significant effects.

Cumberworth

- 3.7.33 The community of Cumberworth 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 The parish would be directly impacted by the operation of approximately 1.6 km of overhead line including pylons LW15-LW19 and would therefore have close proximity views of the Project, as well as be indirectly affected by views of pylons outside the community area in Section 4 to the north west and south. The Project introduces a new 400 kV overhead line to the south of Cumberworth and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. Overall, this would result in a medium magnitude of change and likely significant effects.

East Keal

- 3.7.35 The community of East Keal 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.
- 3.7.36 While East Keal Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. The parish is more elevated to the north allowing for longer distance views and pylons would be noticeable in open views out to the south. Pylons would appear to stack³ in views, which would look along the section between LW88 and LW99. Overall, this would result in a medium magnitude of change and likely significant effects.

Eastville

- 3.7.37 The community of Eastville 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.
- 3.7.38 The parish would be directly impacted by the operation of approximately 1.4 km of overhead line including pylons LW78-LW81 and would therefore have close proximity views of the Project. Views west would also be affected as the Project heads south from LW89, including from the village of Eastville. Views from within the parish to the south are already affected by an existing 132 kV overhead line. The Project would spread the effects of overhead line infrastructure across a wider area and increase the numbers of pylons visible for people living and moving around the parish, pylons would be visible in all directions, although some at distance. Overall, this would result in a medium magnitude of change and likely significant effects.

Farlesthorne

- 3.7.39 The community of Farlesthorne 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 high.
- 3.7.40 The parish would be directly impacted by the operation of approximately 1.7 km of overhead line including pylons LW9-LW13 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons in Sections 3 and 4 to the north and Section 4 to the east. The Project introduces new 400 kV overhead line to the north east of Farlesthorne and in views across the flat landscape which have no existing overhead lines. Although it would not affect views from Farlesthorne towards the Lincolnshire Wolds National Landscape (AONB) which is located to the west, the Project would change the character of views east and north east. Overall, this would result in a medium magnitude of change and likely significant effects.

³ Stacking refers to where multiple pylons are seen against one another as they head into the distance which can intensify the visual effect.

Firsby

- 3.7.41 The community of Firsby 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.
- 3.7.42 The parish would be directly impacted by the operation of approximately 1 km of overhead line including pylons LW61-LW63 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the south east and south west. Although views from within the parish to the east are already affected by an existing 132 kV overhead line, the Project would be in closer proximity and would be prominent in views south. Overall, this would result in a medium magnitude of change and likely significant effects.

Frampton

- 3.7.43 The community of Frampton 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.
- 3.7.44 The parish would be directly impacted by the operation of approximately 2.5 km of overhead line including pylons LW150-LW155 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and south. Although views from within the parish to the east are already affected by an existing 132 kV overhead line, the Project would spread the effects of overhead line infrastructure across a wider area and increase the numbers of pylons visible for people living and moving around the parish. The new 400 kV overhead line would be noticeable in views in the west of this community area. Overall, this would result in a medium magnitude of change and likely significant effects.

Frithville and Westville

- 3.7.45 The community of Frithville and Westville 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.
- 3.7.46 The parish would be directly impacted by the operation of approximately 3.5 km of overhead line including pylons LW124-LW131 and LW134-LW135 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south. The Project introduces new 400 kV overhead line in views to the north and west which have no existing overhead lines. Overall, this would result in a medium magnitude of change and likely significant effects.

Great Steeping

- 3.7.47 The community of Great Steeping 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.
- 3.7.48 While Great Steeping Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other

discordant features. The parish is slightly elevated to the north allowing for longer distance views and pylons would be noticeable in open views out to the south. Overall, this would result in a medium magnitude of change and likely significant effects.

Halton Hologate

- 3.7.49 The community of Halton Hologate 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.
- 3.7.50 While Halton Hologate Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. The village itself is slightly elevated allowing for longer distance views and pylons would be noticeable in open views out to the south. Overall, this would result in a medium magnitude of change and likely significant effects.

Hogsthorpe

- 3.7.51 The community of Hogsthorpe 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.
- 3.7.52 The parish would be directly impacted by the operation of approximately 1.3 km of overhead line including pylons LW29-LW32 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the west and south. The Project introduces new 400 kV overhead line in views to the west and south which have no existing overhead lines and in views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. Overall, this would result in a medium magnitude of change and likely significant effects.

Holland Fen with Brothertoft

- 3.7.53 The community of Holland Fen with Brothertoft 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.
- 3.7.54 The parish would be directly impacted by the operation of approximately 2.6 km of overhead line including pylons LW142-LW149 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south. The Project introduces new 400 kV overhead line in views to the east and south which have no existing overhead lines, and in views towards Boston which contain the Boston Stump (St Botolph's Church). Overall, this would result in a medium magnitude of change and likely significant effects.

Huttoft

- 3.7.55 The community of Huttoft 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.

- 3.7.56 While Huttoft Parish 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 pylons in Sections 3 and 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Although the Project would appear very distant from the east of the parish and along the coast, pylons would remain very noticeable in open views out from the west of the parish including in views from Huttoft. Overall, this would result in a medium magnitude of change and likely significant effects.

Irby in the Marsh

- 3.7.57 The community of Irby in the Marsh 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.
- 3.7.58 The parish would be directly impacted by the operation of approximately 1.6 km of overhead line including pylons LW56-LW60 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the south east and south west. Although views from within the parish to the east are already affected by an existing 132 kV overhead line, the Project would be in closer proximity and would be prominent in views south. Overall, this would result in a medium magnitude of change and likely significant effects.

Kirton

- 3.7.59 The community of Kirton 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.
- 3.7.60 The parish would be directly impacted by the operation of approximately 3.6 km of overhead line including pylons LW156-LW166 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and south. Although views from within the parish are already affected by an existing 132 kV overhead line, the Project would spread the effects of overhead line infrastructure across a wider area and increase the numbers of pylons visible for people living and moving around the parish. The new 400 kV overhead line would be noticeable in views in the west of this community area. Overall, this would result in a medium magnitude of change and likely significant effects.

Langrville

- 3.7.61 The community of Langrville 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.
- 3.7.62 The parish would be directly impacted by the operation of approximately 2 km of overhead line including pylons LW136-LW141 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north east and south. The Project introduces new 400 kV overhead line in views to the east and south which have no existing overhead lines, and in views towards Boston which contain the Boston Stump. From the village Langrick, which is located to the south west of the parish,

views south would also see pylons stacking in views which would increase the prominence of the Project. Overall, this would result in a medium magnitude of change and likely significant effects.

Little Steeping

- 3.7.63 The community of Little Steeping 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.
- 3.7.64 The parish would be directly impacted by the operation of approximately 500 m of overhead line including pylon LW70 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south west. Although views from within the parish to the east are already distantly affected by an existing 132 kV overhead line, the Project would be in closer proximity and would be prominent in views south. Overall, this would result in a medium magnitude of change and likely significant effects.

Midville

- 3.7.65 The community of Midville 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.
- 3.7.66 The parish would be directly impacted by the operation of approximately 3.6 km of overhead line including pylons LW88-LW98 and would therefore have close proximity views of the Project. Views south west would also be affected as the Project heads away from the parish from LW99, including from the village of Midville. Properties along Midville Road and Hobhole Bank would have close proximity views. From some locations, pylons would be seen stacking which would increase the prominence of the Project. Overall, this would result in a medium magnitude of change and likely significant effects.

Mumby

- 3.7.67 The community of Mumby 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.
- 3.7.68 While Mumby Parish 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 pylons in Sections 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Pylons would remain very noticeable in open views out from the parish including in views east from Mumby and Helsey. Overall, this would result in a medium magnitude of change and likely significant effects.

New Leake

- 3.7.69 The community of New Leake 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.

- 3.7.70 The parish would be directly impacted by the operation of approximately 5 km of overhead line including pylons LW82-LW87 to the north and LW99-LW107 to the south east, and would therefore have close proximity views of the Project. Views south west would also be affected as the Project heads away from the parish from LW99, including from the village of Midville. Properties along Bell Water Drain and Hobhole Bank would have close proximity views. From some locations, pylons would be seen stacking to the east which would increase the prominence of the Project. Overall, this would result in a medium magnitude of change and likely significant effects.

Orby

- 3.7.71 The community of Orby 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.
- 3.7.72 The parish would be directly impacted by the operation of approximately 1.3 km of overhead line including pylons LW33-LW36 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and south. The Project introduces new 400 kV overhead line to the east of Orby and in views to the north and south which have no existing overhead lines. Although this would not affect views from Orby towards the Lincolnshire Wolds National Landscape (AONB) which is to the west of this parish, the Project and would change the character of views east. The Project passes close to recreational receptors including a caravan park on Marsh Lane. Overall, this would result in a medium magnitude of change and likely significant effects.

Sibsey

- 3.7.73 The community of Sibsey 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.
- 3.7.74 The parish would be directly impacted by the operation of approximately 2.5 km of overhead line including pylons LW110-LW117 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north east and north west. The Project introduces new 400 kV overhead line in views which have no existing overhead lines. An existing 132 kV overhead line crosses to the east of the parish in views away from the Project, and therefore the Project would spread the effects of overhead line infrastructure across a wider area and increase the numbers of pylons visible for people living and moving around the parish. Overall, this would result in a medium magnitude of change and likely significant effects.

Stickford

- 3.7.75 The community of Stickford 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.
- 3.7.76 While Stickford Parish would not be directly impacted by the Project, views out from the parish to the south and east would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity

infrastructure or other discordant features. The parish is slightly elevated to the east allowing for longer distance views although vegetation around Stickford helps to filter views. Pylons would be noticeable in open views out to the south and east where pylons would appear to stack in views, which would look along the section between LW80 and LW89. Overall, this would result in a medium magnitude of change and likely significant effects.

Stickney

- 3.7.77 The community of Stickney 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.
- 3.7.78 The parish would be directly impacted by the operation of approximately 800 m of overhead line including pylons LW108-LW109 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south west. Although an existing 132 kV overhead line is distantly visible to the south, the Project introduces new 400 kV overhead line in views which have no existing overhead lines. Overall, this would result in a medium magnitude of change and likely significant effects.

Sutterton

- 3.7.79 The community of Sutterton 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.
- 3.7.80 The parish would be directly impacted by the operation of approximately 1 km of overhead line including pylons LW187-LW189 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north west and south. Although an existing 400 kV overhead line is visible to the west, the Project introduces new 400 kV overhead line which would be in closer proximity and would also introduce pylons in views which have no existing overhead lines to the north. Overall, this would result in a medium magnitude of change and likely significant effects.

Swineshead

- 3.7.81 The community of Swineshead 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.
- 3.7.82 The parish would be directly impacted by the operation of approximately 1.1 km of overhead line including pylons LW167-LW169 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south. Although an existing 132 kV overhead line passes through the centre of the parish and pylons are an existing feature, the Project introduces new 400 kV overhead line in views to the east which have no existing overhead lines, spreading the effects of overhead line infrastructure across a wider area and increasing the numbers of pylons visible for people living and moving around the parish. Overall, this would result in a medium magnitude of change and likely significant effects.

Thornton le Fen

- 3.7.83 The community of Thornton le Fen 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.
- 3.7.84 The parish would be directly impacted by the operation of approximately 700 m of overhead line including pylons LW132-LW133 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the east and south. The Project introduces new 400 kV overhead line in views which have no existing overhead lines. Overall, this would result in a medium magnitude of change and likely significant effects.

Thorpe St Peter

- 3.7.85 The community of Thorpe St Peter 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.
- 3.7.86 The parish would be directly impacted by the operation of approximately 2 km of overhead line including pylons LW64-LW68 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and west. Views are already affected by the existing 132 kV overhead line in the centre of the parish and two wind turbines visible at the Hollies Solar Farm to the north, however, the Project would spread the effects of overhead line infrastructure across a wider area, increasing the numbers of pylons visible for people living and moving around the parish. Overall, this would result in a medium magnitude of change and likely significant effects.

Toynton All Saints

- 3.7.87 The community of Toynton All Saints 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.
- 3.7.88 While Toynton All Saints Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. The parish is more elevated to the north allowing for longer distance views and pylons would be noticeable in open views out to the south. Pylons would appear to stack in views, which would look along the section between LW88 and LW99. Overall, this would result in a medium magnitude of change and likely significant effects.

Toynton St Peter

- 3.7.89 The community of Toynton St Peter 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.
- 3.7.90 While Toynton St Peter Parish would not be directly impacted by the Project, views out would be affected by pylons outside the community area in Section 4 to the south. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. The parish is slightly elevated to the north allowing for

longer distance views and pylons would be noticeable in open views out to the south. Pylons between LW76 and LW87 would be seen in combination with pylons LW88 and LW99 which would appear beyond meaning a large number of pylons would be visible. Overall, this would result in a medium magnitude of change and likely significant effects.

West Fen

- 3.7.91 The community of West Fen 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.
- 3.7.92 While West Fen Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. There is little vegetation within this community to filter views although the number of visual receptors is low. Overall, this would result in a medium magnitude of change and likely significant effects.

West Keal

- 3.7.93 The community of West Keal 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.
- 3.7.94 While West Keal Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. The parish is more elevated to the north allowing for longer distance views and pylons would be noticeable in open views out to the south. Overall, this would result in a medium magnitude of change and likely significant effects.

Wigtoft

- 3.7.95 The community of Wigtoft 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.
- 3.7.96 The parish would be directly impacted by the operation of approximately 5.5 km of overhead line including pylons LW170-LW186 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and south. Although an existing 400 kV overhead line is visible to the west and south, the Project introduces new 400 kV overhead line which would be in closer proximity and would also introduce pylons in views which have no existing overhead lines to the north. Overall, this would result in a medium magnitude of change and likely significant effects.

Wildmore

- 3.7.97 The community of Wildmore 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.

- 3.7.98 While Wildmore Parish would not be directly impacted by the Project, views out from the parish to the south would be affected by the presence of pylons in Section 4. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Pylons would be noticeable in open views out to the south. Overall, this would result in a medium magnitude of change and likely significant effects.

Willoughby with Sloothby

- 3.7.99 The community of Willoughby with Sloothby 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.
- 3.7.100 The parish would be directly impacted by the operation of approximately 3.3 km of overhead line including pylons LW20-LW28 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of pylons outside the community area in Section 4 to the north and east. The Project introduces new 400 kV overhead line to the northern side of the parish in views which have no existing overhead lines. Although this would not affect views from Willoughby or Sloothby towards the Lincolnshire Wolds National Landscape (AONB) which is to the west of this parish, the Project and would change the character of views east. The landform in the far west of the parish is more elevated and allows for longer distance views towards the Project, a small section of the parish being located within the Lincolnshire Wolds National Landscape (AONB). Overall, this would result in a medium magnitude of change and likely significant effects.

Recreational receptors

- 3.7.101 No significant effects for recreational routes or receptors have been identified in Section 4 during operation.

Likely Non-Significant Effects

- 3.7.102 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.
- 3.7.103 There are some visual receptors where the effects are likely to be not significant when considering only impacts within Section 4, however when considering the Project in its entirety would result in a likely significant effect. For those receptors, additional information is presented below to describe the effects in Section 4 and which other Sections of the Project would result in a greater effect.

Construction

Greenwich Meridian Trail

- 3.7.104 The Greenwich Meridian Trail is located within Section 4 and is also located within Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A and Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation. The preliminary assessment of the effects on people using the Greenwich Meridian Trail presented below only considers the effects of the Project in Section 4.

- 3.7.105 People using the Greenwich Meridian Trail have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 4 indicate that the value of the sequential views experienced is judged to be medium. Users of the Greenwich Meridian Trail would have close range views of pylon construction between pylons LW110 and LW111, where the trail crosses the Project near pylon LW111. Taller construction equipment would be visible over a longer stretch as people approach from both the north and south. The impact is limited to a short section of the trail, which crosses perpendicular to the Project, and construction activities would soon be filtered by the limited tree cover in this flat landscape. This would result in a small magnitude of change and effects likely be not significant during construction.
- 3.7.106 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change would increase to medium. This is predominantly due to the close proximity to construction in Section 6, although trail users are unlikely to pass the construction activities in multiple Sections within a short period of time due to the distances between Sections. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

Operation

Greenwich Meridian Trail

- 3.7.107 The Greenwich Meridian Trail is located within Section 4 and is also located within Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A and Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation. The preliminary assessment of the effects on people using the Greenwich Meridian Trail presented below only considers the effects of the Project in Section 4.
- 3.7.108 People using the Greenwich Meridian Trail have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 4 indicate that the value of the sequential views experienced is judged to be medium.
- 3.7.109 Users of the Greenwich Meridian Trail would have close range views of the new 400 kV overhead line where the trail crosses the Project near pylon LW111. Although pylons would be a new feature, the trail crosses the Project perpendicular and therefore users of the footpath would only be affected over a short section. This would result in a small magnitude of change and effects likely be not significant during operation.
- 3.7.110 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change would increase to medium. This is mainly due to effects within Section 6, but as the Project affects the trail in three separate locations. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

Table 3.2 Preliminary summary of non-significant Visual effects – Section 4

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Communities					
Addlethorpe	Value of Views – Medium Susceptibility – High	Directly affected by the construction of pylon LW33. Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – small	Construction – not significant	Although some construction activity associated with pylon LW33 is located on the very edge of the parish, this part of the community has no visual receptors, the closest being approximately 1.3 km from the Project. The tops of taller construction equipment may be perceptible from the western areas of the parish which contain the main village of Addlethorpe, but would be temporary in nature and at distance. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 4 during operation. Pylon LW33 is located within the parish but in an area with no visual receptors.	Operation – small	Operation - not significant	At 1.3 km to the closest visual receptors within the community area, pylons may be perceptible but filtered by vegetation cover and the intervening caravan parks which surround the village. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Algarkirk	Value of Views – Medium	Indirectly affected by views of construction activities for the	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible from the western

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – High	overhead line in Section 4 and 5.			areas of the parish but would be 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.
		Indirectly affected by the presence of pylons in Sections 4 and 5 during operation.	Operation - small	Operation - not significant	The new 400 kV overhead line would be noticeable in views in the southern part of this community area, however it would be seen with the existing 400 kV overhead lines to the north of Spalding. As pylons are already a feature of views and the Project looks to parallel existing overhead lines in this area, the magnitude of change is considered to be small and effects on this community area during operation would likely not be significant.
Anderby	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible from the western areas of the parish but would be 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.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	At 2.8 km to the closest visual receptors within the community area, pylons may be perceptible but filtered by vegetation cover and the intervening villages of

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>Huttoft and Mumby which limits the effect of the Project.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Ashby with Scremby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>Taller equipment may be perceptible but would be distant and these effects would be temporary in nature.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – very small	Operation – not significant	<p>At 4.1 km to the closest visual receptors within the community area, the taller components of the Project may be perceptible but would be very distant and would not affect views for people living and moving around the community.</p> <p>The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.</p>
Bicker	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities from the south of the community, due to the flat topography the effects of construction would be limited to the areas around Mill Lane. Taller equipment would be perceptible, however, these effects</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Boston	Value of Views – Medium Susceptibility – Medium	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>Taller equipment may be perceptible but would be distant and these effects would be temporary in nature.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	<p>At 3 km to the closest visual receptors within the community area, the taller components of the Project may be noticeable from limited areas to the west of Boston but being a primarily urban community area the majority of views would be unaffected.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Bratoft	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 1.8 km of overhead line including pylons LW51-LW55.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the south of the community area, the existing vegetation along field boundaries and larger areas of mature trees around</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by views of construction activities from pylons in Section 4.			buildings means that effects would be mainly occur from taller equipment. These effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Burgh le Marsh	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 3.4 km of overhead line including pylons LW35-LW46. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the east of the community area, the existing vegetation along field boundaries and larger areas of mature trees around caravan parks and farms means that effects would mainly occur from taller equipment. These effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Candlesby with Gunby	Value of Views – High Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Although parts of the parish are slightly elevated, the mature woodland blocks associated with Gunby Hall and Candlesby heavily filter views towards the Project. The tops of taller construction equipment may be

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>perceptible but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	<p>At 3.5 km, pylons may be perceptible but heavily filtered by vegetation cover and the intervening town of Burgh le Marsh which limits the effect of the Project.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Carrington	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 2 km of overhead line including pylons LW118-LW123. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the south of the community area, the existing vegetation around Carrington combined with the flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Chapel St Leonards	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be 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.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – very small	Operation - not significant	At 4.3 km to the closest visual receptors within the community area, pylons may be perceptible but filtered by vegetation cover and the intervening village of Hogsthorpe which limits the effect of the Project. The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Claxby St Andrew	Value of Views – High Susceptibility - High	Indirectly affected by views of construction activities for LCS-B and the overhead line in Sections 3 and 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be temporary in nature and at distance, the main village not having views due to its location within a shallow valley and benefiting from large woodland blocks which screen views. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by the presence of LCS-B and pylons in Sections 3 and 4 during operation.	Operation – small	Operation - not significant	At 3.5 km, pylons may be perceptible but heavily filtered by vegetation cover, landform screening views from the village itself. LCS-B is over 4.5 km from this community area and proposed planting around the substation would screen distant views from this parish which are limited to the more elevated areas where there is a lack of visual receptor. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Croft	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 1.6 km of overhead line including pylons LW47-LW50. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although there would be open views towards construction activities from the west of the community, due to the flat topography the effects of construction would be limited. Taller equipment would be perceptible, however, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Cumberworth	Value of Views – Medium	Directly impacted by the construction of approximately 1.6 km of overhead line including	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the south of the community area, the existing vegetation along field boundaries means

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility - High	pylons LW15-LW19. Indirectly affected by views of construction activities from pylons in Section 4.			that effects would be mainly occur from taller equipment which would be visible towards the Lincolnshire Wolds National Landscape (AONB). However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Donington	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be 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.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	The taller components of the Project may be perceptible but for the majority of the community would be seen in the context of the existing 400 kV overhead line which passes through the eastern side of the parish and therefore the Project would not fundamentally alter the composition or character of the views currently experienced. The magnitude of change is considered to be small and effects on this

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during operation would likely be not significant.
East Keal	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be 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.
East Kirkby	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Views from the community are filtered by vegetation on field boundaries as well as some larger blocks of woodland. The tops of taller construction equipment may be perceptible but would be 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.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	At 4.3 km, pylons may be noticeable in more open views but filtered by vegetation cover for much of the community area. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Eastville	Value of Views – Medium	Directly impacted by the construction of	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility - High	approximately 1.4 km of overhead line including pylons LW78-LW81. Indirectly affected by views of construction activities from pylons in Section 4.			<p>north of the community area, there are very few visual receptors in this area. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Farlesthorne	Value of Views – High Susceptibility – High	Directly impacted by the construction of approximately 1.7 km of overhead line including pylons LW9-LW13. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the east of the community area, the existing hedgerow vegetation along field boundaries combined with the flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Firsby	Value of Views – Medium	Directly impacted by the construction of approximately 1 km of overhead line including	Construction – small	Construction – not Significant	<p>Although there would be open views towards construction activities to the south of the community area, the existing vegetation around the village and the</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – High	pylons LW61-LW63. Indirectly affected by views of construction activities from pylons in Section 4.			<p>larger woodland block to the east of the railway line combined with the relatively flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Fishtoft	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>The tops of taller construction equipment may be perceptible from the northern parts of this parish but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation – not significant	<p>From the small part of this parish within the Study Area to the north of Boston, the taller components of the Project may be perceptible but seen in views influenced by the edge of Boston and filtered by vegetation along the River Witham and at Anton's Gowt.</p> <p>The magnitude of change is considered to be small and effects on this</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during operation would likely be not significant.
Fosdyke	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4 and 5.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be 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.
		Indirectly affected by the presence of pylons in Sections 4 and 5 during operation.	Operation – very small	Operation - not significant	At 2.5 km to the closest visual receptors within the community area, the taller components of the Project may be perceptible but seen in the context of the existing 400 kV overhead line to the west and south and therefore the Project would not fundamentally alter the composition or character of the views currently experienced. The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Frampton		Directly impacted by the construction of approximately 2.5 km of overhead line including pylons LW150-LW155. Indirectly affected by views of construction	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the east of the community area, only a limited area of the community would be affected to the east of Hubbert's Bridge. Effects would mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		activities from pylons in Section 4.			<p>accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Frithville and Westville	Value of Views – Medium Susceptibility – High	<p>Directly impacted by the construction of approximately 3.5 km of overhead line including pylons LW124-LW131 and LW134-LW135.</p> <p>Indirectly affected by views of construction activities from pylons in Section 4.</p>	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the east of the community area, effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Friskney	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>The tops of taller construction equipment may be perceptible but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation – not significant	<p>At 2.2 km to the closest visual receptors within the community area, the taller components of the Project may be perceptible. An existing 132 kV overhead line passes through the northern part of</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>the parish and would remain the dominant feature in views for the majority of the community area including the village of Friskney. Therefore, the Project would not fundamentally alter the composition or character of the views currently experienced.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Gosberton	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 1.7 km of overhead line including pylons LW190-LW195. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the east of this large community area, there are very few visual receptors in this area and mature trees along roads to the east of Gosberton would filter views. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
		Directly impacted by the operation of approximately 1.7 km of	Operation – small	Operation - not significant	<p>The new 400 kV overhead line would be noticeable in views east but only from a localised part of this community area. Views are already affected by the</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		overhead line including pylons LW190-LW195. Indirectly affected by pylons to the north in Section 4.			existing 4ZM overhead line, which the Project parallels, and therefore the Project would not fundamentally alter the composition or character of the views currently experienced. The Project would be seen beyond the existing overhead line from the majority of the community area which remain the more prominent feature. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Great Steeping	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Although on slightly elevated landform, vegetation filters views south. Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
Halton Hologate	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Although on slightly elevated landform, vegetation filters views south. Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during construction would likely be not significant.
Hogsthorpe	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 1.3 km of overhead line including pylons LW29-LW32. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although some construction activity associated with the overhead line is located on the western edge of the parish, this part of the community has no visual receptors, the closest being approximately 1.7 km from the Project. Taller construction equipment may be perceptible from the western areas of the parish which contain the main villages of Hogsthorpe and Slackholme End, but would be temporary in nature and at distance. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Holland Fen with Brothertoft	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 2.6 km of overhead line including pylons LW142-LW149. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although some construction activity associated with the overhead line is located on the eastern side of the parish, effects would be limited to the properties along the B1192 at Brothertoft. Due to the flat landform, taller construction equipment may be noticeable but would be temporary in nature and at distance. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during construction would likely be not significant.
Huttoft	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for LCS-B and the overhead line in Sections 3 and 4.	Construction – small	Construction – not significant	Although the parish is within 1 km of the Project, the eastern part of the community area has few visual receptors, the closest being 1.8 km away, receptors benefitting from vegetation along field boundaries and the dismantled railway which filters views west. The tops of taller construction equipment may be perceptible but would be temporary in nature and at distance. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Ingoldmells	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible from the western areas of the parish but would be 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.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – very small	Operation - not significant	As the Project is 3.5 km to the closest visual receptors within the community area, pylons may be perceptible but filtered by vegetation cover and the intervening village of Addlethorpe which limits the effect of the Project. The parish

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>predominantly comprises holiday parks with a focus on the coast.</p> <p>The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.</p>
Irby in the Marsh	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 1.6 km of overhead line including pylons LW56-LW60. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the south of the community area, the existing vegetation around the village and the vegetation along field boundaries to the south combined with the relatively flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Kirton	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 3.6 km of overhead line including pylons LW156-LW166. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the east of the community area, only a limited area of the community would be affected to the west of Kirton End. Effects would mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Langrville	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 2 km of overhead line including pylons LW136-LW141. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities in the centre of the community area, there are few receptors in close proximity. Effects would mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Little Steeping	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 500 m of overhead line including pylon LW70. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the south of the community area, the existing vegetation around the village and the vegetation along field boundaries to the south combined with the relatively flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Midville	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 3.6 km of overhead line including pylons LW88-LW99. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities, there are very few visual receptors in this area and properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Mumby	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for LCS-B and the overhead line in Sections 3 and 4.	Construction – small	Construction – not significant	<p>Although the parish is within 1 km of the Project at its southern end, this part of the community area has few visual receptors, the closest being 1.5 km away, receptors benefitting from vegetation along field boundaries. Taller construction equipment may be perceptible but would be temporary in nature and at distance. Views towards construction of LCS-B would be filtered by vegetation at Thurlby.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
New Leake	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 2 km of overhead line including pylons LW82-LW87 to the north and 3 km of overhead line including pylons LW99-LW107 to the south east. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although there would be open views towards construction activities, there are very few visual receptors in this area and properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Old Leake	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Although the Project comes close to the northern edge of the parish, there are few visual receptors in this area. Taller construction equipment may be perceptible but would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible to the north of this community area. An existing 132 kV overhead line passes through the northern part of the parish and would remain the dominant feature in views for the majority of the community area. Therefore, the Project would not fundamentally alter the composition or character of the views currently experienced.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Orby	Value of Views – Medium Susceptibility – High	<p>Directly impacted by the construction of approximately 1.3 km of overhead line including pylons LW33-LW36.</p> <p>Indirectly affected by views of construction activities from pylons in Section 4.</p>	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the east of the community area, the existing vegetation along field boundaries and larger areas of mature trees around caravan parks and farms means that effects would mainly occur from taller equipment. These effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Quadrang	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be 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.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	The taller components of the Project may be perceptible but would be seen in the context of the existing 400 kV overhead line which passes through the eastern side of the parish and therefore the Project would not fundamentally alter the composition or character of the views currently experienced. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Revesby	Value of Views – High Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Views from the community are filtered by vegetation on field boundaries. The tops of taller construction equipment may be perceptible but would be 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.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	At 3 km, pylons may be noticeable in more open views but filtered by vegetation on field boundaries and around properties for much of the community area. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Sibsey	Value of Views – Medium Susceptibility – Medium	Directly impacted by the construction of approximately 2.5 km of overhead line including pylons LW110-LW117. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although there would be open views towards construction activities, there are very few visual receptors in close proximity and properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Skegness	Value of Views – Medium Susceptibility – Medium	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible from the western areas of the parish but would be temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	At 1.7 km to the closest visual receptors within the community area, the taller components of the Project may be noticeable from limited areas to the western edges of Skegness but being a primarily urban community area the majority of views would be unaffected. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Skendleby	Value of Views – High Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation – not significant	At 5 km, the taller components of the Project may be perceptible but would be very distant and would not affect views for people living and moving around the community. There may be glimpsed longer distance views towards the Project to the east as people travel along the A1028, but views tend to be filtered for transient receptors by road side vegetation.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Stickford	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – small	Construction – not significant	<p>Although construction activity associated with the overhead line would be close to the eastern side of the parish, there are few visual receptors in this area. Views from the A16 are filtered by vegetation. Taller equipment may be perceptible but would be temporary in nature.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Stickney	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 800 m of overhead line including pylons LW108-LW109. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities in the south of the parish, there are very few visual receptors in close proximity, Stickney itself being 1.6 km to the north. Properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during construction would likely be not significant.
Surfleet	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 1.5 km of overhead line including pylons LW196-LW199. Indirectly affected by views of construction activities from pylons in Section 4 and 5.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the east of this large community area, the flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
		Directly impacted by the operation of approximately 1.5 km of overhead line including pylons LW196-LW199. Indirectly affected by pylons to the north in Sections 4 and 5.	Operation – small	Operation - not significant	<p>The new 400 kV overhead line would be noticeable in views east. Views are already affected by the existing 4ZM overhead line, which the Project parallels, and therefore the Project would not fundamentally alter the composition or character of the views currently experienced. The Project would be seen beyond the existing overhead line from the majority of the community area which would remain the more prominent feature.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Sutterton	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 1 km of overhead line including pylons LW187-LW189. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities in the west of the parish, there are very few visual receptors in close proximity, Sutterton itself being north of the A17. Properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Swineshead	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 1.1 km of overhead line including pylons LW167-LW169. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities in the south of the parish, there are very few visual receptors in close proximity. Properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that effects would be mainly occur from taller equipment which would be seen to the south and east. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Thornton le Fen	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 700 m of overhead line including pylons LW132-LW133. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the south of the community area, the existing vegetation around properties at Gipsey Bridge combined with the flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
Thorpe St Peter	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – small	Construction – not significant	<p>Although the Project is close to the western edge of the parish there are few receptors which would be in close proximity to construction activities. Taller construction equipment may be perceptible but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Toynton All Saints	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
Toynton St Peter	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
Ulceby with Fordington	Value of Views – High Susceptibility - High	Indirectly affected by views of construction activities for LCS-A, LCS-B and the overhead line in Sections 2, 3 and 4.	Construction – very small	Construction – not significant	Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of LCS-A, LCS-B and the overhead line in Sections 2, 3 and 4.	Operation – very small	Operation – not significant	Due to the landform and vegetation cover, views would be limited. At 5 km, the taller components of the Project may be perceptible but would be very distant and would not fundamentally affect views for people living and moving around the community, most of which is outside the Study Area.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Wainfleet All Saints	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – small	Construction – not significant	<p>Although the Project is close to the western edge of the parish there are few receptors which would be in close proximity to construction activities. Taller construction equipment may be perceptible but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation – not significant	<p>An existing 132 kV overhead line passes through the western part of the parish and would remain the dominant feature in views for the majority of the community area including the village of Wainfleet All Saints. Therefore, the Project would not fundamentally alter the composition or character of the views currently experienced.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Wainfleet Saint Mary	Value of Views – Medium	Indirectly affected by views of construction	Construction – small	Construction – not significant	Although the Project is close to the western edge of the parish there are few

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility - High	activities for the overhead line in Section 4.			<p>receptors which would be in close proximity to construction activities. Taller construction equipment may be perceptible but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation – not significant	<p>An existing 132 kV overhead line passes through the western part of the parish and would remain the dominant feature in views for the majority of the community area including the village of Wainfleet Bank. Therefore, the Project would not fundamentally alter the composition or character of the views currently experienced.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Welton le Marsh	Value of Views – High Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>Although parts of the parish are slightly elevated, the mature woodland blocks to the north of the parish at Welton High Wood and Welton Low Wood, and woodland around Boothby Hall and Turpits Plantation heavily filter views towards the Project to the east. Vegetation at Gunby Hall filters views to the south. The tops of taller construction</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>equipment may be perceptible but would be temporary in nature and at distance.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation.	Operation – small	Operation - not significant	<p>At 3 km to the closest visual receptors, pylons may be perceptible but heavily filtered by vegetation cover around the village and around Boothby Hall and Turpits Plantation. Views would be glimpsed for people moving around the community.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
West Fen	Value of Views – Medium Susceptibility - High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>Views to the east would be filtered by the intervening village of Stickney. Taller equipment may be perceptible to the south but would be distant and these effects would be temporary in nature.</p> <p>The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.</p>
West Keal	Value of Views – Medium	Indirectly affected by views of construction activities for the	Construction – very small	Construction – not significant	<p>The tops of taller construction equipment may be perceptible but would be temporary in nature and at distance.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility - High	overhead line in Section 4.			The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
Wigtoft	Value of Views – Medium Susceptibility - High	Directly impacted by the construction of approximately 5.5 km of overhead line including pylons LW170-LW186. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although there would be open views towards construction activities throughout the centre of the parish, there are very few visual receptors in close proximity, Wigtoft itself benefitting from vegetation which filters views. Properties tend to be surrounded by vegetation which helps to filter views. The flat landscape means that vegetation would screen views and effects would mainly occur from taller equipment. However, these effects would be temporary in nature and would not be present across the full 5.5 km at any one time. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Wildmore	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Taller equipment may be perceptible but would be distant and these effects would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Willoughby with Sloothby	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 3.3 km of overhead line including pylons LW20-LW28. Indirectly affected by views of construction activities from pylons in Section 4.	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the east of the community area, the existing hedgerow vegetation along field boundaries combined with the flat landscape means that effects would be mainly occur from taller equipment. However, these effects would be temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Wrangle	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	Taller construction equipment may be perceptible but would be temporary in nature. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 4 during operation	Operation – very small	Operation – not significant	The Project would be visible 3.2 km to the north of this community area. An existing 132 kV overhead line passes through the northern part of the parish and would remain the dominant feature in views for the majority of the community area. Therefore, the Project would not fundamentally alter the

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>composition or character of the views currently experienced.</p> <p>The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.</p>
Wyberton	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 4.	Construction – very small	Construction – not significant	<p>Due to the flat landform and intervening vegetation and buildings within Wyberton and the light industry on the outskirts of Boston, views of construction activities would be limited. There may be glimpses of taller equipment associated with the works, however not in close proximity and these would be temporary in nature.</p> <p>The magnitude of change is considered to be very small and effects on this community area likely be not significant during construction.</p>
		Indirectly affected by the presence of pylons in Section 4 during operation	Operation – small	Operation – not significant	<p>At 1 km, the new overhead line would be noticeable from the western side of the parish but open views from visual receptors would be limited by the areas of light industry in this area. Wyberton is over 3.8 km from the Project and benefits from vegetation which helps to screen views.</p> <p>The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Recreational Receptors					
MacMillan Way	Value of Views – Medium Susceptibility – High	Indirectly affected by construction in Section 4 and Section 5, the route crosses the Project between pylons LW199 and the Refined Weston Marsh Siting Zone.	Construction – small	Construction – not significant	Although in close proximity, views of access roads and working areas associated with the proposed 400 kV overhead line in Section 4 would be filtered by vegetation along the River Welland and views would be transient and only over a short section of the path. Taller equipment may be visible above vegetation and more distantly but would be temporary in nature. As only a very short section would be in close proximity and views filtered by vegetation, the magnitude of change is considered to be small and effects on people using the footpath likely be not significant during construction.
		Indirectly affected by the presence of pylons in Section 4 and Section 5, the route crosses the Project between pylons LW199 and the Refined Weston Marsh Siting Zone.	Operation - small	Operation - not significant	Although the Project would introduce pylons into views from the footpath on the boundary between Sections 4 and 5, pylons are not an unusual feature in views in the area, the existing 400 kV crossing in the same sections of the footpath. The magnitude of change is considered to be small and effects on people using the footpath during operation would likely be not significant.
National Cycle Route 1	Value of Views – Medium	Indirectly affected by construction in Section 4,	Construction – small	Construction – not significant	Although in close proximity, views of access roads and working areas

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – High	the route crosses the Project between pylons LW141 and LW142 along the River Witham between Anton’s Gowt and Langrick Bridge.			<p>associated with the proposed 400 kV overhead line in Section 4 would be filtered by vegetation along the River Witham and views would be transient. Taller equipment may be visible above vegetation but would be temporary in nature.</p> <p>As only a very short section would be in close proximity and views filtered by vegetation, the magnitude of change is considered to be small and effects on people using the cycle route likely be not significant during construction.</p>
		In Section 4, the route crosses the Project between pylons LW141 and LW142 along the River Witham between Anton’s Gowt and Langrick Bridge.	Operation - small	Operation - not significant	<p>Although the Project would introduce pylons into views from the cycle route within Section 4, pylons are not an unusual feature in views in the area. Although the Projects would spread the effects of high voltage electricity infrastructure for cycle users, views would be transient and only over a short section.</p> <p>The magnitude of change is considered to be small and effects on people using the cycle route during operation would likely be not significant.</p>
Recreational users of the River Witham	Value of Views – Medium Susceptibility – High	Indirectly affected by construction in Section 4, the route crosses the Project between pylons LW141 and LW142 along	Construction – very small	Construction – not significant	Although in close proximity, views of access roads and working areas associated with the proposed 400 kV overhead line in Section 4 would be screened by the embankments either

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		the River Witham between Anton's Gowt and Langrick Bridge.			side of the river. Taller equipment may be visible above vegetation but would be temporary in nature. There are no moorings along this stretch of the river. As only a very short section would be in close proximity and views filtered by vegetation, the magnitude of change is considered to be very small and effects on people using the river for recreation likely be not significant during construction.
		In Section 4, the route crosses the Project between pylons LW141 and LW142 along the River Witham between Anton's Gowt and Langrick Bridge.	Operation - small	Operation - not significant	Although the Project would introduce pylons into views from the river within Section 4, views would be limited to those along the river corridor. Views would be transient and only over a short section. There are no moorings along this stretch of the river. The magnitude of change is considered to be small and effects on people using the river for recreation during operation would likely be not significant.
Recreational user of the Black Sluice Navigation (South Forty Foot Drain)	Value of Views – Medium Susceptibility – High	Indirectly affects by construction in Section 4, the route crosses the Project between pylons LW152 and LW153 to the east of Hubbert's Bridge.	Construction – very small	Construction – not significant	Although in close proximity, views of access roads and working areas associated with the proposed 400 kV overhead line in Section 4 would be screened by the embankments either side of the wasterway. Taller equipment may be visible above vegetation but would be temporary in nature. There are

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>no moorings along this stretch of the waterway.</p> <p>As only a very short section would be in close proximity and views filtered by vegetation, the magnitude of change is considered to be very small and effects on people using the waterway for recreation likely be not significant during construction.</p>
		In Section 4, the route crosses the Project between pylons LW152 and LW153 to the east of Hubbert's Bridge.	Operation - small	Operation - not significant	<p>Although the Project would introduce pylons into views from the river within Section 4, views would be limited to those along the waterway corridor. Views would be transient and only over a short section. There are no moorings along this stretch of the waterway.</p> <p>The magnitude of change is considered to be small and effects on people using the river for recreation during operation would likely be not significant.</p>

3.8 Monitoring

- 3.8.1 No Visual monitoring is currently proposed for Section 4, 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 3 South East Lincolnshire Joint Strategic Planning Committee (2019). South East Lincolnshire Local Plan 2011-2036 (adopted 2019). [online] Available at: <https://southeastlincslocalplan.org/article/20102/Adopted-Plan>. [Accessed 11 March 2025]
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- Ref 5 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 6 Landscape Institute and Institute for Environmental Management and Assessment (IEMA) (2013) Guidelines for Landscape and Visual Impact Assessment – 3rd Edition (GLVIA3).
- Ref 7 Landscape Institute and Institute for Environmental Management and Assessment (2024). Technical Guidance Note 01/24 Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment. [online] Available at: https://www.landscapeinstitute.org/wp-content/uploads/2024/08/LITGN-2024-01-GLVIA3-NC_Aug-2024.pdf [Accessed: 27.08.24].
- Ref 8 Landscape Institute (2019). Technical Guidance Note (TGN) 06/19 Visual Representation of Development Proposals. [online] Available at: https://www.landscapeinstitute.org/wp-content/uploads/2019/09/LI_TGN-06-19_Visual_Representation-1.pdf [Accessed 20 September 2024].
- Ref 9 His Majesty's Stationary Office (HMSO) (2017), Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations). [online] Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents> [Accessed 20 September 2024].
- Ref 10 Landscape Institute (2019). Technical Guidance Note (TGN) 02/19 Residential Visual Amenity Assessment. [online] Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf> [Accessed 20 September 2024].

- Ref 11 Planning Inspectorate (2024) Advice Note 17: Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects (AN17). [online] Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-cumulative-effects-assessment> [Accessed 25 September 2024].
- Ref 12 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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- 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].
- Ref 15 British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction – Recommendations.

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 Lincolnshire Connection Substation (LCS) B to the Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 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 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 4 (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 4 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/maintenance of the Project within Section 4, based upon the assessment completed to date (section 4.7); and
 - viii. An outline of the proposed 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 4.1 Sites Statutorily Designated for their International Biodiversity Importance</p> <p>Figure 4.2 Sites Statutorily Designated for their National and County Biodiversity Importance</p> <p>Figure 4.3 Sites Statutorily Designated for their County Biodiversity Importance</p>
PEI Report Volume 3 Part B Section 4 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.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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 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
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.

- 4.1.3 There are also 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 4 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 4 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 4 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 4 Chapter 10 Noise and Vibration** includes details of the potential noise and vibration effects within Section 4, which are used to inform assessment of effects upon sensitive ecological features.
 - v. **PEI Report Volume 2 Part B Section 4 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 4 Chapter 13 Summary** which 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 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 is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** and supporting appendices, the details 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: 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: 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.
 - ii. South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019) (Ref 2).
 - Policy 3 Design of New Development: development will use high quality design and demonstrate how incorporation of existing hedgerows and trees and the provision of appropriate new landscaping to enhance biodiversity, green infrastructure, flood risk mitigation and urban cooling will be secured.
 - Policy 28 The Natural Environment: states that a high quality, comprehensive ecological network of interconnected designated sites, sites of nature conservation importance and wildlife-friendly greenspace will be achieved by protecting, enhancing and managing natural assets.

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 a 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 for Ecology and Biodiversity 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 by 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 is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.

4.3.3 The scope of the Ecology and Biodiversity assessment within Section 4 includes the 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;
- 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 and notable species (e.g. Species of Principal Importance (SPIs)) which are either confirmed present or potentially present within the Section 4 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; and
 - 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 defined 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 5).
- 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 **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 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 4.
- 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 4 have been informed by published guidance and professional judgement. They include the area within the draft Order Limits and a 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 (hereafter 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 4 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 Refined Siting Area (i.e. within the 'Site' boundary) plus wider areas within the Zone of Influence, 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 4

Study Area (distance from Section 4 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 6), 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 7).

Study Area (distance from Section 4 draft Order Limits)	Feature
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:
- the Natural England website (Ref 8) for information on statutory designated sites of nature conservation interest;
 - the MAGIC website (Ref 6) to identify the location (and details) of statutorily designated sites, ancient woodland, HPI(including Priority River Habitat) and for any granted European Protected Species Licence applications;
 - the Joint Nature Conservation Committee (JNCC) website (Ref 9) for site information and designation details of SACs, SPAs and Ramsar sites;
 - aerial imagery (Google Maps);
 - Environment Agency (EA) Ecology and Fish Data for species records of fish, macroinvertebrate and macrophytes species (Ref 10); and
 - EA Catchment Data Explorer for data on WFD water bodies and water catchments (Ref 11).
- 4.5.7 In addition to these desk-based data, field survey data are in the process of being collected, and this work is ongoing. 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 and assessments, using the UK Habitat (UKHab) Classification (Ref 12) for terrestrial habitats 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 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 4 Figure 4.1 Sites Statutorily designated for their International Biodiversity Importance;**
- ii. **PEI Report Volume 2 Part B Section 4 Figure 4.2 Sites Statutorily designated for their National and County Biodiversity Importance;**
- iii. **PEI Report Volume 2 Part B Section 4 Figure 4.3 Sites Statutorily designated for their County Biodiversity Importance;** and
- iv. **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2022-2024.**

Section Overview

4.5.12 A description of the works within Section 4 is provided within **PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project**. In summary, Section 4 of the Project includes approximately 66 km of new 400 kV overhead line from LCS-B (Section 3) to the Refined Weston Marsh Substation Siting Zone (Section 5). The proposed overhead line route within Section 4 commences approximately 1.35 km east of Bilsby north of the B1449 and meets

the route Section break for Section 5 on agricultural land approximately 125m north east of the River Welland. Most of the land crossed by the overhead line route is in agricultural use and is below 30 m above sea level.

- 4.5.13 The habitats within the Section 4 Study Area from B4119 to Burgh le Marsh are dominated by arable fields with boundary hedgerows and ditches, areas of pasture and scattered trees. The overhead line route then runs westwards passing over Steeping River and Hobhole Drain, where the surrounding habitats continue to be dominated by arable farmland, with some isolated areas of woodland. After crossing Hobhole Drain, the overhead line route continues south and west around the margins of Boston, passing through arable farmland and crossing a series of drains and the River Witham. Between South Forty Foot Drain and the River Welland, habitat within the Section 4 Study Area is again dominated by arable fields, with drains and watercourses flowing towards the Wash, with some scattered areas of woodland. The watercourses crossed by the overhead line route include the Environment Agency Main Rivers: Willoughby High Drain, Little River Lymn and Cowcroft Drain, Steeping River, East Fen Catchwater Drain, West Fen Catchwater Drain, River Witham and South Forty Foot Drain.

Designated Sites

- 4.5.14 No site (nor part of any site) statutorily designated for its biodiversity importance is present within the Section 4 draft Order Limits. 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 4 Study Area is provided in **Table 4.3**, which includes a summary of the main qualifying features and their relative distances from the Section 4 draft Order Limits at the closest point.
- 4.5.15 The Wash and North Norfolk SAC, The Wash SPA and Ramsar site, Greater Wash SPA, Inner Dowsing, Race Bank and North Ridge SAC, and Gibraltar Point SPA and Ramsar site, fall within 10 km of the Section 4 draft Order Limits. In addition, Humber Estuary SPA and Ramsar and Nene Wash SPA and Ramsar site, where bird species with large foraging ranges are noted as, or one of, the qualifying features, fall within 30 km of the Section 4 draft Order Limits.
- 4.5.16 There are 15 SSSIs, one NNR and one LNR within the Section 4 Study area (i.e. within 5 km of the Section 4 draft Order Limits and/or where the SSSI Impact Risk Zones (IRZ's) overlap), including Willoughby Branch Line LNR, which is present within the draft Order Limits. The IRZ's for Bratoft Meadows SSSI, Candlesby Hill SSSI, Chapel Point to Wolla Bank SSSI, Gibraltar Point SSSI, Jenkins Carr SSSI, Surfleet Lows SSSI, Troy Wood SSSI and The Wash SSSI partially overlap with the Section 4 draft Order Limits.
- 4.5.17 There are 32 sites non-statutorily designated for their biodiversity value as Local Wildlife Sites (LWSs) within the 2 km Study Area, nine of which are partially located within, or within 0.1 km of, the Section 4 draft Order Limits. These are: Willoughby Branch Line LWS, Hobhole Drain Boston Corporation Farm to Station Cottages LWS, Risegate Eau LWS, Farlesthorne Pit LWS, Sloothby Low Lane LWS, Sloothby Meadows LWS, South Forty Foot Drain LWS, Surfleet Bank LWS and The Lymn LWS.

Table 4.3 Sites designated for their biodiversity value, their qualifying features and distance from the Section 4 draft Order Limits

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Internationally Designated (Statutory)				
Greater Wash	SPA	344,267	Qualifying features of the SPA <ul style="list-style-type: none"> • Red-throated diver (<i>Gavia stellata</i>) – non-breeding • Common scoter (<i>Melanitta nigra</i>) – non-breeding • Little gull (<i>Hydrocoloeus minutus</i>) – non-breeding • Sandwich tern (<i>Sterna sandvicensis</i>) – breeding • Common tern (<i>Sterna hirundo</i>) – breeding • Little tern (<i>Sternula albifrons</i>) – breeding 	3.2 km east
Gibraltar Point	SPA	422.2	Qualifying features of the SPA are: <ul style="list-style-type: none"> • Sanderling (<i>Calidris alba</i>) – non-breeding • Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding • Grey plover (<i>Pluvialis squatarola</i>) – non-breeding • Little tern (<i>Sternula albifrons</i>) - breeding 	3.6 km south-east
Gibraltar Point	Ramsar site	414.1	Designated under: Ramsar Criterion 1: Coastal dunes and saltmarsh habitats, including freshwater marsh. Ramsar Criterion 2: Wetland invertebrate assemblage Ramsar Criterion 5: Assemblages of international importance Species with peak counts in winter 53072 waterfowl (5 year peak mean 1998/99-2002/2003) Ramsar Criterion 6: Species/populations occurring at levels of international importance. Species with peak counts in spring/autumn:	3.6 km south-east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • Grey plover (<i>Pluvialis squatarola</i>) - Wintering • Sanderling (<i>Calidris alba</i>) • Bar-tailed godwit (<i>Limosa lapponica</i>) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose (<i>Branta bernicla bernicla</i>) <p>Species/populations identified subsequent to designation for possible future consideration under Criterion 6.</p> <ul style="list-style-type: none"> • Red knot (<i>Calidrus canutus islandica</i>) - Wintering 	
The Wash and North Norfolk Coast	SAC	10,7718	<p>The Wash is a habitat diverse area with multiple Annex I habitats. Qualifying features of the SAC are:</p> <ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks; • Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats • Coastal lagoons • Large shallow inlets and bays • Reefs • Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) • Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>); Mediterranean saltmarsh scrub • Otter (<i>Lutra lutra</i>); and 	3.8 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> Common seal (<i>Phoca vitulina</i>) 	
The Wash	SPA	63,135	<p>Qualifying features of the SPA are:</p> <ul style="list-style-type: none"> Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding Bewick's swan (<i>Cygnus columbianus</i>) – non-breeding Black-tailed godwit (<i>Limosa limosa islandica</i>) – non-breeding Common scoter (<i>Melanitta nigra</i>) – non-breeding Common tern (<i>Sterna hirundo</i>) - breeding Curlew (<i>Numenius arquata</i>) – non-breeding Dark-bellied brent goose (<i>Branta bernicla bernicla</i>) – non-breeding Dunlin (<i>Calidris alpina alpina</i>) – non-breeding Gadwall (<i>Mareca strepera</i>) – non-breeding Wigeon (<i>Mareca penelope</i>) – non-breeding Goldeneye (<i>Bucephala clangula</i>) – non-breeding Grey plover (<i>Pluvialis squatarola</i>) – non-breeding Knot (<i>Calidris canutus</i>) – non-breeding Little tern (<i>Sternula albifrons</i>) - breeding Oystercatcher (<i>Haematopus ostralegus</i>) – non-breeding Pink-footed goose (<i>Anser brachyrhynchus</i>) – non-breeding Pintail (<i>Anas acuta</i>) – non-breeding Redshank (<i>Tringa totanus</i>) – non-breeding Sanderling (<i>Calidris alba</i>) – non-breeding 	4.5 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • Shelduck (<i>Tadorna tadorna</i>) – non-breeding • Turnstone (<i>Arenaria interpres</i>) – non-breeding • Waterbird assemblage. 	
The Wash	Ramsar site	63,135	<p>Designated under:</p> <p>Ramsar Criterion 1: Large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.</p> <p>Ramsar Criterion 3: 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>Ramsar Criterion 5: 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>Ramsar Criterion 6 – species/populations occurring at levels of international importance.</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Oystercatcher (<i>Haematopus ostralegus</i>) – Wintering • Grey plover (<i>Pluvialis squatarola</i>) - Wintering • Knot (<i>Calidris canutus</i>) – Wintering • Sanderling (<i>Calidris alba</i>) • Curlew (<i>Numenius arquata arquata</i>) – Breeding • Redshank (<i>Tringa totanus</i>) 	4.5 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • Turnstone (<i>Arenaria interpres</i>) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Pink-footed goose (<i>Anser brachyrhynchus</i>) • Dark-bellied brent goose (<i>Branta bernicla</i>) • Shelduck (<i>Tadorna tadorna</i>) • Pintail (<i>Anas acuta</i>) • Dunlin (<i>Calidris alpina</i>) • Bar-tailed godwit (<i>Limosa lapponica</i>) <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"> • Ringed plover (<i>Charadrius hiaticula</i>) • Black-tailed godwit (<i>Limosa limosa islandica</i>) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Golden plover (<i>Pluvialis apricaria</i>) • Northern lapwing (<i>Vanellus vanellus</i>) – Breeding 	
Inner Dowsing, Race Bank and North Ridge	SAC	968	<p>Designated features of the SAC:</p> <ul style="list-style-type: none"> • H1110 Sandbanks which are slightly covered by sea water all the time • H1170 Reefs 	5.4 km east
Humber Estuary	SPA	37,630.24	<p>Qualifying features of the SPA include:</p> <ul style="list-style-type: none"> • Avocet (<i>Recurvirostra avosetta</i>) – breeding • Avocet (<i>Recurvirostra avosetta</i>) – non-breeding • Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding • Bittern (<i>Botaurus stellaris</i>) – breeding 	10.4 km north

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • Bittern (<i>Botaurus stellaris</i>) – non-breeding • Black-tailed godwit (<i>Limosa limosa islandica</i>) – non-breeding • Dunlin (<i>Calidris alpina alpina</i>) – non-breeding • Golden plover (<i>Pluvialis apricaria</i>) – non-breeding • Hen harrier (<i>Circus cyaneus</i>) – non-breeding • Knot (<i>Calidris canutus</i>) – non-breeding • Little tern (<i>Sterna albifrons</i>) – breeding • Marsh harrier (<i>Circus aeruginosus</i>) – breeding • Redshank (<i>Tringa totanus</i>) – non-breeding • Ruff (<i>Calidris pugnax</i>) – non-breeding • Shelduck (<i>Tadorna tadorna</i>) – non-breeding • Waterbird assemblage 	
Humber Estuary	Ramsar site	37, 630.24	<p>Designated under:</p> <p>Ramsar Criterion 1: 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>Ramsar Criterion 3:</p> <ul style="list-style-type: none"> • Grey seal (<i>Halichoerus grypus</i>) – breeding • Natterjack toad (<i>Epidalea calamita</i>) <p>Ramsar Criterion 5: Assemblages of international importance:</p> <p>153,934 waterfowl, non-breeding season (5 year peak mean 1996/97-2000/2001)</p> <p>Ramsar Criterion 6: Species/populations occurring at levels of international importance</p>	10.4 km north

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Black-tailed godwit (<i>Limosa limosa</i>) - Passage • Dunlin (<i>Calidris alpina</i>) • Golden plover (<i>Pluvialis apricaria</i>) • Knot (<i>Calidris canutus</i>) – Wintering • Redshank (<i>Tringa totanus</i>) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Golden plover (<i>Pluvialis apricaria</i>) • Redshank (<i>Tringa totanus</i>) • Knot (<i>Calidris canutus</i>) – Wintering • Shelduck (<i>Tadorna tadorna</i>) • Dunlin (<i>Calidris alpina</i>) • Black-tailed godwit (<i>Limosa limosa</i>) • Bar-tailed godwit (<i>Limosa lapponica</i>) <p>Ramsar Criterion 8: river lamprey (<i>Lampetra fluviatilis</i>) and sea lamprey (<i>Petromyzon marinus</i>)</p>	
Nene Washes	SPA	1519	<p>Qualifying features of the SPA include:</p> <ul style="list-style-type: none"> • Bewick's swan (<i>Cygnus columbianus bewickii</i>) – non-breeding • Black-tailed godwit (<i>Limosa limosa limosa</i>) – breeding • Gadwall (<i>Mareca strepera</i>) – breeding • Gadwall (<i>Mareca strepera</i>) – non-breeding • Garganey (<i>Anas querquedula</i>) – breeding • Pintail (<i>Anas acuta</i>) – non-breeding • Shoveler (<i>Spatula clypeata</i>) – breeding 	29.5 km south

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • Shoveler (<i>Spatula clypeata</i>) – non-breeding • Teal (<i>Anas crecca</i>) – non-breeding • Wigeon (<i>Mareca penelope</i>) – non-breeding 	
Nene Washes	Ramsar site	1519	<p>Designated under:</p> <p>Ramsar Criterion 2: Important assemblage of nationally rare breeding birds. A wide range of raptors throughout the year. Nationally scarce plants and invertebrates.</p> <p>Ramsar Criterion 6: Species/populations occurring at levels of international importance.</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Bewick's swan (<i>Cygnus columbianus bewickii</i>) <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"> • Black-tailed godwit (<i>Limosa limosa islandica</i>) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Northern pintail (<i>Anas acuta</i>) 	29.5 km south
Nationally Designated (Statutory)				
Candlesby Hill	SSSI	1.81	<p>One of the best remnants of the once extensive chalk grasslands of the South-east Lincolnshire Wolds. Together with surrounding scrub and broad-leaved woodland, the site provides an excellent example of the sequence of change to a mature system. The ash woodland, which contains some sycamore (<i>Acer pseudoplatanus</i>), is edged by scrub merging into open grassland forming an amphitheatre with the exposed chalk cliff. Herbs growing in association with woody</p>	0.8 km north-west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			species include false brome, black bryony (<i>Tamus communis</i>), hound's tongue (<i>Cynoglossum officinale</i>) and twayblade (<i>Listera ovata</i>). Finches and warblers are well represented and include garden warbler (<i>Sylvia borin</i>) and lesser whitethroat (<i>Curruca curruca</i>). Butterflies are present in large numbers with 17 species of mollusc recorded.	
Bratoft Meadows (Heaths Meadows LWS)	SSSI	2.2	The site is owned and managed as a county trust reserve called Heath's Meadows. Species rich neutral grassland and one of the remaining areas of permanent grassland not dominated by plants associated with chalk and limestone. Two adjacent fields which border the Cowcroft drain are divided by a high hedge of hawthorn (<i>Crataegus monogyna</i>). Both are managed as hay meadows and grazed after cutting. A third field separated from the others by a narrow strip of improved pasture is cut for hay. They are dominated by sweet vernal grass (<i>Anthoxanthum odoratum</i>), red fescue (<i>Festuca rubra</i>), meadow fescue (<i>Lolium pratense</i>) and creeping bent (<i>Agrostis stolonifera</i>). The site attracts a large number of butterflies.	1.1 km north
Willoughby Meadow	SSSI	0.5	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	1.9 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			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.	
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 (<i>Scolopax rusticola</i>), tawny owl (<i>Strix aluco</i>), greater spotted woodpecker (<i>Dendrocopos major</i>), tree creeper (<i>Certhia familiaris</i>) and four species of warblers.	2.5 km west
Willoughby wood	SSSI	23.4	Willoughby Wood is representative of the series of ancient woodlands found on the middle Marsh Boulder Clay on the edge of the Lincolnshire Wolds. It is predominantly oak-ash and hazel, managed as coppice with standards. This supports a characteristic and rich ground flora. The site is notable for its breeding birds including grey heron (<i>Ardea cinerea</i>). Though enrichment of the soil beneath the heronry has favoured plants like nettle (<i>Urtica dioica</i>), scarcer plants are found throughout the wood. These include early purple orchid (<i>Orchis mascula</i>), wood anemone (<i>Anemone nemorosa</i>), broad-leaved helleborine (<i>Epipactis helleborine</i>), wood speedwell (<i>Veronica</i>	2.7 km south-west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p><i>Montana</i>), yellow pimpernel (<i>Lysimachia nemorum</i>) and toothwort (<i>Lathraea squamaria</i>). The abundance of the moss (<i>Fontinalis antipyretica</i>) is a feature of the spring and stream.</p>	
Surfleet Lows	SSSI	3.8	<p>Surfleet Lows is one of the few remaining wet alluvial meadows in Lincolnshire that has not be subjected to agricultural improvement. Meadows of this type are now rare throughout lowland Britian. The typical range of meadow plants are present along with species more characteristic of coastal locations. Species include: marsh foxtail (<i>Alopecurus geniculatus</i>), floating sweet-grass (<i>Glyceria fluitans</i>), hammer sedge (<i>Carex hirta</i>) and tubular water-dropwort (<i>Oenanthe fistulosa</i>). Areas of marsh are present along with wet fen woodland, pools and tall fen vegetation. Winter flooding attracts birds with at least 50 species recorded. Reed warblers (<i>Acrocephalus scirpaceus</i>) are known to breed here.</p>	3.1 km south-west
Claxby Chalk Pit	SSSI	10.8	<p>A particularly fine example of Lincolnshire Wolds chalk grassland, which only survives in disused quarries or on steep, unploughable slopes. Since this grassland is in the context of an old chalk pit, its value is increased for it represents a stage within the process of continuous changes from grassland through to scrub and broad-leaved woodland. The grassland is dominated by characteristic chalk downland species: upright brome (<i>Bromus erectus</i>) and red fescue (<i>Festuca rubra</i>) with meadow oak (<i>Avenula pratensis</i>), tor grass (<i>Brachypodium pinnatum</i>) and quaking grass (<i>Briza media</i>) locally common. Breeding birds are present including spotted flycatcher (<i>Muscicapa striata</i>).</p>	3.3 km west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Gibraltar Point	SSSI	598	<p>Gibraltar Point is of national importance due to its sand dunes and other coastal habitats, and associated fauna, notably invertebrates and passage and breeding birds. Gibraltar Point is also of great importance for its coastal geomorphology.</p> <p>Gibraltar Point supports important communities of invertebrates, notably Lepidoptera, Diptera and Coleoptera, including 12 species which are nationally rare. The diversity of coastal habitats present supports a good variety of breeding birds such as mallard (<i>Anas platyrhynchos</i>), shelduck (<i>Tadorna tadorna</i>), ringed plover (<i>Charadrius hiaticula</i>), little tern (<i>Sternula albifrons</i>), oystercatcher (<i>Haematopus ostralegus</i>) and redshank (<i>Tringa totanus</i>). Gibraltar Point is also an important site for wintering and passage waders. Numbers of oystercatcher, grey plover (<i>Pluvialis squatarola</i>), knot (<i>Calidris canutus</i>), sanderling (<i>Calidris alba</i>) and bar-tailed godwit (<i>Limosa lapponica</i>) are of international significance, and the area is of national importance for its numbers of ringed plover.</p>	3.4 km south
Chapel Point to Wolla Bank	SSSI	39.6	<p>Chapel Point - Wolla Bank is a 1.5 km length of coastline situated approximately 8 km north of Skegness. The site comprises a foreshore section of inter-tidal deposits stretching from the Coastguard lookout at Chapel Point to the car park at Wolla Bank. Global sea level rise during the Holocene (Flandrian) Stage resulted in the deposition of material along coasts and estuaries. In the submerged low-lying areas of eastern England extensive blanket bog accumulations alternated with the deposition of marine sands and gravels, and estuarine silts and</p>	3.4 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			clays. The buried sequence at Chapel Point - Wolla Bank includes inter-bedded peats, saltmarsh deposits and shelly clays all of which represent sedimentation in an intertidal zone. Incorporated within these organic deposits are the remains of the flora and fauna present at the time of deposition. Systematic pollen and macrofossil analysis of the organic deposits, coupled with the results of radiocarbon dating, has provided important palaeo-environmental information concerning the timing of and conditions for the deposition of these sediments. The inter-tidal deposits buried beneath the foreshore between Chapel Point and Wolla Bank are of national importance for interpretation of Holocene stratigraphy and environmental reconstruction. The information derived from the analysis of these deposits is important in establishing and correlating sea-level change across eastern England.	
Sea Bank Clay Pits	SSSI	16.8	The Sea Bank Clay Pits comprise a series of isolated flooded clay workings of varying size, depth and topography which now support uncommon aquatic plant communities characteristic of the slightly brackish, eutrophic (nutrient-rich) water in addition to extensive reedbeds and a rich marginal wetland flora. The pits are also important for breeding, wintering and passage birds. They are known to support a rich aquatic invertebrate fauna, notably beetles, including several nationally scarce species and others new to the County.	3.4 km east
Skendleby Psalter Banks	SSSI	1.0	The species-rich unimproved grasslands of Skendleby Psalter Banks represent one of the best examples of a habitat now rare and fragmented in Lincolnshire. The abundance of plants restricted to these steep north-	4.1 km west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			facing slopes of a dry valley cut into the eastern Wolds by glacial meltwaters is maintained by traditional management of sheep grazing. Upright brome (<i>Bromus erectus</i>) is the dominant grass species in an open sward which also includes sweet vernal grass (<i>Anthoxanthum odoratum</i>), red fescue (<i>Festuca rubra</i>), quaking grass (<i>Briza media</i>) and wood false brome (<i>Brachypodium sylvaticum</i>).	
Jenkins Carr	SSSI	3.6	The site is a species rich example of alder carr, a habitat now rare in the area, with stream and swamp communities of regional importance. The eastern area has stands of alder (<i>Alnus glutinosa</i>), with a ground flora including lady fern <i>Athyrium (filix-femina)</i> , broad-buckler fern (<i>Dryopteris austriaca</i>), marsh marigold (<i>Caltha palustris</i>) and alternate leaved golden saxifrage (<i>Chrysosplenium alternifolium</i>) which here reaches the eastern end of its range in Britain. The area of open water/swamp in the east and the stream sides have wetland species including water-plantain (<i>Alisma plantago-aquatica</i>), wild celery (<i>Apium graveolens</i>) and lesser water parsnip (<i>Berula erecta</i>).	4.3 km north
The Wash	SSSI	107,718	Designated for aggregations of breeding birds: common tern, little tern and redshank. Also designated for non-breeding birds: bar tailed godwit, Bewick's swan, brent goose, curlew, dunlin, grey plover, knot, oystercatcher, pink-footed goose, pintail, redshank, sanderling, shelduck turnstone and whooper swan. Supports an assemblage of >20,000 Non-breeding waterbirds. Also designated for common seal and wetland and saltmarsh habitats.	4.5 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Keal Carr	SSSI	9.4	An example of a base-rich springline alder woodland, especially characteristic of the southern Lincolnshire Wolds. Here, the upper reaches of Toynton Beck have cut a steep sided valley through the porous Spilsby Sandstone to the underlying impermeable Kimmeridge Clay, exposing a springline along the valley side. The wood supports a rich flora typical of flushed ground and is one of the best sites in the county for the alternate-leaved golden saxifrage (<i>Chrysosplenium alternifolium</i>). Woodlands dominated by alder are rather rare nationally, as many such stands have been lost through drainage.	4.9 km north-
Troy Wood	SSSI	91.1	This extensive oak woodland is one of the best surviving examples of those found on fen-edge sands and gravels in mid-Lincolnshire with a diverse flora typical of ancient sites managed traditionally as coppice with standards. Streams, ditches, earthworks and species-rich rides add to the interest of Troy Wood, notable for its heronry and wood ants (<i>Formica rufa</i>).	7 km north-west
Gibraltar Point	NNR	438.4	The reserve comprises two parallel ridges of sand dunes—the "east dunes" and the "west dunes"—separated by salt marsh; and an area on the seaward side with further salt marsh and sand, shingle and muddy beaches. Notable breeding birds at the site include little tern, common shelduck, ringed plover, oystercatcher and common redshank, whilst the site is of international significance for overwintering wader species such as oystercatcher, grey plover, red knot, sanderling and bar-tailed godwit. Nationally important numbers of ringed plover also overwinter.	3.6 km south

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Willoughby Branch Line	LNR	6.2	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.	Within Section 4 draft Order Limits
County Designated (Non-statutory)				
A16 Verges North of the River Glen	LWS	N/A	Road verges running along the A16.	0.6 km south-west
Bell Mere Pool	LWS	0.8	Large wetland complex surrounded by amenity/rough grassland, wildflower areas, shrubs, small plantation woodland copses, hedgerows, trees, bird feeding stations, drainage ditch and general landscaping features.	2 km south-east
Blue Gout Drain North	LWS	N/A	Drainage channel that comes off from the river Glen LWS. Runs alongside a golf course.	1.3 km West
Dog Whipping Ground	LWS	0.5	Two areas of neutral grassland.	1.56 km west
Farlesthorpe Pit	LWS	1.7	Fishing ponds with wooded area surrounding them.	<0.1 km West
Frith Bank Drain	LWS	N/A	Man made fenland drain and steep grassland bankside.	2 km north-east
Heath's Meadows	LWS	1.4	Species-rich meadows maintained by traditional management of hay cropping and grazing.	1 km west
Hobhole Drain, Boston Corporation Farm to Station Cottages	LWS	N/A	Manmade drain that carries water from fenland north of Boston.	Runs through Section 4 draft Order Limits

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Hobhole Drain, Simmon House Bridge to Benington Bridge	LWS	N/A	Manmade drain that carries water from fenland north of Boston.	1.7 km South
Mackay's Pit	LWS	0.7	Site is a large pond where activities such as fishing take place.	1.8 km Northwest
Middlemarsh Farm	LWS	73.5	Site consisting of the coastal and floodplain grazing marsh with pools of water connected by channels.	0.3 km Southeast
Middlemarsh Meadows	LWS	4.7	Four contiguous hay meadows adjacent to the north-eastern edge of Middlemarsh Farm LWS.	0.6 km east
Mill Hill Farm Fields	LWS	23.3	A small field of neutral grassland habitat recreated under the HLS scheme with local provenance seed.	1.2 km west
Old Brickyard Plantation, Well	LWS	1.3	Semi-natural woodland with large central pond.	1.7 km -west
Sloothby Low Lane	LWS	N/A	Area containing coastal and floodplain grazing marsh habitat.	Within Section 4 draft Order Limits
Sloothby Meadows	LWS	7.7	Site consisting of a range of grassland habitat including good quality semi-improved grassland, lowland meadows and lowland calcareous grassland.	Within Section 4 draft Order Limits
Spendluffe Meadow	LWS	4.7	The site is surrounded by large hedges on a gently sloping site with boulder clay soils, typical of the Middle Marsh.	1.3 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
South Bank Fosdyke	LWS	N/A	A man-made raised floodbank with wide berm along the southern side of the River Welland.	1.5 km south-east
South Forty Foot Drain	LWS	N/A	Man-made watercourse and bankside communities.	Within Section 4 draft Order Limits
Summergate Meadow	LWS	2.3	An area of coarse, neutral grassland managed as a hay meadow.	1.1 km west
Surfleet Bank	LWS	N/A	A long strip of sandy embankment and adjacent flat pasture on the north-western side of the tidal River Welland, just downstream from the River Glen confluence. One of only two localities in Lincolnshire where the autumn ladies tresses orchid (<i>Spiranthes spiralis</i>) has been seen in the last 20 years.	Within Section 4 draft Order Limits
Surfleet Seas End Saltmarsh	LWS	N/A	Area running alongside river Wellard that contains coastal and floodplain grazing marsh and mudflats.	1 km south-west
Risegate Eau	LWS	N/A	The central 9 km of a 15 km long watercourse.	Runs through Section 4 draft Order Limits
River Glen Corridor	LWS	N/A	A botanically rich 20 km stretch of the River Glen	1 km south-west
The Hollies Field	LWS	8.4	Two fields with fossilised ridge and furrow and old drainage systems, bisected by a public footpath.	1.3 km west
The Lymn	LWS	N/A	Flowing stream within a ditch that runs alongside a small country road.	Runs through Section 4 draft Order Limits
Well Vale Estate, Belt Plantation	LWS	3.9	The site supports botanically-rich semi-natural woodland and drain network.	2 km

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Westgate Wood and Meadow	LWS	31.4	Newly created woodland plantation on former arable land; this has been extended to include grassland areas, parkland areas, ponds and more woodland.	0.9 km south-east
Willoughby Branch Line	LWS	N/A	Neutral grassland footpath and fields with some calcareous grassland to the south and secondary woodland to the east.	<0.1 km west
Willoughby Meadow West	LWS	2.2	Grazed pasture adjoining a SSSI meadow.	2 km west
Witham Way, Anton's Gowt to Boston	LWS	11.4	Former track bed of the Boston to Lincoln railway line, which passes along the top of the re-aligned floodbank of the River Witham.	2 km north-east
Vernatts Drain	LWS	N/A	Drainage channel that runs through arable land close to the River Welland	1.1 km south-west

Habitats

Habitats of Principal Importance

4.5.18 The following HPI have been identified within the Section 4 Study Area:

- i. Coastal and floodplain grazing marsh;
- ii. Hedgerows;
- iii. Lowland meadows;
- iv. Traditional Orchard;
- v. Good quality semi-improved grassland (if meets HPI criteria);
- vi. Deciduous Woodland (if meets HPI criteria); and
- vii. Ponds (if meets HPI criteria).

Ancient Woodland

- 4.5.19 No areas of ancient woodland have been identified within the Section 4 Study Area.
- 4.5.20 One veteran tree, which is an irreplaceable habitat, was identified during the 2024 surveys, within the draft Order Limits approximately 100 m west of pylon no. LW55.

Terrestrial Habitats

- 4.5.21 Where the UKHab surveys have been completed within the Section 4 Survey Area, the primary habitat type comprised cropland, which is of negligible ecological importance.
- 4.5.22 The surrounding arable field margins and hedgerows, provide important connectivity through the landscape and are therefore considered to be of Local importance, or County importance (if they meet the criteria for HPI). Patches of low diversity scrub are considered to be of Local importance.
- 4.5.23 A small woodland parcel was located within the Section 4 draft Order Limits south of Burgh le Marsh, which is assessed to be a HPI and of County importance.
- 4.5.24 Additionally, urban areas were found along the route which are of negligible importance.
- 4.5.25 Areas of modified grassland were also present throughout the Section 4 Survey Area, some of which are classified as coastal and floodplain grazing marsh (notably at Sloothby, south of Burgh le Marsh, north of Thorpe St Peter, south-east of Hubbert's Bridge and along the River Welland). Coastal and floodplain grazing marsh is recognised as HPI and is assessed as being of up to County importance due to its ecological significance and contribution to biodiversity.
- 4.5.26 Survey work will continue through 2025 to characterise the terrestrial habitat types which are present within the Section 4 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

- 4.5.27 Seven Main Rivers are crossed by the proposed route: Willoughby High Drain; The Lymn; Steeping River, East Fen Catchwater drain; West Fen Catchwater drain; River Witham; and South Forty Foot drain, all of which play a role in local hydrology and provide habitat for aquatic and riparian species and are therefore assessed as being of County importance.
- 4.5.28 The River Welland is located just outside the southern extent of Section 4 (within Section 5), which is of County importance.
- 4.5.29 Reedbed associated with the Steeping River is assessed to be a HPI and of County importance.
- 4.5.30 A total of 17 ponds were identified within the Section 4 draft Order Limits and 233 were identified within the Section 4 Survey Area.
- 4.5.31 A network of smaller ditches/drains are also traversed along the proposed overhead line route, which are of Local importance.
- 4.5.32 Survey work will continue through 2025 to characterise the aquatic habitat types which are present within the Section 4 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 reported within the ES.

Water Framework Directive (WFD) Waterbodies

- 4.5.33 Within the Section 4 draft Order Limits the Project crosses eight WFD waterbodies, all of which are hydrologically linked to The Wash SPA and Ramsar site and The Wash and North Norfolk Coast SAC:
- i. Boygrift Drain (GB105029061720);
 - ii. Anderby Main Drain (GB105029061730);
 - iii. Lymn/Steeping (GB105030062430);
 - iv. East & West Fen Drains (GB205030056405);
 - v. Maud Foster and Fen Catchwater Drains (GB205030056465);
 - vi. Lower Witham – conf Bain to Grand Sluice (GB205030062426);
 - vii. Black Sluice IDB draining to the South Forty Foot Drain (GB205030051515); and
 - viii. Risegate Eau (GB205031055525).
- 4.5.34 Further details of these WFD waterbodies are provided within **PEI Report Volume 2 Part B Section 4 Chapter 6 Water Environment and Flood Risk**.

Protected and Notable Species

- 4.5.35 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 area within the Section 4 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

- 4.5.36 The habitats within the Section 4 Survey Area largely comprise agricultural land which is of limited value to terrestrial invertebrates. However, coastal floodplain grazing marsh, woodland and hedgerow are also recorded within the Section 4 draft Order Limits and provide potential for a more diverse assemblage of terrestrial invertebrates.
- 4.5.37 Any areas within the Section 4 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 final assessments reported in the ES, and any specific mitigation requirements.

Great Crested Newt

- 4.5.38 The desk study records indicate that great crested newts are present in within the draft Order Limits in the Burgh le Marsh area; and around Stickney approximately 2 km north of the draft Order Limits.
- 4.5.39 Great crested newt surveys to date have included Habitat Suitability Index (HSI) assessments and analysing water samples from ponds for great crested newt eDNA.¹ Of the 233 ponds identified within the Section 4 Survey Area, 110 have been surveyed for great crested newt. The presence/absence surveys revealed mostly negative results for great crested newt eDNA, with varying habitat suitability index (HSI) scores. Many ponds with good or excellent HSI ratings returned negative eDNA results. Ponds with poor or below-average HSI scores also returned negative eDNA results.
- 4.5.40 The 12 positive eDNA findings were limited to specific locations, with positive results returned from the area between Burgh le Marsh and Thorpe Culvert, where great crested newt were recorded within 100 m of the draft Order Limits to both the north and south. Positive eDNA results were also recorded within ponds east of Gipsey Bridge, approximately 150 m south of proposed road widening works; and another pond at Wigtoft, which lies approximately 450 m east of the draft Order Limits. The nearest positive record was 20 m west of a proposed access track to the east of Burgh le Marsh.
- 4.5.41 Seasonal survey work will continue in 2025 to confirm the status of great crested newt and the survey results will be used to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

Reptiles

- 4.5.42 Desk study research has indicated that there are records for grass snake within the Section 4 Study Area around Burgh le Marsh.
- 4.5.43 The floodplain grazing marsh, meadow and woodland habitats in the Section 4 Study Area have potential for common reptiles however the general habitats within the remaining Section 4 Study Area appear to be limited in extent, being confined to field boundaries and the margins of ditches. Therefore, as any use of the habitats by

¹ 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.

reptiles within Section 4 is likely to be localised, common reptile species present within Section 4 are likely to be of no more than Local importance for common reptile species.

- 4.5.44 Survey work will continue in 2025 to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

Wintering Birds

- 4.5.45 Surveys for wintering birds were carried out within the Section 4 Survey Area between November 2022 and March 2023. Surveys involved 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 once in March 2023). A total of ten VPs were recorded throughout Section 4 (VP 4 to 13).
- 4.5.46 Data are presented from the draft Order Limits of Section 4 and an adjacent zone of 500 m to account for the mobility of birds and the limited coverage of survey extents.
- 4.5.47 Within the ornithological surveys of Section 4, the species found to be present in winter are presented in **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2022-24, Table 4A.1**. A range of target species were recorded comprising gulls, geese, waders, and ducks, and smaller numbers of raptors. The largest counts recorded (>70 birds) were of common gull (*Larus canus*), curlew (*Numenius arquata*), golden plover (*Pluvialis apricaria*), greylag goose (*Anser anser*), lapwing (*Vanellus vanellus*), mallard (*Anas platyrhynchos*), mute swan (*Cygnus olor*), teal (*Anas crecca*), and wigeon (*Anas penelope*). A number of species are considered as main component species of internationally designated sites. Four species are on the Red-list of conservation concern, and 18 species on the Amber-list. From the wintering data, golden plover, lapwing, marsh harrier and pink-footed goose (*Anser brachyrhynchus*) were recorded and are considered to be of County importance or greater, noting that these species' Impact Risk Zone overlap with the Section 4 draft Order Limits. As **Table A4.3** summarises, the majority of wintering species recorded to date are considered to be of Local importance.
- 4.5.48 Further avian work was undertaken during winter 2024/25 and will be analysed (along with all of the avian survey data) to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

Breeding Birds

- 4.5.49 Surveys for breeding birds were carried out between March 2024 and July 2024. There was a total of 11 transect routes distributed (or at least partially) throughout the Section 4 Survey Area.
- 4.5.50 For breeding bird data, the number of territories is presented, which is derived from a standardised approach of assessing breeding status given 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 13) Section 41 species (Ref 14), and Schedule 1 species of the Wildlife and Countryside Act 1981.
- 4.5.51 Breeding season data, showing the species and the numbers of territories recorded from the transects in the Section 4 Survey Area are presented in **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2024 Table 4A.2**. Skylark were the most common breeding bird recorded across the surveyed areas within the

Section 4 Survey Area, with a relatively even spatial distribution across the transects. Other farmland specialists included corn bunting (*Emberiza calandra*), grey partridge (*Perdix perdix*), lapwing (*Vanellus vanellus*), linnet (*Linaria cannabina*), starling (*Sturnus vulgaris*), stock dove (*Columba oenas*), tree sparrow (*Passer montanus*) (one territory), whitethroat (*Curruca communis*) and yellowhammer (*Emberiza citrinella*). Given the length of Section 4, a number of other habitats are present supporting a range of breeding species. Wetland/waterbodies across this section were found to support avocet (*Recurvirostra avosetta*), little ringed plover (*Charadrius dubius*), common sandpiper (*Actitis hypoleucos*), common tern (*Sterna hirundo*), oystercatcher (*Haematopus ostralegus*), and waterfowl such as gadwall (*Mareca strepera*), shoveler (*Anas clypeata*), shelduck (*Tadorna tadorna*) and mallard (*Anas platyrhynchos*). There were eight Schedule 1 species (avocet, barn owl (*Tyto alba*), Cetti's warbler (*Cettia cetti*), hobby (*Falco subbuteo*), kingfisher (*Alcedo atthis*), little ringed plover, marsh harrier (*Circus aeruginosus*), and peregrine (*Falco peregrinus*) recorded in this Section.

- 4.5.52 The majority of recorded species are considered to be of Local importance. Avocet, common sandpiper, redshank, marsh harrier and oystercatcher are considered to be of County importance, based upon a combination of survey records, local distribution and Birds of Conservation Concern (BoCC) status (see **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2022-24, Table 4A.3**).
- 4.5.53 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 4 Appendix 4A Bird Survey Data 2022-24** are incomplete. Once available, the full survey results will be assessed and presented within the ES.
- 4.5.54 It is important to note that this section considers the importance of a species in the context of the geographical extent of Section 4 only. An initial route-wide assessment is included in **PEI Report Volume 2 Part C Route-wide Chapter 3 Ecology and Biodiversity**.

Badger

- 4.5.55 Desk study survey records included that there were over 500 records of badger within the Section 4 Study Area. These included recorded setts and signs of badger activity and badger casualties on roads throughout the area.
- 4.5.56 Surveys for badger were conducted between November 2024 and March 2025 and incidental records of badger field signs were recorded during other species and habitat surveys.
- 4.5.57 Eight potential main badger setts were recorded within Section 4 Survey Area. The results of the badger surveys (including the locations of the setts) will be presented in a Confidential Appendix to the ES.
- 4.5.58 Given its common status and widespread distribution within the county, Badger is assessed as being of Local importance.
- 4.5.59 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

- 4.5.60 Local records centre data for the Section 4 Study Area included records of brown long-eared (*Plecotus auritus*), Natterer's (*Myotis nattereri*), barbastelle (*Barbastella*

barbastellus) and soprano pipistrelle (*Pipistrellus pygmaeus*), with records of brown long eared roosts and Natterer's roosts falling within the draft Order Limits. The brown long eared roost record was between pylons LW5 and LW7, the four Natterer's roost records were between pylons LW20 and LW23, between pylons LW93 and LW96, between pylons LW115 and LW119 and between pylons LW163 and LW166.

- 4.5.61 There were three existing European Protected Species Mitigation Licence (EPSML) applications for bats within the Section 4 Study Area. These were for common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, and brown long-eared bats, with the closest located approximately 2 km from the Section 4 draft Order Limits.
- 4.5.62 Initial surveys for bats were carried out between May and October 2024.
- 4.5.63 The field surveys completed to date have confirmed that the bat species present within the Section 4 Survey Area include common pipistrelle, barbastelle, *Myotis* sp., *Nyctalus* sp., *Pipistrellus* sp., soprano pipistrelle, Leisler's bat (*Nyctalus leisleri*), Nathusius pipistrelle (*Pipistrellus nathusii*) and serotine (*Eptesicus serotinus*) species. The activity surveys indicated that hedgerows and woodland edges along the proposed overhead line route are being utilised by foraging and commuting bats within the Survey Area.
- 4.5.64 Survey work was also conducted in winter 2024/2025 and will continue over 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.
- 4.5.65 At this stage no buildings or structures are known to be within the Section 4 draft Order Limits. If any buildings or structures are identified within the Section 4 draft Order Limits and potential impacts to bats are identified, these will be surveyed accordingly.

Otter

- 4.5.66 Desk study records included more than 200 records of otter within the Section 4 Study Area. These included signs of otter activity including spraints and footprints throughout the area, as well as road traffic casualties.
- 4.5.67 Initial surveys for otter were carried out between March 2024 and October 2024.
- 4.5.68 Within the Section 4 Survey Area, no breeding sites were recorded. However, four resting sites were recorded on the River Witham (WFD watercourse GB205030062426 Lower Witham - conf Bain to Grand Sluice) between pylons LW140 and LW141, over 100 m east and west of the Section 4 draft Order Limits. Additionally, multiple field signs of otter have been identified within the Survey Area, including spraint and feeding remains.
- 4.5.69 Where suitable otter habitat exists surveys will be completed to confirm presence/absence.
- 4.5.70 Given its recovering status and importance within the county, where otter is present, the species is assessed as being of County importance.
- 4.5.71 Survey work will continue in 2025 to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented in the ES.

Fish

- 4.5.72 Desk study research has identified Environment Agency (EA) records of the notable fish species brown/sea trout (*Salmo trutta*), European eel, lamprey spp. (*Petromyzontidae*) and bullhead (*Cottus gobio*) having been recorded within the WFD waterbody Lymn/Steeping (GB105030062430).
- 4.5.73 Furthermore, records of European eel have also been found within the Willoughby High Drain (GB105029061710) and Anderby Main Drain (GB105029061730). There are also records of spined loach (*Cobitis taenia*) within numerous waterbodies across the Section 4 Study Area.

Table 4.4 Notable fish species identified within the Section 4 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.
Spined loach	<i>Cobitis taenia</i>	Global Red List Post 2001 – Least Concern, Annex II of the Habitats Directive, UKBAP 2007, Section 41 NERC Act 2006 and Appendix III of Bern Convention 1979	Local, due to the relative scarcity of this species and small population size likely to be affected.
European brook lamprey	<i>Lampetra planeri</i>	Annex II of the Habitats Directive, Appendix III Bern Convention	Regional, due to records found within this Section of the Project and the Lymn/Steeping WFD waterbody and relative scarcity of this species.
European river lamprey	<i>Lampetra fluviatilis</i>	Annex II and V of the Habitats Directive, Appendix III Bern Convention, The Conservation of Habitats and Species Regulations 2010 Schedule 4, Section 41 NERC Act 2006	National, due to records found within this Section of the Project and the Lymn/Steeping WFD waterbody which is hydrologically linked to the Wash SPA and The Wash and North Norfolk Coast SAC

Common name	Scientific name	Designation/Status	Importance
			and relative scarcity of this species.
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, as this species is migratory and records have been found within this Section of the Project and the Lymn/Steeping WFD waterbody which is hydrologically linked to the Wash SPA and The Wash and North Norfolk Coast SAC.

4.5.74 Survey work will be conducted in 2025 to confirm the status of fish within the Section 4 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

4.5.75 Desk study research (data search) identified the presence of three notable aquatic macroinvertebrate species within the Section 4 Study Area (see **Table 4.5**). These are Lister's river snail (*Viviparus contectus*), the shore bug (*Saldula palustris*) and the beetle (*Noterus crassicornis*).

4.5.76 Additionally, there are Environment Agency records of Lister's river snail within the WFD waterbody East & West Fen Drains (GB205030056405) approximately 2 km from the Section 4 draft Order Limits.

Table 4.5 Notable aquatic macroinvertebrate species identified within the Section 4 Study Area

Common name	Scientific name	Designation/Status	Importance
Lister's river snail	<i>Viviparus contectus</i>	Global Red List Post 2001 – Least Concern, Nationally Scarce, Community Conservation Index (CCI) index: Local	County, due to relative scarcity of this species.
Shore bug	<i>Saldula palustris</i>	Global Red List Post 2001, Nationally scarce	County, due to relative scarcity of this species.

Beetle	<i>Noterus crassicornis</i>	Nationally scarce	County, due to relative scarcity of this species.
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- 4.5.77 Survey work will be undertaken in 2025 to confirm the status of aquatic macroinvertebrates, to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented within the ES.

Aquatic Macrophytes

- 4.5.78 One notable aquatic macrophyte species was identified within the Section 4 Study Area from Environment Agency records (Ref 10); flat-stalked pondweed (*Potamogeton friesii*; (see **Table 4.6**).

Table 4.6 Notable aquatic macrophyte species identified within the Section 4 Study Area

Vernacular name	Scientific name	Designation/Status	Importance
Flat-stalked pondweed	<i>Potamogeton friesii</i>	Global Red List Post 2001 – Near Threatened, England Red List Post 2001 - Vulnerable	County, due to records found in this Section of the Study Area and relative scarcity of this species

- 4.5.79 Survey work will be undertaken in 2025 to confirm the status of aquatic macrophytes, to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented within the ES.

Water Vole

- 4.5.80 Desk study records included over than 3,400 records of water vole within the Section 4 Study Area. These included sightings of individuals and signs of water vole activity including droppings and burrows throughout the area
- 4.5.81 Initial surveys for water vole were carried out between March 2024 and October 2024.
- 4.5.82 Within the Section 4 Survey Area, water vole were found to be present in at least 14 locations within the Section 4 draft Order Limits, along watercourses including Woldgrift Drain, North Ings Drain, Wyche Drain Branch, Black House Farm Drain, Burgh Marsh Drain College Drain, Catchwater Drain, Curtis and Ridge, Four Towns Drain North, Cross Drain (NW) and West Drain. Evidence included numerous field signs of water vole including latrines, burrows and feeding signs.
- 4.5.83 Where suitable water vole habitat exists, surveys will be completed to confirm presence/absence.
- 4.5.84 Given its declining status and importance within the county, where water vole is present, the species is assessed as being of County importance.
- 4.5.85 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

- 4.5.86 The desk study returned records for brown hare (*Lepus europaeus*), hedgehog (*Erinaceus europaeus*), harvest mouse (*Micromys minutus*) and common toad (*bufo bufo*) within the Section 4 Study Area.
- 4.5.87 Habitats within the Section 4 Survey Area are suitable for brown hare, common toad, harvest mouse and hedgehog, which are SPI and of Local importance.
- 4.5.88 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

- 4.5.89 Desk study research has identified the presence of a total of 13 INNS within the Section 4 Study Area. These comprise 11 invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981: variegated yellow archangel (*Lamium galeobdolon*, subspecies *argentatum*), Canadian waterweed (*Elodea canadensis*), giant hogweed (*Heracleum mantegazzianum*), New Zealand pygmyweed (*Crassula helmsii*), Montbretia sp. (*Crocsmia x crocosmiiflora*), Japanese knotweed (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*), Himalayan cotoneaster (*Cotoneaster simonsii*), few-flowered garlic (*Allium paradoxum*), false Virginia-creeper (*Parthenocissus inserta*) and water fern (*Azolla filiculoides*); one invasive non-native animal species listed under Schedule 9: American signal crayfish (*Pacifastacus leniusculus*); and one additional INNS listed in the Invasive Alien Species (Enforcement and Permitting) Order 2019: Nuttall's waterweed (*Elodea nuttallii*). American signal crayfish, Himalayan balsam and giant hogweed are also listed on the Invasive Alien Species Order.
- 4.5.90 No specific INNS survey has been undertaken; however field observations have been made during other ecological surveys within the Study Area. A total of seven invasive non-native plant species were identified within the Section 4 Study Area in 2024. At Burgh-le-Marsh an area of woodland was found to contain variegated yellow archangel, Himalayan cotoneaster and rhododendron (*Rhododendron ponticum*). Additionally, INNS were recorded in an urban area north of LW50, on the edge of the draft Order Limits, where wall cotoneaster (*Cotoneaster horizontalis*) and Virginia creeper (*Parthenocissus quinquefolia*) were noted. An area of Japanese knotweed was also recorded approximately 600 m north of this. Further areas of Japanese knotweed were identified to the south of LW133 within a small area of woodland, and within a field pond to the east of LW140. Himalayan balsam was recorded along the banks of the Steeping River north of LW63.
- 4.5.91 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 further surveys will be presented in the ES.

Future Baseline

- 4.5.92 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.

- 4.5.93 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.
- 4.5.94 Habitats within the Section 4 draft Order Limits and Study Area comprise mainly arable farmland currently under cultivation.
- 4.5.95 In addition to the main habitat coverage, field boundaries are in places defined by hedgerows, ditches and farm tracks and the Section 4 draft Order Limits cross four watercourses designated as LWS (The Lymn LWS, Hobhole Drain LWS, South Forty Foot Drain LWS and Rise Gate Eau LWS).
- 4.5.96 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.
- 4.5.97 Relative to the current baseline, the value of priority ecological features ecological features present within the Section 4 Study Area 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.
- 4.5.98 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 and Embedded 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 15) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 16) 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 17) 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 4 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 Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects (Ref 18), Version 9 (November 2022) and the Habitats Regulations 2017 (Ref 19).

- 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 4. This has further contributed to the avoidance or reduction of the potential ecological impacts of the Project. Examples of such measures include the refined 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, 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 and Management Measures

Construction

- 4.6.7 A Preliminary CoCP is included within **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. General control measures included within the Preliminary CoCP relevant to the Ecology and Biodiversity assessment include:
- 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 receptors 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.

- 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.

Additional Mitigation Measures

4.6.13 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.

4.6.14 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.

4.6.15 As set out within **PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operation Features**, initial measures within Section 4 include:

- i. Woodland and scrub, habitats;
- ii. Potential water vole mitigation areas (mitigation requirements to be confirmed following surveys); and
- iii. Habitat improvement and creation for birds.

4.6.16 Any mitigation and compensation 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.

4.6.17 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 4 Study Area, as a result of construction, maintenance and/or operational 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 should be deemed to be an important receptor until determined otherwise. Therefore, at this stage, most of the ecological receptors identified in the baseline of this PEI Report have been retained in the assessment, noting that once all survey data has been collated, it is likely that the status of these receptors will change. A full detailed 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 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 4.7** 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 Gibraltar Point SPA and Ramsar located 3.6 km south of the Section 4 draft Order Limits at its closest point. The Wash and North Norfolk Coast SAC is located 3.8 km east, The Wash SPA and Ramsar site is located 4.5 km south, the Greater Wash SPA is located 3.2 km east and the Inner Dowsing, Race Bank and North Ridge SAC is located 5.4 km east of the Section 4 draft Order Limits at its closest point.

- 4.7.8 In addition, the Humber Estuary SPA, Ramsar, and Nene Wash SPA, Ramsar (where bird species with large foraging ranges are noted as, or one of, the qualifying features), are located 10.4 km north and 29.5 km south of the Section 4 draft Order Limits at its closest point respectively.
- 4.7.9 According to Natural England guidance (Ref 20), only those main component species of Internationally designated sites which have an overlapping IRZ with the Section 4 draft Order Limits, 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 The Gibraltar Point SPA and Ramsar site include birds as qualifying features. The SPA qualifying species are unlikely to occur within the Section 4 draft Order Limits given their affinity to coastal habitats. However, with respect to the Ramsar site, there is potential for habitat loss within FLL within the draft Order Limits, given that the IRZ for the assemblage feature species could partially overlap with the Section 4 draft Order Limits. Disturbance of bird species which are qualifying features of these sites could also occur due to construction activities within any functionally linked areas. Further assessment is required of the constituent main component species of these designated sites once surveys are completed and data assessed, to consider how they might utilise habitats within the Section 4 draft Order Limits. 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 Wash and North Norfolk Coast SAC is designated for its habitats such as seedbanks, mudflats and coastal lagoons and also includes otters as qualifying features. Potential pathways of effect include changes in water quantity, level and flow and works within or adjacent to watercourses which are hydrologically linked to the SAC have the potential to impact otter species. The potential for LSE upon this site 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.
- 4.7.12 The Wash SPA and Ramsar site includes birds as qualifying features. The IRZ for the SPA and Ramsar site overlaps with the Section 4 draft Order Limits, in relation to primarily wintering Bewick's swan, whooper swan, and pink-footed goose. 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, and significant effects cannot be excluded at this stage of the assessment.
- 4.7.13 Species of Greater Wash SPA are considered to be coastally dependent and therefore the Project is unlikely to give rise to any significant effect from disturbance or habitat loss to species due to impacts within 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 habitat within functionally linked land cannot be excluded at this stage of the

assessment. The potential for LSE upon this site 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.

- 4.7.14 The Humber Estuary SPA and Ramsar site include birds as qualifying features and are located approximately 10.4 km north of the draft Order Limits. At this distance, it is unlikely that qualifying features would be impacted, given that IRZ for those species do not overlap with the Section 4 draft Order Limits. However, further assessment is required once 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 HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.15 The Nene Washes SPA and Ramsar sites include birds as qualifying features and are located approximately 29.5 km south of the draft Order Limits. Species of the Nene Washes SPA and Ramsar site are considered to be located too far from the Section 4 draft Order Limits to give rise to any significant effect from disturbance or habitat loss to species due to impacts within 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 habitat within functionally linked land cannot be excluded at this stage of the assessment. The potential for LSE upon this site 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.
- 4.7.16 Inner Dowsing, Race Bank and North Ridge SAC is designated for its sandbank types and biogenic reef habitats. Significant impacts are not anticipated, and this site is included within **Table 4.7**.
- 4.7.17 The Impact Risk Zones (IRZ's) for the nationally designated Bratoft Meadows SSSI (designated for its grassland habitats), Candlesby Hill SSSI (designated for chalk grassland and broadleaved woodland), Chapel Point to Wolla Bank SSSI (designated for its coastal habitats), Gibraltar Point SSSI (designated for its coastal habitats and fauna, including passage and breeding birds), Jenkins Carr SSSI (designated for woodland and wetland habitats), Surfleet Lows SSSI (designated for its wet meadow habitats), Troy Wood SSSI (designated for its woodland habitat and breeding heron) and The Wash SSSI (designated for wetland habitats and its bird assemblage) partially overlap with the Section 4 draft Order Limits.
- 4.7.18 Gibraltar Point SSSI is located 3.4 km south of the Project. There are potential hydrological links between the project and this SSSI, however given the separation distances and the pollution prevention measures assumed to be secured through the 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 within the draft Order Limits 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.
- 4.7.19 Troy Wood SSSI is located 7 km north-west of the Project. The site is upstream of the Project, so no hydrological impacts are anticipated, but the herons 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.

- 4.7.20 The Wash SSSI is located 4.5 km east of the Project. There are potential hydrological links between the project and this SSSI, however given the separation distances and the pollution prevention measures assumed to be secured through the CoCP, no effects upon habitats are predicted. Disturbance of bird species which form part of the SSSI assemblage could also occur due to construction activities within any functionally linked areas. 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.
- 4.7.21 In addition, the nationally designated site Willoughby Branch Line LNR is located within the Section 4 draft Order Limits and Gibraltar Point NNR is located 3.6 km south of the Section 4 draft Order Limits. Due to its location within the Section 4 draft Order Limits, there is a risk of adverse effects on habitats (habitat loss and/or degradation), as well as potential disturbance of any fauna (e.g. bats, otter and water vole), associated with Willoughby Branch Line LNR. Further survey work will establish the nature and importance of any receptors associated with the LNR that may be affected by the works. Therefore, on a precautionary basis, significant effects cannot be excluded at this stage of the assessment.
- 4.7.22 There are potential hydrological links between the project and Gibraltar Point NNR, however given the separation distances and the pollution prevention measures assumed to be secured through the CoCP, no effects upon habitats are predicted. The bird assemblage of the NNR 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.
- 4.7.23 Taking into account the pollution prevention measures within the Preliminary CoCP (such as GG15, GG16, GG17), significant effects upon the remaining nationally designated sites within 5 km of the Section 4 draft Order Limits (or where the IRZ overlaps) are not anticipated and are included within **Table 4.7**.
- 4.7.24 There are nine LWS that are located close to or within the draft Order Limits of Section 4 which includes watercourses which are crossed by the alignment and woodlands that lie adjacent to the Section 4 draft Order Limits (i.e. Willoughby Branch Line LWS, Hobhole Drain Boston Corporation Farm to Station Cottages LWS, Risegate Eau LWS, Farlesthorne Pit LWS, Sloothby Low Lane LWS, Sloothby Meadows LWS, South Forty Foot Drain LWS, Surfleet Bank LWS and The Lymn LWS). As above, due to the proximity of the draft Order Limits to these LWS there is a risk of adverse effects on habitats (habitat loss and/or degradation) as well as potentially any fauna (e.g. bats, otter and water vole) associated with these LWS. It is however noted that indirect impacts associated with the release or mobilisation of pollutants are not likely to result in significant effects upon these sites, given the embedded control measures set out within the Preliminary CoCP. Further survey work will establish the nature and importance of any receptors associated with these LWS that may be affected by the works. Therefore, on a precautionary basis, significant effects cannot be excluded at this stage of the assessment.
- 4.7.25 No significant effects are predicted for the remaining 23 LWS's located within 2 km of the Section 4 draft Order Limits and these are therefore included within **Table 4.7**.

Habitats

Terrestrial Habitats

- 4.7.26 Initial habitat survey results indicate that the majority of land within the Section 4 Survey Area is cultivated cropland with negligible biodiversity importance. Areas of this habitat would be lost during construction of the proposed pylons; stringing areas; and to create the haul road for construction.
- 4.7.27 Pylons have been located outside of HPI where possible, however coastal and floodplain grazing marsh in the Burgh le Marsh area and near the River Welland would be directly affected by the proposed ground works within Section 4 through habitat loss.
- 4.7.28 Grazing marsh is defined as periodically inundated pasture or meadow, typically with ditches or rills containing standing brackish or fresh water. The ground and/or in-channel works could result in changes in hydrology which may alter the habitat. Indirect impacts upon habitats due to the release or mobilisation of contaminants causing water pollution are not likely to result in significant effects upon HPI, given the embedded control measures set out within the Preliminary CoCP (GG15, GG16, GG17 and W01 to W11). Further assessment of potential indirect impacts due to construction activities, including changes in air quality, will be undertaken and reported within the ES.
- 4.7.29 Hedgerows, scrub and small woodland parcels would be crossed by the proposed overhead line. Temporary severance of hedgerows would occur during construction, where the haul roads are proposed. Existing tracks and roads would be utilised where practicable, however these may require widening. Those habitats which would be directly impacted by the establishment of haul roads and/or stringing works would be reinstated upon completion of construction.
- 4.7.30 Survey work will continue through to 2025 to characterise the terrestrial habitat types, and their constituent flora and fauna, within and adjacent to Section 4 draft Order Limits and to confirm the condition of relevant habitats. The survey findings will inform the design of appropriate mitigation and the assessment of impacts and enhancement, which will be developed fully in the ES.
- 4.7.31 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects on terrestrial habitats within the Section 4 Study Area cannot be excluded at this stage of the assessment.

Aquatic Habitats

- 4.7.32 There are four streams designated as LWSs that are crossed by the Section 4 draft Order Limits. There are also a number of other watercourses, ditches and ponds located within or close to the draft Order Limits.
- 4.7.33 Direct impacts upon aquatic habitats within the Section 4 Study Area would 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 overhead line could potentially result in temporary loss or damage to watercourses and ditches within the Draft Order Limits, however the stringing methodology would seek to minimise any potential direct impacts to watercourses during construction and any associated impacts are therefore likely to be temporary.

- 4.7.34 Within Section 4, the construction of approximately 220 temporary access crossings associated with haul roads would 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 and appropriate culvert design. Based upon the implementation of best practice construction methods and reinstatement of the impacted habitats post construction (see Preliminary CoCP measures W01 to W11), associated effects are likely to be temporary.
- 4.7.35 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 4 includes at least 3 attenuation ponds 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.
- 4.7.36 As noted above, 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 4 draft Order Limits and to confirm the condition of relevant habitats, in order to inform the design of appropriate mitigation and the assessment of impacts and enhancement, which will be developed fully in the ES.
- 4.7.37 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects on aquatic habitats within the Section 4 Study Area cannot be excluded at this stage of the assessment.

Protected and Notable Species

Terrestrial Invertebrates

- 4.7.38 Survey results to date indicate that the majority habitats (i.e. cropland) within the Section 4 Survey Area have limited value to terrestrial invertebrates. However, coastal floodplain grazing marsh, woodland and lowland meadow also recorded within the Section 4 draft Order Limits may have suitability to support a more diverse invertebrate assemblage.
- 4.7.39 Potential impacts upon terrestrial invertebrates include habitat loss, habitat fragmentation and death/injury through the loss of floodplain grazing marsh, and woodland habitats and severance of hedgerows.
- 4.7.40 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).
- 4.7.41 A scoping survey will be undertaken in 2025 to assess those habitats recorded in 2024/25 as potentially suitable for terrestrial invertebrates, to assess their potential importance. Following on from this, targeted surveys would be undertaken if required, to inform the assessment of impacts and effects and design of appropriate mitigation, which will be reported within the ES.
- 4.7.42 On a precautionary basis, significant effects on terrestrial invertebrates cannot be excluded at this stage of the assessment.

Great Crested Newt

- 4.7.43 The survey results to date indicate that populations of great crested newt are present in discrete areas within the Section 4 Study Area.
- 4.7.44 No ponds would be lost during construction, however, potentially suitable terrestrial habitat for great crested newts up to 500 m away from ponds including hedgerows and grassland would be directly impacted through habitat loss/severance during construction, due to the establishment of construction compounds and haul roads and within the footprint of pylons. Additionally, there is a risk of machinery and traffic killing or injuring great crested newts if they are present within the draft Order Limits during construction activities.
- 4.7.45 Where impacts upon great crested newt cannot be avoided, a licence from Natural England would be required to permit derogation (as outlined in Preliminary CoCP management measure B01). Indicative locations for mitigation are provided on **PEI Report Volume 2 Part B Section 4 Figure 1.3 Permanent and Operational Features**.
- 4.7.46 Additional relevant 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), reinstatement of hedgerows (GG08), establishment of protective areas (GG09), maintenance of hedgerow connectivity (B08) and directional and minimised lighting (LV04).
- 4.7.47 Survey work will continue in 2025 to inform the assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES. Further survey findings will also be used to confirm any licencing and enhancement requirements.
- 4.7.48 On a precautionary basis, significant effects on great crested newt cannot be excluded at this stage of the assessment.

Reptiles

- 4.7.49 The majority of habitats within the Section 4 draft Order Limits that are suitable for reptiles appear to be limited in extent, being confined to field boundaries and the margins of ditches. However, floodplain grazing marsh, meadow and woodland habitats in this area also have potential for common reptiles.
- 4.7.50 There are potential impacts through habitat loss and risk of killing and/or injury of reptiles during construction.
- 4.7.51 Where impacts upon reptiles cannot be avoided, measures would be implemented to prevent a breach of legislation. These measures are outlined in the Preliminary CoCP and include two-stage habitat manipulation of suitable habitats, with an ECoW appointed to oversee these works (B05). Any species translocation (if required) would be undertaken in accordance with a strict method statement (B09).
- 4.7.52 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).
- 4.7.53 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 effects and the details of appropriate mitigation and enhancement to be presented in the ES.

- 4.7.54 On a precautionary basis, significant effects on reptiles cannot be excluded at this stage of the assessment.

Birds: Breeding and Wintering

- 4.7.55 Surveys for wintering birds carried out between November 2022 and March 2023 indicate that habitats within the Section 4 Survey Area are used by a range of wintering birds (see **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2022-24, Table 4A.1**).
- 4.7.56 In addition, surveys for breeding birds, carried out between March 2024 and July 2024, indicated an expected assemblage of farmland specialists and generalists across within the Section 4 Survey Area (see **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2022-24, Table 4A.2**).
- 4.7.57 Although measure B02 in the Preliminary CoCP would ensure the impacts of construction works upon active nests would be mitigated, the construction works within Section 4 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.
- 4.7.58 Additional relevant 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 (LV04).
- 4.7.59 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 effects and the design of appropriate mitigation and enhancement, which will be further developed and presented within the ES.
- 4.7.60 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

- 4.7.61 Eight potential main badger setts were recorded within the Section 4 Survey Area and there is the potential for direct impacts through the loss of some of these setts. Specifically, hedgerow and areas of woodland habitats would require clearance during construction during the establishment of on-site compounds and haul roads and within the footprint of proposed pylons.
- 4.7.62 There is also potential for general disturbance impacts during construction from noise and vibration and, if required 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.
- 4.7.63 As outlined in Preliminary CoCP measure B13, in the first instance, reasonable avoidance measures would be incorporated to avoid impacting known badger setts. If however direct impacts on badger setts cannot be avoided, a licence from Natural England would be sought to permit derogation (as outlined in Preliminary CoCP measure B01). Mitigation measures may include the provision of artificial setts within the Order Limits where main setts would be closed.

- 4.7.64 Additional relevant 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).
- 4.7.65 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 effects, any appropriate mitigation and enhancement measures, which will be developed fully and presented within the ES.
- 4.7.66 On a precautionary basis, significant effects on badger cannot be excluded at this stage of the assessment.

Bats

- 4.7.67 Surveys in 2024 confirmed that bats were foraging and commuting within the Section 4 Survey Area and indicated that bats were associated with hedgerows and woodland edges along the overhead line route.
- 4.7.68 There is potential for both permanent and temporary loss of roosting, foraging and commuting habitat for bats and severance of commuting routes. Specifically, hedgerow and areas of woodland habitats would require clearance during construction during the establishment of on-site haul roads and within the footprint of proposed pylons. Likely construction impacts also include potential disturbance due to noise, vibration and, if required, lighting.
- 4.7.69 As outlined in Preliminary CoCP measure B13, in the first instance, reasonable avoidance measures would be incorporated to avoid impacting known bat roosts. Where impacts upon bat roosts cannot be avoided, a licence from Natural England would be required to permit derogation (as outlined in Preliminary CoCP measure B01).
- 4.7.70 Additional relevant 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).
- 4.7.71 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 4 draft Order Limits. The outputs of these surveys will be used to confirm the status of bats and the assessment reported within the ES.
- 4.7.72 On a precautionary basis, significant effects on bats cannot be excluded at this stage of the assessment.

Otter

- 4.7.73 Initial surveys for otter carried out in 2024 identified otter field signs within the Section 4 Survey Area, although no breeding sites were recorded. Four resting sites were recorded outside of the draft Order Limits.
- 4.7.74 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. There would also be

a risk of machinery and traffic killing or injuring otters if they are present during construction activities.

- 4.7.75 As outlined by 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 would be sought to permit derogation from legislation (as outlined in Preliminary CoCP measure B01).
- 4.7.76 Additional relevant 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.
- 4.7.77 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 details of any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.78 On a precautionary basis, significant effects on otter cannot be excluded at this stage of the assessment.

Fish

- 4.7.79 Notable fish species were recorded within the Section 4 Study Area.
- 4.7.80 There is a risk that habitats supporting protected and notable fish species would be impacted by the construction of temporary access crossings associated with hauls roads and during overhead line stringing works. Short-term impacts due to habitat fragmentation, degradation and/or disturbance cannot be discounted at this stage, nor can the risk of incidental mortality of protected fish species during construction works.
- 4.7.81 As outlined in Preliminary CoCP measure B10, where any in channel watercourse work are required, works would be completed outside of fish spawning season (March 16th-June 16th 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 Environment Agency (B11). Additional 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). In addition, as outlined in B12, a method statement would be required to ensure works within watercourse crossings include suitable measures to allow the passage of fish.
- 4.7.82 Survey work will continue in 2025 to confirm the status of species present. Survey findings will inform the full assessment of impacts and effects, and the details of any appropriate mitigation and enhancement, which will be presented within the ES.
- 4.7.83 On a precautionary basis, significant effects on fish cannot be excluded at this stage of the assessment.

Aquatic Macroinvertebrates

- 4.7.84 Notable aquatic macroinvertebrates were identified within the Section 4 Study Area.
- 4.7.85 There is a risk that habitats suitable for protected and notable aquatic macroinvertebrate species would be impacted by proposed construction works, including the establishment of temporary access crossings associated with hauls roads and overhead line stringing works. These activities would potentially result in habitat loss and/or fragmentation and disturbance and/or incidental mortality of aquatic macroinvertebrates.
- 4.7.86 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).
- 4.7.87 Survey work will be carried out in 2025 to confirm the status of this taxon. Survey findings will inform the assessment of impacts and effects, and the details of any appropriate mitigation and enhancement, which will be presented within the ES. Survey site selection has been based on crossing point locations where culverts, bridges and/or outfalls have the potential to influence macroinvertebrate populations.
- 4.7.88 On a precautionary basis, significant effects on aquatic macroinvertebrates cannot be excluded at this stage of the assessment.

Aquatic Macrophytes

One notable aquatic macrophyte species has been identified within the Section 4 Study Area.

- 4.7.89 There is a risk of construction works impacting watercourses and associated aquatic macrophytes causing incidental mortality of protected species. 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 and fragmentation).
- 4.7.90 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 (GG03) and establishment of protective areas (GG09).
- 4.7.91 Survey work will be carried out in 2025 to confirm the status of aquatic macrophytes and inform the full assessment of impacts and effects, and the details of any appropriate mitigation and enhancement, which will be presented within the ES.
- 4.7.92 On a precautionary basis, significant effects on aquatic macrophytes cannot be excluded at this stage of the assessment.

Water Vole

- 4.7.93 Initial survey work indicates that water vole are present within several watercourses within the Section 4 Survey Area.
- 4.7.94 Where suitable habitat for water voles exists, there is a risk of construction works impacting watercourses and associated riparian habitat causing incidental mortality of protected species. 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).

- 4.7.95 If impacts to water vole burrows cannot be avoided, a licence from Natural England would be sought to permit derogation (as outlined in Preliminary CoCP measure B01).
- 4.7.96 Additional relevant 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) and lighting restrictions (LV04). In addition, as outlined in B12, a method statement will be required to ensure works within watercourse crossings include suitable measures to allow the passage of water vole.
- 4.7.97 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 the details of any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.98 On a precautionary basis, significant effects on water vole cannot be excluded at this stage of the assessment.

Operation and Maintenance

Designated Sites

- 4.7.99 The Humber Estuary SPA, Ramsar site and SSSI, The Wash SPA, Ramsar site and SSSI, Gibraltar Point SPA, Ramsar site, SSSI and NNR, Greater Wash SPA and Nene Washes SPA and Ramsar site and Troy Wood 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.
- 4.7.100 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.
- 4.7.101 European designated sites within the Section 4 Study Area can be 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 with the exception of the Dowsing, Race Bank and Ridge SAC, significant effects cannot be excluded at this stage in the assessment. With respect to this site, due to the separation distances between the draft Order Limits and the Inner Dowsing, Race Bank and Ridge SAC and the likely dilution effects of the North Sea, no significant effects are anticipated.

Protected and Notable Species

Birds: Breeding and Wintering

- 4.7.102 As noted above in relation to designated sites, the collision risk with the overhead line within the Section 4 area will need to be fully assessed once further winter and breeding bird data have been collected.

- 4.7.103 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

- 4.7.104 For completeness, **Table 4.7** 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 4.7 Preliminary summary of non-significant Ecology and Biodiversity effects – Section 4

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Construction					
Inner Dowsing SAC	Habitat loss	International	Permanent or Temporary	Due to the distance of this site from the Section 4 Order Limits, there would be no habitat loss within this designated site.	Not significant
	Habitat degradation as a result of contamination during construction, changes in air quality, dust and/or changes in water quality	International	Temporary	Due to the separation distances and the likely dilution effects of the North Sea, no significant effects are anticipated. The likelihood of contamination is also considered to be minimal assuming appropriate management (such as Preliminary CoCP pollution prevention measures GG15, GG16 and GG17).	Not significant
Hoplands Wood SSSI, Chapel Point to Wolla Bank SSSI, Claxby Chalk Pit SSSI, Candlesby Hill SSSI, Bratoft Meadows SSSI, Keal Carr SSSI, Willoughby Wood SSSI, Willoughby Meadow SSSI, Sea Bank Clay Pits SSSI, Surfleet Lows, Skendleby Psalter Banks	Habitat loss	National	Permanent	Due to the distance of these sites from the Section 4 draft Order Limits, there would be no habitat loss within these nationally designated sites.	Not significant
	Contamination during construction, changes in air quality, dust, changes in water quality	National	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management (such as Preliminary CoCP pollution prevention	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
SSSI and Jenkins Carr SSSI				measures GG15, GG16 and GG17).	
A16 Verges North of the River Glen LWS, Bell Mere Pool LWS, Blue Gout Drain North LWS, Dog Whipping Ground LWS, Frith Bank Drain LWS, Heath's Meadows LWS, Hobhole Drain, Simmon House Bridge to Benington Bridge LWS, Mackay's Pit LWS, Middlemarsh Farm LWS, Middlemarsh Meadows LWS, Mill Hill Farm Fields LWS, Old Brickyard Plantation, Well LWS, Spendluffe Meadow LWS, South Bank Fosdyke LWS, Summergate Meadow LWS, Surfleet Seas End Saltmarsh LWS, River Glen Corridor LWS, The Hollies Field LWS, Well Vale Estate, Belt Plantation LWS, Westgate Wood and Meadow LWS, Willoughby Meadow West LWS, Witham	No impact	County	Permanent or Temporary	Due to the distances between these receptors and the Section 4 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
Way, Anton's Gowt to Boston LWS and Vernatts Drain LWS					
Hedgehog, brown hare, common toad, harvest mouse	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, common toad and brown hare during construction: GG06, B01, B03. Habitats impacted temporarily during construction would also be reinstated post construction (GG08).	Not significant
Invasive Non-Native Species (INNS)	Spread of INNS during construction activities	N/A	Permanent or Temporary	Preliminary CoCP measure B04 would ensure that the construction works do not result in the spreading or mishandling of any invasive non-native species..	Not significant
Operation/Maintenance					
Inner Dowsing and North Ridge SAC	No impact	International	Permanent or Temporary	Due to the distance between this receptor and the Section 4 there is not considered to be a pathways to effect. Therefore no mitigation is required.	Not significant
Willoughby Branch Line LNR	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,	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				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).	
Hoplands Wood SSSI, Chapel Point to Wolla Bank SSSI, Keal Carr SSSI, Claxby Chalk Pit SSSI, Candlesby Hill SSSI, Bratoft Meadows SSSI, Willoughby Wood SSSI, Willoughby Meadow SSSI, Sea Bank Clay Pits SSSI, Surfleet Lows, Skendleby Psalter Banks SSSI and Jenkins Carr SSSI	No impact	National	Permanent or Temporary	Due to the distance between these receptors and the Section 4 draft Order Limits, there is not considered to be a pathways to effect. Therefore no mitigation is required.	Not significant
A16 Verges North of the River Glen LWS, Bell Mere Pool LWS, Blue Gout Drain North LWS, Dog Whipping Ground LWS, Frith Bank Drain LWS, Heath's Meadows LWS, Hobhole Drain, Simmon House Bridge to	No impact	County	Permanent or Temporary	Due to the distances between these receptors and the Section 4 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 required.	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Benington Bridge LWS, Mackay's Pit LWS Middlemarsh Farm LWS, Middlemarsh Meadows LWS, Mill Hill Farm Fields LWS, Old Brickyard Plantation, Well LWS, Spendluffe Meadow LWS, South Bank Fosdyke LWS, Summergate Meadow LWS, Surfleet Seas End Saltmarsh LWS, River Glen Corridor LWS, The Hollies Field LWS, Well Vale Estate, Belt Plantation LWS, Westgate Wood and Meadow LWS, Willoughby Meadow West LWS, Witham Way, Anton's Gowt to Boston LWS and Vernatts Drain LWS.					
Willoughby Branch Line LWS, Hobhole Drain Boston Corporation Farm to Station Cottages LWS, Risegate Eau LWS, Farlesthorne Pit LWS, Sloothby Low Lane LWS, Sloothby Meadows 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 Grid best practice requirements	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
South Forty Foot Drain LWS, Surfleet Bank LWS and The Lymn LWS.				during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).	
Habitats: Coastal and Floodplain Grazing Marsh HPI and Reedbeds 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, access routes).	Not significant
Habitats: arable field margins, hedgerows, patches of low diversity scrub, ponds, 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	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				within and adjacent to assets (e.g. substations, pylons, access routes).	
Terrestrial Invertebrates	Habitat loss or fragmentation.	TBC	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
	Contamination of habitats during maintenance works	TBC	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	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				constraints present at the time would be identified and potential impacts mitigated accordingly..	
	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
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 potential impacts 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	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				current agricultural operations or less.	
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/damage 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 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 (involving inspections and maintenance of overhead line infrastructure) are anticipated to be small in scale and of an intermittent nature and therefore	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				broadly comparable to current agricultural operations or less.	
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/damage 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 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

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
	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
	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	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				<p>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>	
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	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				<p>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>	
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</p>	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				there is a potential impact on local flora and fauna of works near controlled waters.	
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	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.	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
				substations, pylons, access routes). 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.	
Brown hare, hedgehog common toad, harvest mouse	No impact	Local	N/A	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	Permanent	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 potential impacts mitigated accordingly.	Not significant

4.8 Monitoring

- 4.8.1 Monitoring requirements, that may be required for the Project following the implementation of mitigation to ensure it 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 Substation B to Refined Weston Marsh Substation Siting Zone (Section 4) 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 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 5.3) relevant to the Historic Environment assessment in Section 4. 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 4 (section 5.4). A detailed description of the assessment methods, 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 4 Study Areas 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 Section 4 (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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	Figure 5.1 Designated Heritage Assets; Figure 5.2 Non-designated Heritage Assets
PEI Report Volume 3 Part B Section 4 Appendix 5A Known Heritage Assets	A list of all identified heritage assets within the assessment Study Areas. This will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part B Section 4 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 Environmental Statement (ES).
Project Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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
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.

- 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**:
- PEI Report Volume 2 Part B Section 4 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.
 - PEI Report Volume 2 Part B Section 4 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.
 - PEI Report Volume 2 Part B Section 4 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.
 - PEI Report Volume 2 Part B Section 4 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
 - 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

Regional and Local 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** 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:
- 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. South East Lincolnshire Local Plan (Ref 2)
 - Policy 29 The Historic Environment: Distinctive elements of the South East Lincolnshire historic environment will be conserved and, where appropriate, enhanced.

5.3 Scope of Assessment

- 5.3.1 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 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 Non-Statutory 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 4 Study Area); 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 4 Study Area); 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**. This includes a description of how heritage value, 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 relating to Section 4 is 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, consultation, regional variation and individual qualities.
 - ii. Identification of the magnitude of impacts arising from the construction of the new 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 4A Environmental Impact Assessment (EIA) Assessment Methodologies and Scope**. Effects can be neutral, adverse, or beneficial.
 - 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 4.
- 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 applicable to the full 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**:
- 1 km from the draft Order Limits for non-designated heritage assets;
 - 3 km from the draft Order Limits for all designated heritage assets; and
 - 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 heritage assets of high value located beyond the 5 km Study Area will be 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 the baseline conditions:
- the National Heritage List for England (NHLE), held by Historic England, for designated assets;
 - Lincolnshire Historic Environment Record (HER) for non-designated heritage assets;
 - historic landscape characterisation (HLC) mapping undertaken by local planning authorities;
 - geological mapping held by the British Geological Survey; and
 - various online sources including:
 - Historic Ordnance Survey maps held by the National Library of Scotland;
 - 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:
- Volume 2 Part B Section 4 Chapter 5 Figure 5.1 Designated Heritage Assets;**

- ii. **Volume 2 Part B Section 4 Chapter 5 Figure 5.2 Non-designated Heritage Assets;** and
- iii. **Volume 3 Part B Section 4 Appendix 5A Known Heritage Assets.**

- 5.5.5 Designated heritage assets are referenced with their National Heritage List for England (NHLE) reference number (e.g. NHLE 1010947).
- 5.5.6 Non-designated assets are referenced using the relevant HER's unique identifier number (e.g. MLI240 for Lincolnshire).
- 5.5.7 Non-designated heritage assets identified by the preliminary assessment that are not yet recorded on the county HERs (e.g. possible archaeological remains identified by geophysical survey), have been assigned a unique identifier using an AEC prefix (e.g. AEC400).

Geology and Topography

- 5.5.8 Section 4 is located within two National Character Areas, National Character Area: 42 - Lincolnshire Coast and Marshes and National Character Area 46 - The Fens. National Character Area: 42 - Lincolnshire Coast and Marshes in the northern part of Section 4 is characterised by a wide coastal plain, to the west is the Middle Marsh which comprises a softly undulating arable landscape with a greater number of woodlands and hedgerows than other areas. To the east lies the Outmarsh, an open landscape of arable land, mixed with rich pasture divided by narrow dykes (Ref 7). The southern half of Section 4 is located within National Character Area 46 - The Fens, which extend across southern Lincolnshire, Cambridgeshire and Norfolk. The Fens are characterised by a low-lying, flat and expansive landscape, with wide views to the horizon (Ref 8).
- 5.5.9 Human interaction across the Fens has led to some changes to the topography; historically, the Fenlands would seasonally flood. Since the 17th century, however, systematic drainage of the area has occurred and subsequently, the peat has dried significantly and caused widespread subsidence. Due to the shrinkage of the peat deposits, roddons (alluvial palaeochannel deposits) are now much more prominent within the landscape forming a focus of past settlement activity.
- 5.5.10 The formation of the Fenlands Basin was likely caused by sub-glacial fluvial processes that formed tunnel valleys, which were inundated following glacial retreat. Deposits that have been identified in the British Geological Survey (BGS) as tidal flat alluvium areas are a mixture of tidal flat muds, peat and intertidal sands. The intertidal muds are characterised as blueish grey to greyish brown sandy clay which are associated with a low energy shallow marine and saltmarsh environment. The intertidal sands are generally comprised of quartz with uncommon feldspar and are associated with sandflats, tidal channels, estuarine and subtidal settings.
- 5.5.11 In the northern part of Section 4 the bedrock is recorded by the BGS (Ref 9) as Cretaceous chalk of the Welton Chalk Formation, overlain by superficial deposits of Devensian Till and localised pockets of Devensian glaciofluvial deposits. Tidal Flat deposits of clay and silt are also recorded infilling the drainage channels and watercourses draining onto the North Sea within the northern third of Section 4.
- 5.5.12 Between Cumberworth and Sloothby the bedrock changes to the Ferriby Chalk Formation formed between 100.5 and 93.9 million years ago. East of Burgh le Marsh the bedrock becomes more variable with areas of Cretaceous sandstone of the Carstone Formation formed between 113 and 100.5 million years ago, and mudstones

and interbedded limestone of the Claxby Ironstone Formation, Tealby Formation and Roach Formation, the latter formed between 139.4 and 126.3 million years ago.

- 5.5.13 To the south of Burgh le Marsh Section 4 turns westwards into the Fens, crossing areas of the Spilsby Sandstone Formation formed between 152.1 and 133.9 million years ago during the Jurassic and Cretaceous periods, and Jurassic mudstone of the Kimmeridge Clay Formation formed between 157.3 and 152.1 million years ago. East of Gipsey Bridge the bedrock again changes to mudstone of the Ampthill Clay Formation formed between 163.5 and 157.3 million years ago during the Jurassic period. In the vicinity of Wigtoft, Section 4 crosses Jurassic mudstone and siltstone of the West Walton Formation (formed 163.5 and 157.3 million years ago) to the south of which lies Jurassic mudstone of the Oxford Clay Oxford Clay Formation formed between 166.1 and 157.3 million years ago.
- 5.5.14 Within the Fens, south of Spilsby, extensive superficial Tidal Flat deposits (formed between 11.6 and 11.8 thousand years ago), are recorded across the majority of Section 4. Of note is a large area of peat superficial deposits mapped between Thorpe Fen and Stickney (Ref 9).

Designated Heritage Assets

- 5.5.15 There are no World Heritage Sites or Registered Battlefields within the 3 km or 3-5 km Section 4 Study Areas.
- 5.5.16 Located within the draft Order Limits and the 3 km Section 4 Study Area there are 247 designated heritage assets of high or medium value, summarised in **Table 5.2**, which includes only one asset, a grade II listed building, located within the draft Order Limits. Fifteen scheduled monuments are located within the 3 km Section 4 Study Area and include a Bronze Age barrow cemetery, Saxon burial mound, the remains of a medieval abbey, moated site, field system, and shrunken medieval village, the remains of two motte and bailey castles, six churchyard crosses and a post-medieval windmill. Of the 222 listed buildings in this Study Area, the majority of listed buildings are located within conservation areas or clustered within towns or villages such as Burgh le Marsh, Wainfleet, and Kirton. Other listed buildings are scattered throughout the rural landscape comprising occasional isolated farms, houses and former manors.

Table 5.2 Designated heritage assets within the 3 km Section 4 Study Area

Designation	Number of assets within Study Area	Number of assets within the draft Order Limits
Scheduled monument	15	0
Conservation area	8	0
Grade I listed building	15	0
Grade II* listed building	11	0
Grade II listed building	196	1
Grade I registered park and garden	0	0
Grade II* registered park and garden	0	0

Designation	Number of assets within Study Area	Number of assets within the draft Order Limits
Grade II registered park and garden (which extends into the 3-5 km Study Area)	2	0

5.5.17 There are 59 designated heritage assets of high value identified within the 3-5 km Section 4 Study Area and their designations are listed in **Table 5.3**.

Table 5.3 Designated heritage assets of high value within the 3-5 km Section 4 Study Area

Designation	Number of assets within Study Area
Scheduled monument	20
Grade I listed building	15
Grade II* listed building	24
Grade I registered park and garden	0
Grade II* registered park and garden	0

5.5.18 There are seven designated heritage assets of high value located beyond the 5 km Section 4 Study Area which have been identified at the preliminary assessment stage as having the potential to be impacted by the Project for Section 4. These assets comprise one scheduled monument and six grade I listed buildings, listed in **Table 5.4**, and all relate to Tattershall Castle to the north west of the draft Order Limits.

Table 5.4 Designated heritage assets of high value beyond the 5 km Section 4 Study Area

Designation	Number of assets within the Study Area
Scheduled monument	1
Grade I listed building	6
Grade II* listed building	0
Grade I registered park and garden	0
Grade II* registered park and garden	0

Non-designated Heritage Assets

5.5.19 A total of 750 non-designated heritage assets of medium and low value have been identified within the draft Order Limits and 1 km Section 4 Study Area. These include 38 non-designated heritage assets which are located within, or overlap with, the draft Order limits. A total of 360 non-designated buildings have been identified which remain extant within the 1 km Section 4 Study Area. A further 114 buildings have

been identified where they are no longer extant, including the demolished sites of three former buildings which are located within the draft Order Limits. A summary of the types of non-designated heritage assets identified is provided in **Table 5.5** and discussed, where appropriate, in the archaeological and historical background below.

Table 5.5 Non-designated heritage assets within the 1 km Section 4 Study Area

Asset Type	Number of assets within the Study Area	Number of assets within the draft Order Limits
Cropmarks	25	0
Earthworks (including roddons and sea defences)	28	7
Saltern Site	19	4
Settlement site	25	6
Deserted medieval village	6	1
Moated Site	1	0
Ridge and Furrow	9	4
Parkland	3	1
Farmsteads or buildings extant	359	1
Farmsteads or buildings demolished	111	3
Military Remains	8	0
Roads/trackways	0	0
Industrial Remains	3	1
Ecclesiastical	7	0
Funerary remains/Burial	2	0
Woodland/Covert	3	1
Find spot	103	9

- 5.5.20 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 found in archaeological deposits of a chronologically later date. As such, 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

- 5.5.21 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.
- 5.5.22 Evidence for early prehistoric activity in the Fens is likely to be largely masked by thick deposits of alluvial and peat deposits, with much of the northern areas of the fenlands dominated by marshlands. Holocene deposits from the past 10,000 years have been slowly deposited across the Fenlands, with a lower peat deposit identified to have been deposited between 500 and 400 BC. The lower peat deposit was then overlain by a fen clay, and then an upper peat deposit.
- 5.5.23 Evidence of in-situ Palaeolithic activity has not been identified within the 1 km Section 4 Study Area. In the northern areas of the Fenlands, in which Section 4 is located, the Mesolithic land surfaces are completely buried by later deposits that have accumulated over several thousand years. Evidence of Mesolithic occupation has been recorded close to the River Witham, approximately 5km south-east of the draft Order Limits, with it being suggested that a previous Mesolithic land surface is buried here beneath alluvial deposits.
- 5.5.24 Within the 1 km Section 4 Study Area the findspots of a Mesolithic flint flake (MLI97892) was also recorded at Willoughby, and eight pieces of worked flint dated to the Mesolithic period (MLI81932) were recorded during a watching brief at St Helen's Church in Cumberworth. Within the Fens a Later Mesolithic flint working site evidenced by an assemblage of in-situ blades, bladelets and cores (MLI84488), was identified during test pitting carried out by the Fenland Management Project at Mexican Bridge, Midville approximately 500 m west of the draft Order Limits.
- 5.5.25 Evidence of Neolithic occupation across Section 4 is primarily limited to finds identified through field walking and excavation. Evidence of Neolithic activity has been previously identified at Cumberworth, with a spread of Neolithic flints recorded adjacent to the draft Order Limits (MLI97997, MLI98000, MLI98001), and findspots within the draft Order Limits (MLI98002 and MLI97998).
- 5.5.26 A substantial Neolithic occupational site has been previously identified at East Keal, approximately 12 km west of the draft Order Limits, with evidence of several Neolithic axe heads recorded at Stickney.
- 5.5.27 Neolithic activity at Midville is evidenced by findspots of a likely Neolithic blade (MLI41089) and a single axehead (MLI41085). These have been recovered within the 1 km Section 4 Study Area approximately 620 and 670 m west of the draft Order Limits respectively.
- 5.5.28 A number of findspots of Neolithic worked flint have been recorded across the 1 km Section 4 Study Area. At Willoughby, Neolithic flints have been recorded spread across the landscape, including a Neolithic flint flake (MLI97968) and three scrapers (MLI97956, MLI97958, and MLI97894). Two flints (MLI141725 and MLI99383) were also recorded at Croft, and also at Thurlby (MLI43492). A single Neolithic green stone axe (MLI12537) was recorded within the draft Order Limits at Kirton.
- 5.5.29 A group of three scheduled Neolithic long barrows are recorded approximately 3.6 km west of the draft Order Limits. The group comprises the Neolithic long barrow 525 m north east of Valley House: one of a group known as Deadmen's Graves (NHLE 1017464), Neolithic long barrow 495 m north of Moon Wood, one of a pair of long barrows known as Deadmen's Graves (NHLE 1013923), and Neolithic long barrow

575 m NNW of Moon Wood, one of a pair of long barrows known as Deadmen's Graves (NHLE 1013921). These long barrows are all present to the west of Willoughby, with a further barrow, Neolithic long barrow 320 m north west of Skendleby Psalter (NHLE 1013918) also located close to this group.

- 5.5.30 The transition into the Bronze Age led to a more settled and agrarian lifestyle, with many funerary monuments established and constructed across the landscape. The landscape close to Willoughby contained such a funerary landscape, with the scheduled monument Butterbump Barrow Cemetery (NHLE 1003615), located approximately 200 m west of the draft Order Limits. The barrow cemetery offers clear evidence this landscape was settled and was a focal point for prehistoric funerary activities, with a group of seven extant barrows surviving as earthworks. A magnetometry survey by the Humber Wetlands Project has also identified three further potential barrows in the vicinity of the extant scheduled barrows at Butterbump Barrow Cemetery.
- 5.5.31 Barrows within the Fenlands are distinct from those outside of the fens, with the majority of these buried by alluvial deposits. These barrows were originally constructed on dry land, but due to the changing nature and character of the fens, have become submerged. Many of these barrows have become more visible due to post-medieval drainage activities which led to the tops of these monuments to protruding above the flat landscape and being identified as the softer land sinks through drainage or is weathered away.
- 5.5.32 Fieldwalking and aerial photographic analysis have identified a further potential 11 barrows to the west of this barrow cemetery (MLI42930), associated ditches (MLI84134), enclosures, and ring ditch (MLI90836 and MLI97890). To the east of the Barrowbump Barrow Cemetery are further linear ditches and enclosures (MLI97957).
- 5.5.33 Further designated bowl barrow cemeteries are located within the 5 km Section 4 Study Area, and include Bowl barrow at Mill Hill Quarry, 350 m north-west of Claxby church (NHLE 1015769); the monument includes a Bronze Age circular barrow mound 15 m in diameter and situated on the eastern edge of Mill Hill Quarry.
- 5.5.34 Bronze Age settlement of the northern Fens is largely located along the fen margins, with the Stickney Ridge forming a peninsula, bounded on either side by waterlogged sediments. The majority of Bronze Age sites consist of lithic scatters, with known sites recorded at Midville, within the 1 km Section 4 Study Area, and at East Kirkby, approximately 7 km north-west of the draft Order Limits. At Stickney, just outside of the 1 km Section 4 Study Area, evidence for Bronze Age occupation has been recorded on small islands, with a broad spread of early Bronze Age pottery identified (Ref 10).
- 5.5.35 A number of finds dating to the Bronze Age have been found across the 1 km Section 4 Study Area. These include palstaves recorded at East Keel (MLI41002), and a palstave and tanged arrowhead (MLI41086 and MLI41083) at Midville.
- 5.5.36 Evidence of Early Iron Age settlement is relatively scarce in the Lincolnshire Fens, with no Iron Age activity recorded along the fen edges. Surviving evidence include four sherds of Iron Age pottery recovered close to Toynton St Peter, approximately 1.4 km north of the draft Order Limits.
- 5.5.37 Late Iron Age settlements have been recorded across the Lincolnshire Fens and in the wider landscape, with key examples of proto—urban centres that include enclosures, with occupational features such as pits and ditches recorded at Tattershall Thorpe, approximately 15 km west of the draft Order Limits.

- 5.5.38 A large Iron Age settlement (MLI99129) has been identified within the 1 km Section 4 Study Area at the Hollies, Croft, indicating continued occupation across the landscape within Lincolnshire. A magnetometry survey was undertaken at the settlement and revealed a considerable number of linear anomalies, including several phased enclosures and linear features, revealing a likely Late Iron Age and Romano-British settlement.
- 5.5.39 Iron Age activity across the Fens is predominantly limited to saltern sites, which exploited the nutrient dense landscape. Due to the high salt content of the fenland marshes, salt extraction began in the later prehistoric period and continued throughout the Roman, early medieval and medieval periods. Saltern sites have been identified through the identification of dense concentrations of briquetage and have often been associated with dark soil marks that surround the salterns. Their location is often close to a rodden and they survive as low mound earthworks. A group of these saltern sites are located in the fields to the east of Burgh Le Marsh (MLI41693, MLI41694), within the 1 km Section 4 Study Area, located between 5 m and 225 m east of the draft Order Limits.
- 5.5.40 A group of four salterns (MLI41948, MLI41957, MLI43154, MLI88785) are located in the fields to the south-east of the settlement of Willoughby; all three are located within the draft Order Limits. A further saltern site (MLI88786) is located within the 1 km Section 4 Study Area.
- 5.5.41 Saltern extraction continued into the Roman period, with saltern sites identified close to the settlement of Burgh Le Marsh, within the 1 km Section 4 Study Area (MLI42843 and MLI41951, MLI43103 and MLI42845). A further saltern site is located close to Addlethorpe (MLI43102).
- 5.5.42 Roman settlement occurred throughout Lincolnshire with settlements established on higher ground, or islands of drier land. Major Roman settlements within the Lincolnshire Fens include a walled enclosure site at Horncastle, approximately 10 km north west of the draft Order Limits.
- 5.5.43 The majority of Romano-British sites identified in the Lincolnshire Fens are rural settlement sites that occupied the lower-lying land that were preserved when the sea level rose in the 4th century. It has been suggested that settlements in the northern Lincolnshire Fens were not prosperous, based on their ceramic and pottery evidence, with the Stickney region producing primarily greyware pottery and very little diverse pottery types. The lack of diversity indicated an isolated region that impeded trade.
- 5.5.44 A likely Roman settlement site (MLI12609) was identified in the 1950s, with a dense spread of greyware, mortarium and roof tile, close to Frampton. Further Romano-British farmsteads have been identified, within the 1 km Section 4 Study Area close to Frampton (MLI12624), at Wildmore Fen (MLI81652) and at Langrick (MLI81504). A likely Romano-British farmstead was also identified north of Sutterton (MLI12605), formed of a complex of occupation floors, drainage ditches and pits.
- 5.5.45 More general evidence for Romano-British activity comes from finds spots including pottery, buckles and coins which have been recorded across the 1 km Section 4 Study Area. In particular spreads of finds have been recorded at Kirton (MLI12547 and MLI12538), Willoughby (MLI97999 and MLI97967), and at Langrville (MLI40664 and MLI40665). Romano-British pottery has also been identified within the draft Order Limits at Kirton (MLI12546 and MLI12548)
- 5.5.46 Several settlements were established across the Lincolnshire Fens during the early medieval period with a number of these recorded within the wider 1 km Section 4

Study Area. Within the wider landscape one of the largest Anglo-Saxon settlements was located close to the existing settlement of Stickney, approximately 3 km west of the draft Order Limits. The settlement has its origins in the Roman period, however, it grew to become an important and strategic settlement, controlling the movements along Stickney Ridge.

- 5.5.47 A small Anglo-Saxon settlement was identified around St Helen's Church in Cumberworth (MLI81930), with an excavation and watching brief recording a *grubenhaus* (a sunken-featured building), dating to between the 7th-9th centuries. St Helen's Church (MLI41986) retains medieval features but was mainly rebuilt in 1838. Evidence of an earlier timber church consisted of postholes thought to represent external walls of earth-fast posts spaced regularly. This timber church was likely demolished in the 10th century. An excavation within the associated graveyard recorded a sequence of 26 intercutting burials, thought to have been laid to rest over a period of about a century (MLI81931).
- 5.5.48 A scheduled monument Cock Hill Saxon burial mound (NHLE 1003609) is located within the settlement of Burgh Le Marsh, approximately 1.2 km west of the draft Order Limits. Several inhumations have been identified within the mound and which was expanded during the post-medieval period to accommodate cock-fighting.
- 5.5.49 Further settlements established in the early medieval period include the shrunken settlement of Asperton (MLI13096), which displays remnant extant later medieval earthworks which may represent house platforms, crofts and tofts.
- 5.5.50 Early medieval pottery finds have been recorded across the 1 km Section 4 Study Area, dating to between the 7th and 10th century (MLI43663, MLI80877, MLI13298, MLI13297, and MLI40282).
- 5.5.51 Following the Norman conquest in 1066, new settlements were established across Lincolnshire and the Fens, and earlier settlements established during the early medieval period were expanded.
- 5.5.52 To consolidate the power of the new Norman lords, several castles were constructed across Lincolnshire to maintain control over the local populations and to provide further defence against foreign invaders. The Manwar Ings: remains of a motte and bailey castle (NHLE 1018684), is located approximately 2.7 km west of the draft Order Limits, Castle Hill: a motte castle 250 m east of Hanby Hall Farm (NHLE 1019173) is located approximately 2.7 km west of the draft Order Limits and King's Hill motte and bailey castle (NHLE 1018398), is located approximately 4.3 km south of the draft Order Limits.
- 5.5.53 Settlement patterns across Section 4 are varied, with the northern section of the route located within the Middle Marshes, Outer Marshes, and Grazing Marshes extending as far south as Wainfleet and Thorpe St Peter, with the southern areas of the section located within the Fens. Many of the larger settlements in these areas were established on higher and much drier islands within the marshes.
- 5.5.54 Settlements within the Middle Marshes and the Grazing Marshes are predominantly located on the marsh edges, with much of the settlement pattern in the south of the Middle Marshes formed through the depopulation of medieval villages. The decline in population from the Black Death, crop failure, war and the reduction in the salt trade, led to a number of settlements within Lincolnshire, and more widely across England, to shrink or become deserted during the medieval period.

- 5.5.55 The major settlement in this region was Boston, which was originally established in the Roman period, before expanding in size during the 9th and 10th centuries. It is not mentioned in the Domesday Book; however, due to its prominent position close to the River Witham, Boston became an important trading port during the medieval period and acted as a major trading hub to the smaller settlements in the region.
- 5.5.56 Settlements within the northern area of Section 4, within the Middle and Grazing Marshes, were located in close proximity to one another. This close-knit pattern of settlement is evident within the 1 km Section 4 Study Area with the deserted medieval village of Bonthorpe (MLI84121), displaying surviving earthworks that are visible on the surface and including remains of tofts, crofts and field boundaries, and the shrunken village of Farleshorpe (MLI89119). Both of these deserted medieval villages are located within 70 m of the draft Order Limits. The shrunken Village of Cumberworth (MLI89121) displays surviving earthworks, with further likely medieval earthworks recorded to the west of Cumberworth (MLI84135) and located adjacent to the earlier prehistoric Butterbump Barrow Cemetery site. The settlement of Habertoft (MLI84137) is also located within the 1 km Section 4 Study Area.
- 5.5.57 Archaeological evidence of other medieval settlements includes earthworks related to the settlement of Ashington (MLI88788), and Wyche (MLI88789), both of these settlements extend within the draft Order Limits. The remains of a potential medieval house (MLI42008) are located to the west of Wyche, within the draft Order Limits. The deserted medieval village of Ashington is located close to a large rodden, with cropmarks indicating substantial water management was taking place at the settlement in the 12th and 13th centuries (Ref 11). Extant buildings within these settlements of medieval date include parish churches (e.g. NHLE 1237405; NHLE 1223215 and NHLE 1223796). Medieval enclosures relating to Ashington and Wyche have been identified as cropmarks extending close to these settlements within the 1 km Section 4 Study Area (MLI98638, MLI98636, MLI98639). An unnamed abandoned medieval settlement (MLI88895) is located to the south of Ashington in Hogsthorpe approximately 20 m from the Order Limits.
- 5.5.58 Within the Middle and Grazing Marshes, several larger settlements developed on areas of higher land. To the south of this cluster of settlements is the large settlement Burgh Le Marsh (MLI80563); whilst the centre of the medieval settlement is located outside of the 1 km Section 4 Study Area occupational evidence has been identified extending to the south of the settlement and including a medieval trackway (MLI98102), ditches (MLI85311), and a wide spread of finds recovered during fieldwalking, which includes a 15th century pewter spout (MLI41561), bronze fragments (MLI41559), and sherds of Toyntonware pottery (MLI41535). Further occupational evidence is located to the east of Burgh Le Marsh, including pits, ditches and house platforms (MLI41501); these have been recorded extending within the draft Order Limits.
- 5.5.59 Further large settlements that became deserted between the 13th and 15th centuries include the deserted medieval village of Thorpe St Peter (MLI41486) which has been recorded extending partially within the draft Order Limits and the settlement of Sloothby (MLI83297) located within the 1 km Section 4 Study Area.
- 5.5.60 Enclosures identified through aerial photography have been recorded to the south of Thorpe St Peter and within the 1 km Section 4 Study Area (MLI90847, MLI90852, MLI84699), with enclosures (MLI90843, MLI90844) house platforms (MLI90845, MLI90848), settlements remains (MLI90854), and ridge and furrow (MLI90850) located within the draft Order Limits.

- 5.5.61 Whilst many of the shrunken or deserted medieval villages are located in the Middle Marshes, there are examples of population decrease within the Fens, for example the scheduled monument Shrunken Medieval Village (NHLE 1004933) is recorded just south of the village of Algarkirk. No standing earthworks are present, however, there are occupation features identified within this site. With regards to the Fens, settlement patterns in the medieval period are much more dispersed, with few nucleated settlements established on areas of higher ground.
- 5.5.62 Further non-designated settlements include Armtree deserted medieval village (MLI40657), which is located within the Fens, with a large quantity of medieval finds, including tile and pottery recorded at the settlement. Further extant earthen mounds are visible within the settlement which have been interpreted as potential house platforms. Earthworks relating to the deserted medieval village of Firsby (MLI42192) have also been recorded within the 1 km Section 4 Study Area.
- 5.5.63 The medieval settlement of Croft, located within the Fens, was established in the medieval period with a substantially sized manor house (MLI90833) and estate visible as areas of distinct cropmarks on aerial photographs. The Church of All Saints was located at the centre of the settlement (MLI125506). Further enclosures and ponds have been identified close to Croft (MLI91796, MLI98098, MLI91805 and MLI87788) within the 1 km Section 4 Study Area. Evidence of extractive pits has been recorded within the draft Order Limits at Irby-in-the-Marsh (MLI98814).
- 5.5.64 Agricultural features, which include field boundaries and ridge and furrow are present both within the draft Order Limits (MLI98096, MLI98097, MLI98708), between Burgh Le Marsh and Croft and more widely across the 1 km Section 4 Study Area close to the settlements of Thorpe St Peter (MLI90850, MLI90859, MLI98699, MLI90856, and MLI98107), Burgh Le Marsh (MLI43115), Firsby (MLI98813) and Bratoft (MLI98610). A surviving and well-preserved scheduled monument, the Medieval field system 250 m north of Church End Farm (NHLE 1009978), located approximately 2.7km west of the draft Order Limits, comprises three separate but adjoining sets of parallel strip fields.
- 5.5.65 Much of the medieval economy was reliant on major monastic and religious centres, with two of the large and regionally important monasteries located at Ely and Peterborough, with the third important religious centre located at Lincoln. These monastic centres all had their origins in the Anglo-Saxon period, with smaller granges and hermitages often located in isolated locations within the Lincolnshire Fens landscape.
- 5.5.66 Ecclesiastical sites are present within the 1 km Section 4 Study Area, including the scheduled monument Swineshead Abbey (NHLE 1018687). The scheduled monument includes the known extent of the earthwork and buried remains of part of the inner precinct and an associated field system of the Abbey of St Mary, a Cistercian monastery founded in the early 12th century. Further non-designated ecclesiastical assets include Dowdyke Grange (MLI13075), the grange has associated fishponds and earthworks associated with the non-designated fishpond (MLI13074). The Magdalen College School scheduled monument (NHLE 1004931) was established in 1484 as a college, which was later upgraded and modified throughout the post-medieval period. It is located approximately 3.1 km south of the draft Order limits.
- 5.5.67 Another feature of the medieval ecclesiastical landscape is the numerous churchyard crosses present within the 3 km and 3 - 5 km Section 4 Study Areas. Churchyard crosses, often both scheduled and listed, include Churchyard cross, St Thomas of

Canterbury's churchyard (NHLE 1014423), Churchyard cross, St Andrew's churchyard (NHLE 1014939), Churchyard cross, St Mary's churchyard, (NHLE 1015162), Churchyard cross, St Nicholas's churchyard (NHLE 1014422), Churchyard cross, St Andrew's churchyard (NHLE 1014424), Churchyard cross, St Margaret's churchyard (NHLE 1010677), Churchyard cross, St Peter's churchyard (NHLE 1013535), Churchyard cross, St Mary's churchyard, Winthorpe (NHLE 1014427), Churchyard cross, All Saints' churchyard (NHLE 1010678), with several village standing crosses, Stump Cross (NHLE 1010674), recorded at Swineshead, Butter Cross, Swineshead (NHLE 1009218) and Wainfleet All Saints Market Cross (NHLE 1013530).

- 5.5.68 Moated manorial sites were built throughout the medieval period as a way of displaying wealth and power, with some of these sites as also having a defensive function. Three scheduled moated manorial sites have been identified within the 3 km and 3 - 5 km Section 4 Study Areas, including the scheduled monument, Manor Farm Moated Site (NHLE 1016045), located in the village of Orby, with the monument comprising a moat that partly encloses an asymmetric, curvilinear island. Other manorial sites include the Medieval moated site and post-medieval gardens at Cressy Hall (NHLE 1019526), Moated site 480 m north east of Wyberton West Hospital (NHLE 1019528), and Abbey Hills moated site (NHLE 1016044). Further non-designated manorial sites have also been recorded at Bigby (MLI41476) within the 1 km Section 4 Study Area and at Bratoft Hall moated site, 550 m north of Manor Farm (NHLE 1017392), which includes an associated raised moated platform where the buried remains of the medieval house are located with an associated causeway and moat.
- 5.5.69 A number of medieval findspots have been recorded within the draft Order Limits, including medieval pottery, lead ampullae and tile (MLI43146), a single medieval whetstone (MLI12539) and medieval pottery (MLI41946, MLI42244, MLI41506,). More generally within the 1 km Section 4 Study Area, other medieval pottery findspots have also been recorded (MLI98003, MLI43666, MLI43665, MLI99481, MLI43667, MLI42246, MLI83891, MLI87944, MLI87950).
- 5.5.70 The post-medieval period saw the drainage of the Fenland landscape. From the mid-18th century, a concerted campaign to drain the Fens and convert them into arable land was undertaken. During this time many new drainage channels were cut and pumping stations constructed to overcome the challenge of draining land that was below sea-level. The reclaimed land was divided into a pattern of rectilinear fields, which have been separated by drains, with much of this evidence still visible within the landscape today. Surviving evidence of this land reclamation and drainage includes the grade II listed Lade Bank lock, pumping station and chimney (NHLE 1360501), Anton's Gowl Lock (NHLE 1062085) and bridges over drains (NHLE 1359723; 1168163; 1308385), built in the early 19th century. The drainage of the Fens was done under the direction of the engineer John Rennie between 1802 and 1812.
- 5.5.71 The pattern of settlement remains the same into the post-medieval period, with no new large settlements established in this period, rather there is an increase in small, isolated farmsteads spread out across the marshes and Fens.
- 5.5.72 Evidence of post-medieval agricultural practices are still evident across the landscape. One example within the 3 km Section 4 Study Area is the Sibsey Trader Windmill (NHLE 1013828, 1063535), which is a scheduled monument and grade I listed, comprising a tarred brick tower of six storeys. There are also a number of

other post-medieval tower mills in the 3 km Section 4 Study Area including the grade I Dobson's windmill (NHLE 1222732), the grade II Hanson's Windmill (NHLE 1223034) and grade II Stickney Mill (NHLE 1168251) as well as a number of others (NHLE 1061993; 1062021; 1062032; 1063008; 1063530; 1223035; 1359682; 1063537). A grade II mill warehouse at Huttoft Mill is also located within the 3 km Section 4 Study Area (NHLE 1308586).

- 5.5.73 A number of duck decoy ponds have been recorded across Section 4, within the 1 km Section 4 Study Area. These are landscape features, which were used throughout the post-medieval period and were used to lure and capture ducks without killing them, thus selling for a higher price. Duck decoy ponds identified within the 3 km Section 4 Study Area include the scheduled monument Duck Decoy Pond (NHLE 1019098), located approximately 3.6 km south of the draft Order Limits, close to the settlement of Sedgedyke. Further duck decoy ponds are located at Farleshorpe (MLI42917) within the 1 km Section 4 Study Area, and a non-designated duck decoy pond (MLI42907) identified within the draft Order Limits at Sedgedyke. Evidence of pits and ditches have been identified close to Burgh Le Marsh (MLI87276) whilst evidence of salterns (MLI22463) have been recorded at Gosberton.
- 5.5.74 The changing agricultural landscape of the area during the post-medieval period, with the enclosure of former medieval open fields and the development of field farms beyond the nucleated villages is highlighted by the large number of extant and former farmsteads in the Section 4 Study Areas. There are various farmhouses that are listed (for example NHLE 1360497; 1267487; 1232947; 1232866; 1224571) and outbuildings (NHLE 1232867; 1276845; 1360472; 1062057; 1165111; 1359287; 1166255; 1215325; 1267660; 1222666) including barns, stables and pigeoncotes as well as non-designated, 19th century farmsteads (for example MLI122814; MLI120295; MLI122568; MLI120380).
- 5.5.75 Several enclosures dating to the post-medieval period have been recorded at Burgh Le Marsh, within the draft Order Limits (MLI87794), and further enclosures within the 1 km Section 4 Study Area (MLI87795), at Orby (MLI98628, MLI98630, MLI98633), at Willoughby (MLI84139), and at Hogsthorpe (MLI98637). These all relate to settlement activity. Boundary ditches (MLI83892) were recorded at Thorpe St Peter, within the 1 km Section 4 Study Area.
- 5.5.76 The increase in industrialisation that occurred throughout the early post-medieval period led to the establishment of further settlements across Lincolnshire. The settlement of Brothertoft (MLI86171) was established as a dispersed settlement and is located partially within the 1 km Section 4 Study Area. Industrial sites identified within the 1 km Section 4 Study Area, include a brick clamp (MLI13299).
- 5.5.77 Industrial sites have been recorded within the draft Order Limits, including a brick kiln at Farlesthorpe (MLI42228), and at Irby-in-the-Marsh (MLI126078)
- 5.5.78 With the move to increasing industrialisation across Lincolnshire, transport links became more important, with railways and tramway networks established across the county. The Firsby to Boston Railway was built in the early 19th century (MLI124888) and extends across the draft Order Limits. Further transport sites have been identified within the 1 km Section 4 Study Area that includes Little Steeping Railway Station (MLI124883), and Mumby Road Railway Station (MLI43413). Development of road networks also occurred during the post-medieval period, which are evidenced by extant milestones (NHLE 1264133; 1308503; 1062092; 1317352; 1360519;

1307179; 1165317; 1062033; 1064466; 1317400). These are of 18th and 19th century date and were often associated with turnpike roads.

- 5.5.79 Ecclesiastical sites continue to be occupied throughout the 17th, 18th and 19th centuries, with Thurlby Grange (MLI41490) identified within the 1 km Section 4 Study Area. There are also various post-medieval churches recorded in the Section 4 Study Area, including the 17th century Gosberton Baptist Church (NHLE 1146640), as well as 19th century churches such as the former chapel of ease Church of St Michael, in Frampton (NHLE 1147659), the Church of St Paul, Carrington (NHLE 1359721), Church of St Peter, Frithville (NHLE 1307173) and the Church of St Margaret, Langrville (NHLE 1359725). A number of these 19th century churches were small, rural churches, and several, including St Peter's and St Margaret's, were built by Boston architect Jephtha Pacey as part of the 1816 Fens Chapel Act. Non-designated, 19th century Methodist chapels have also been recorded within the settlements in the 1 km Section 4 Study Area (for example MLI86181; MLI99089; MLI99088; MLI99060; MLI98921; MLI98920).
- 5.5.80 Several parklands were established in the late 18th and 19th centuries as private parks for nearby country houses. A single grade II registered park and garden is recorded within the 3 km Section 4 Study Area in Well Hall (NHLE 1000992), located 2.2 km west of the draft Order Limits. It comprises a designed garden and surrounding parkland around the 17th century hall. Two non-designated parks and gardens are also recorded within the 1 km Section 4 Study Area including an unnamed park at Brothertoft (MLI92254) and the parkland associated with Firsby Manor House (MLI98402). Casterton House Park, Wigtoft (MLI92287), also extends into the draft Order Limits.
- 5.5.81 Post-medieval findspots have been recorded within the 1 km Section 4 Study Area and include a clay figurine (MLI41142), a coin hoard (MLI40660), a bronze handle (MLI41560), a bronze spur (MLI41533), and pottery (MLI42247, MLI42223, MLI42842, MLI43118, MLI41719, MLI41555).
- 5.5.82 Several grade II listed war memorials to the fallen soldiers in World War I are located within the 3 km Section 4 Study Area associated with settlements that include Firsby (NHLE 1223275) Thorpe St Peter (NHLE 1434782), Midville (NHLE 1450521), Langricke (NHLE 1450494), Burgh Le Marsh (NHLE 1450497), Carrington (NHLE 1413112), Sutterton (NHLE 1454311), Stickney (NHLE 1433521), Wainfleet (NHLE 1450436, NHLE 1266923), Bicker (NHLE 1454912), and Kirton (NHLE 1439370). A non-designated war memorial is also located at the settlement of Croft (MLI116052), within the 1 km Section 4 Study Area.
- 5.5.83 Another extant designated 20th century structure is a Grade II listed K6 Telephone kiosk in Bratoft (NHLE 1224572).
- 5.5.84 Lincolnshire played an important role in World War II, with the Royal Air Force (RAF) Bomber Command having an extensive and strategic presence across the county and RAF Cranwell acting as a training centre and Headquarters.
- 5.5.85 Archaeological evidence relating to the defence of Britain during World War II is present across the 1 km Section 4 Study Area. Defensive pillboxes are located across Section 4 including at Langrick Bridge (MLI126014), Bonthorpe (MLI125954), Old Leake (MLI43376), Midville (MLI43375, MLI43373, MLI43374), Hemholme Bridge (MLI82729), Sloothby (MLI43277) and at Frithville (MLI43382). A resistance hide (MLI13430) was also recorded at Frampton.

- 5.5.86 Several World War II aircraft crash sites are recorded within the 1 km Section 4 Study Area, including the crash site of an Avro Lancaster at Sibsey Northlands which is marked by a War Memorial (MLI116028) approximately 330 m south of the draft Order Limits, and a Dornier Do17 at Carrington (MLI125736) located approximately 600 m north of the draft Order Limits.
- 5.5.87 Anti-aircraft obstructions have been recorded at several locations within the 1 km Section 4 Study Area, with a group of earthwork obstructions located close to the settlement of Burgh Le Marsh (MLI87793, MLI87792, MLI87791, MLI87790), and an anti-glider ditch at Orby (MLI98629).
- 5.5.88 Undated mounds that are likely salterns have been identified across the 1 km Section 4 Study Area, including undated remains at Hogsthorpe (MLI41956), Orby (MLI41949 and MLI41950), Willoughby (MLI125456), Langricke (MLI81508) and Bicke (MLI12524).
- 5.5.89 Undated cropmarks and occupation features are recorded at New Leake (MLI41091), Cumberworth (MLI43730), Firsby (MLI88433), Farlesthorne (MLI89118), Willoughby (MLI84136, MLI125455, MLI84118), Bonthorpe (MLI84128, MLI84128), Croft (MLI91795) and close to Butterbump Barrow Cemetery (MLI84123 and MLI84122).
- 5.5.90 A single undated extant linear earthwork bank was recorded at Thorpe St Peter (MLI90853).
- 5.5.91 Several potential enclosures and ring ditches (MLI97718 and MLI97719) which may date to the prehistoric period, have been identified close to Hogsthorpe, within the 1 km Section 4 Study Area.

Historic Landscape Character

- 5.5.92 Section 4 extends across three broad historic landscape regional character areas (RCAs) (RCA 8 - The Grazing Marshes, RCA 9 - The Fens and the RCA 10 - Wash) defined by the Lincolnshire Historic Landscape Characterisation project (Ref 12 and Ref 13), and within each of the RCAs subsidiary historic landscape character zones (HLCZ):
- i. RCA 8 - The Grazing Marshes: HLCZ GRM1: The Middle Marsh, HLCZ GRM3 The Mablethorpe Outmarsh and HLCZ GRM5 Skegness Holiday Coast;
 - ii. RCA 9 – The Fens: HLCZ FEN 2 The Eastern Fens; and
 - iii. RCA 10 – The Wash: HLCZ WSH5 Townlands within the Wash and HLCZ WSH5 Bicker Haven.
- 5.5.93 The north-eastern area of Section 4 close to the settlements of Alford and Burgh Le Marsh is located within the Lincolnshire Grazing Marshes (GRM1). Settlement in this zone was located on ‘islands’ of high ground within the undrained marshes, with small strip fields that were associated with these settlements. Remnants of surviving medieval field systems are still legible within the higher areas of the landscape.
- 5.5.94 The larger settlements in the Grazing Marshes owe much of their growth to the holiday industry and whilst the historic cores are still identifiable, they have been extensively developed throughout the 20th century. On the lower-lying land, isolated 19th and 20th century farmsteads are located sporadically throughout the landscape.
- 5.5.95 The Mablethorpe Outmarsh (GRM3) is typified by dispersed settlement patterns in contrast to the highly nucleated settlement of the Middle Marsh (GRM1), with much of

the settlement isolated farmsteads located between the agricultural fields. Early settlement of the character zone was undertaken on the higher areas of land, with the primary settlement in this zone being Mablethorpe. Agricultural development in this zone is largely strip fields, which continues today, with a strong rectilinear pattern of fields still visible within the modern landscape (Ref 13).

- 5.5.96 Settlement within the Middle Marshes (GRM1) is one of nucleated settlements that has retained its character and undergone some modern development and expansion. The larger settlements that are located in the southern area of the zone, such as Alford, and Willoughby are located on higher ridges of land, with smaller settlement such as Irby-in-the-Marsh much more isolated and dispersed. The zone displays a high amount of planned post- medieval enclosure, which follows the underlying medieval boundaries (Ref 13).
- 5.5.97 The Skegness Holiday Coast (GRM5) is dominated by modern fields that have been consolidated throughout the 20th century. The larger settlements in this character zone are Burgh Le Marsh, and Thorpe St Peter. Smaller isolated settlements and farmsteads are located on the lower lying ground, which are scattered throughout the zone. Towards the south of the zone, there are some remnants of open field development that has now been enclosed, however, across much of the zone, field patterns are variable (Ref 13).
- 5.5.98 The Eastern Fens (FEN2) covers the central area of Section 4, from Fendike Corner in the east, to Brothertoft in the south. The character zone is exemplified by a mixture of nucleated settlements located on higher ground, and more dispersed, linear settlements that follow existing roadways. Whilst much of the settlements in the character area are dispersed, there is a much higher density in this area of the Fens than the marshes or the Witham Fens (Ref 13).
- 5.5.99 There is very little evidence of early medieval settlement within the character area, with the exception of Stickney. Whilst Fenland reclamation occurred in the later medieval period, large scale reclamation began in the 18th and 19th centuries, with new drainage channels cut and pumping stations established to dry out the Fenlands, with new rectilinear agricultural fields established in this character area. These rectilinear field boundaries are still evident today.
- 5.5.100 The southern part of Section 4 is located in the Lincolnshire Historic Character Area RCA 10: The Wash, and within the landscape zones WSH5: Bicker Haven and WSH6: The Washland Townlands. The landscape within landscape zone WSH6 is made up of a mixture of predominantly arable fields, and small nucleated settlements, with the two largest settlements in the area Boston and Spalding, surrounded by much smaller settlements. Field patterns within the Washlands are a mixture of irregular enclosures which have their origin in the medieval period, and much larger irregular Parliamentary enclosure (Ref 13).
- 5.5.101 Much of the agricultural land within landscape zone WSH5 is under arable cultivation, with much of the settlement in this area comprised of isolated farmsteads. There are no nucleated settlements in this character zone. The zone throughout the medieval period was a tidal estuary, and as such several small hamlets developed alongside the estuary, including Quadring Eaudyke. Falling sea levels in the 16th century led Bicker Haven to dry up, and from the mid-17th century, the area was divided into agricultural fields. These fields are still largely legible in the landscape, however, there has been some loss through 20th century alterations (Ref 13).

- 5.5.102 The population increased throughout the 12th and 13th centuries. This occurred during a period of medieval reclamation of the Fenlands, and an increase in the settlement of the Washlands. Remnants of land reclamation and protection are still evident within the landscape, with the Roman Sea Bank and its associated earthworks, and Hurdletree Bank still visible today.
- 5.5.103 The zone is characterised by large straight and embanked river channels, such as the River Welland, and much smaller rivers and canals interspersed throughout the landscape. During the later medieval periods, the enclosure of small areas of meadows and grazing land occurred, leading to the ploughing and the laying out of large-scale land drainage.

Future Baseline

- 5.5.104 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.
- 5.5.105 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 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.
- 5.5.106 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 14) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 15) 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 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.
- 5.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 4. 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. the construction access haul road being realigned to avoid non-designated archaeological remains and reduce potential impacts between proposed pylons LW27 and LW29;
- ii. changes to the siting of pylons LW92 to LW96 to reduce potential setting impacts to the grade II listed bridge over Barlode Drain and Church of St Peter, Midville; and
- iii. relocation of the overhead line further west between pylons LW160 and LW182 to avoid the grade I and grade II listed buildings within the Wigtoft conservation area and at Castleton House and the non-designated Casterton House Park.

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 control measures included within the Preliminary CoCP relevant to the Historic Environment assessment of Section 4 include:

- i. 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.
- ii. GG06: A Construction Environmental Management Plan (CEMP), a Landscape Environmental Management Plan (LEMP), a Material Waste Management Plan (MWMP), a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Right 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'.
- 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, 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 4 and characterise their extent, depth, date, state of preservation and significance. As such, specific control measures for individual archaeological 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 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 5, section 5.9.17).
- 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 4 Study Area, as a result of construction, operation and/or maintenance activities.
- 5.7.2 The preliminary assessment of effects reported below takes into account the Design and Control, as previously described.
- 5.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 5.6**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. 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 4 Appendix 5B Preliminary Summary of Likely Non-Significant effects**.
- 5.7.4 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

- 5.7.5 The preliminary assessment of the effects arising from construction of Section 4 of the Project is described in this section. The preliminary assessment considers the design, control and additional mitigation measures described in section 5.6.
- 5.7.6 Potential impacts identified during the construction phase include direct physical impacts on heritage assets within the draft Order Limits of Section 4 resulting from construction works e.g. topsoil stripping and groundworks for construction access haul roads, pylon working areas, construction compounds and drainage.
- 5.7.7 Setting impacts 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

- 5.7.8 The preliminary assessment has identified five designated heritage assets within the Section 4 Study Areas that have the potential to experience temporary and/or permanent significant effects. These include three scheduled monuments, one grade I listed building and one grade II listed building. 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 4 Chapter 13 Summary** and the non-significant effects summarised in **Table 5.6** and **PEI Report Volume 3 Part B Section 4 Appendix 5B Preliminary Summary of Likely Non-Significant Effects**.

Listed Buildings or Structures within the draft Order Limits

- 5.7.9 Bridge over Twenty Foot Drain (NHLE 1359723) is a grade II listed structure located just within the draft Order Limits. The bridge was built around 1812 of red brick and ashlar as part of a drainage programme of the Fens by John Rennie between 1802-1812. The setting of the bridge consists of the surrounding Fenland landscape and its position across the drain. A construction access haul road with a bellmouth is proposed approximately 90 m west of the bridge for access into the field to the south where pylon LW124 is proposed, with the likelihood that construction traffic would utilise the bridge. There would be increased noise, mechanical plant and traffic associated with the construction activities to the east and south of the bridge. The listed bridge may also experience direct impacts to its historic fabric from vibration and load caused from increased traffic by use from construction vehicles. The temporary construction works within the asset's setting would have a large magnitude of impact upon the asset which would comprehensively alter its value and setting changing how the asset is understood and experienced, along with a risk of physical damage to its historic fabric. These temporary construction activities would result in a major adverse effect on an asset of medium value, which is significant. Permanent changes to the setting due to the presence of pylons to the east and south of the bridge (proposed pylons LW122 – LW125) would change the asset's wider setting by altering views in the landscape which makes little contribution to its value. This would have a small magnitude of impact on an asset of medium value resulting in a minor adverse effect, which would not be significant.

Scheduled Monuments within the 3 km Section 4 Study Area

- 5.7.10 The scheduled monument, Butterbump round barrow cemetery (NHLE 1003615) is located approximately 230m west of the draft Order Limits. This high value designated heritage asset comprises the earthwork and buried remains of a group of seven round barrows. Excavations of the barrows identified three cremations, Bronze Age pottery and flint artefacts. A magnetometer survey of the monument identified further barrows that were encircled by ring ditches. Further Bronze Age funerary assets are located in close proximity to the monument including further non-designated Bronze Age barrows to the west (MLI42930), and cropmark evidence for a likely barrow within a rectangular enclosure to the east (MLI84134). The setting of the monument is the local Bronze Age funerary landscape with a wider setting provided by the open agricultural landscape in which it can be viewed. The landscape to the east of the monument in which the Project is situated forms part of the wider setting of the scheduled monument, with the Project introducing new

infrastructure into the open, agricultural setting of the asset. Some screening is provided by existing intervening trees and hedgerows located to the east of the monument.

- 5.7.11 Construction of the Project may temporarily alter the setting of the monument through construction traffic, noise and plant movement and the introduction of temporary scaffolding to the skyline east of the scheduled monument. 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 overhead line infrastructure (proposed pylons LW13 and LW22) within the landscape and against the skyline from the time of construction and throughout its operational duration would have a small magnitude of impact, resulting in a moderate adverse effect which is significant.
- 5.7.12 Castle Hill: a motte castle 250 m east of Hanby Hall Farm (NHLE 1019173) scheduled monument is located approximately 2.8 km west of the draft Order Limits. This high value designated heritage asset comprises a large 5 m high mound, with a motte measuring 50 m by 40 m. A 5 m wide ditch encloses the motte on the east and northern sides, with the southern and west sides infilled. The setting of the monument is the wider medieval landscape, areas that the castle would have been built to protect, and the nearby settlements of Welton Marsh and Sloothby. The Project is located in the wider hinterland of the castle, with open views between the monument and the Project to the east. The landscape in which the Project is situated forms part of the wider setting of the scheduled monument.
- 5.7.13 Construction of the Project is not considered likely to result in temporary impacts to the setting of the scheduled monument. Permanent changes to the setting of the monument would arise from the presence of new pylons and overhead line infrastructure (proposed pylons LW21 and LW29) within the landscape and against the skyline from the time of construction and throughout its operational duration. This would have a small magnitude of impact, resulting in a moderate adverse effect which is significant.
- 5.7.14 The scheduled monument Manwar Ings: remains of a motte and bailey castle (NHLE 1018684) is located approximately 2.5 km west of the draft Order Limits. The monument is of high value and comprises a mixture of earthworks and buried features, that include a circular motte and bailey with inner and outer moats and an area of higher land. The motte comprises a level platform rising approximately 2 m from ground level. Brick-lined shelters were inserted into the motte during World War II. The motte is surrounded by a deep inner moat. Surrounding the bailey is an outer moat 7 m to 10 m wide, originally circular in plan but partly truncated on the eastern side by modern ploughing. The setting of the monument is the wider medieval landscape and areas that the castle would have been built to control and defend including Swineshead Abbey (also a scheduled monument (NHLE 1018687) to which the motte and bailey was linked via a ditched causeway 650 m to the south west, and the nearby settlement of Swineshead which it overlooked. Both the motte and bailey castle and Swineshead Abbey were constructed by Robert de Gresley and share a historic association. The Project is located within the wider hinterland and setting of the asset.
- 5.7.15 Construction of the Project is not considered likely to result in temporary impacts to the setting of the scheduled monument. Permanent changes to the setting of the monument arising from the presence of proposed new pylons (LW156 – LW163) and associated infrastructure against the skyline to the east of the monument would

have a small magnitude of impact, resulting in a moderate adverse effect which is significant.

Listed Buildings within the 3 – 5 km Section 4 Study Area

- 5.7.16 Parish Church of St Botolph, Boston (NHLE 1388844) is a grade I listed building approximately 4.86 km east of the draft Order Limits. Construction began on the church in 1309 with the tower completed in 1520, and the church was restored by Gilbert Scott in the 19th century. The church consists of a west tower with a tall octagonal lantern called 'The Stump', which is approximately 83 m high and is a feature of the skyline visible over the surrounding Fenland landscape, being the tallest parish church tower in England. The land to the west of Boston consists of a flat, agricultural landscape with kinetic views of the church tower apparent moving through the landscape, as well as views across the Fenland afforded from the top of the tower which is open to the public. The setting of the church includes its location and historic relationship with Boston and its surrounding agricultural landscape over which it commands views due to the tower's height. The tower is visible on the approach roads to the west of Boston leading to the surrounding settlements, including from the land in and beyond the draft Order Limits near Brothertoft, namely Langrick Road (B1192) and Punchbowl Lane. The alignment of these roads stem from the historic routeways into Boston and are recorded on the 19th century OS mapping. There is potential for the wider setting of the church to experience a temporary change during the construction works with intervisibility to and from the tower, along with noise and traffic. This would result in changes to the setting of grade I listed asset that would have little effect on its value having no real change on the ability to understand or experience the asset. This would result in a minor adverse effect on an asset of high value, which would not be significant. The addition of the modern infrastructure into the landscape would interrupt views of the church tower from the roads to the west of the Project, as the pylons and overhead line would be a visual distraction in these views which are within the wider setting of the church and its tower. The permanency of the infrastructure within the landscape would have a small impact slightly changing the wider setting of the asset and how it is appreciated. On an asset of high value this would result in a moderate adverse effect that is significant.

Non-designated Heritage Assets

- 5.7.17 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 4 Chapter 13 Summary** and the non-significant effects summarised in **Table 5.6** and **PEI Report Volume 3 Part B Section 4 Appendix 5B Preliminary Summary of Likely Non-Significant Effects**.

Non-designated assets within the draft Order Limits

- 5.7.18 Sixty-three non-designated heritage assets have been identified within or extending into the draft Order Limits, none of which have been assessed as potentially experiencing a significant effect as a result of the of the Project.

Non-designated assets within the 1 km Section 4 Study Area

- 5.7.19 Five non-designated built heritage assets have been identified within the 1 km Section 4 Study Area that may experience significant effects as a result of the Project.
- 5.7.20 Bilsby Farm, Bilsby (MLI116616) is located approximately 6 m east and south of the draft Order Limits along Widowfen Lane and Thurlby Road. Bilsby Farm is a non-designated 19th century farmstead with partial loss of traditional buildings but with the L-plan farmstead remaining to the north of the property. The farmhouse is a two storey property with the principal elevation of the building bounded to the south by Thurlby Road, facing south which benefits from views across the agricultural fields which form part of the setting of the farmhouse. The proposed alignment would pass through the agricultural fields to the west of the farm, which also form part of the building's setting but which are partially screened by mature trees and hedgerows. The construction activities including construction traffic, plant movement and works for the proposed pylon proposed pylon LW7, would temporarily cause a comprehensive change to the setting of the asset due to increased noise, light, traffic, dust and intervisibility with the works. This would have a large magnitude of impact on an asset of low heritage value, resulting in a temporary moderate adverse significance of effect which is significant. The presence of proposed pylons LW7 approximately 100 m to the west of the farm and LW8 approximately 300 m to the south of the farm, along with the associated overhead line, would partially diminish the agricultural setting of the farmhouse. The permanency of the infrastructure in the landscape would have a small magnitude of impact slightly altering the setting and ability to appreciate this non-designated heritage asset. For an asset of low heritage value, this would result in a permanent negligible adverse significance of effect which is not significant.
- 5.7.21 Moat House (MLI116615) is a non-designated redeveloped 19th century farmstead located approximately 170 m to the east of Bilsby Farm (MLI116616). The farmhouse is slightly set back from Thurlby Road in a landscaped garden, with its principal elevation facing southwards across the road with unrestricted views across the rural landscape to the south. A house and paddock are depicted on the 1841 tithe map under the same ownership of other land parcels to the south. The property is located within the non-designated Thurlby Deserted Medieval Village (MLI41486) with which the moat, and the name of the property, is associated. Large modern sheds are situated to the north-east of the property which diminish from its immediate setting but do not restrict views from the property to the south. The draft Order Limits are within approximately 20 m of the asset along Thurlby Road with the proposed pylon LW8 approximately 400 m to the south-west. The construction activities within close proximity of the asset include a stringing position to the south, pylon work areas, drainage, construction access haul roads, and a trackway and bellmouth proposed a short distance to the west of the property. These activities would temporarily cause a comprehensive change to the setting of the asset due to increased noise, light, traffic, dust and intervisibility with the works. This would have a large magnitude of impact on an asset of low heritage value, resulting in a temporary moderate adverse significance of effect which is significant. The presence of proposed pylons LW8 and LW9 to the south of the property, along with the associated overhead line between them, would partially diminish the agricultural setting of the farmhouse. The permanency of the infrastructure in the landscape would have a small magnitude of impact slightly altering the setting and ability to appreciate this non-designated heritage asset. For an asset of low heritage value, this would result in a permanent negligible adverse significance of effect which is not significant.

- 5.7.22 Barbridge House, Sibsey (MLI124595) is located approximately 50 m south of the draft Order Limits, just to the east off the A16 north of Northlands. This non-designated heritage asset comprises a partially extant farmstead which has lost a significant proportion of the historic buildings. The farmhouse's principal fenestration is west overlooking the surrounding agricultural landscape, although there is a window in the upper floor in the north elevation looking towards the land within the draft Order Limits. The construction activities within close proximity to the asset include a proposed construction access haul road directly north of the asset, a proposed works compound approximately 50 m north across the East Fen Catchwater Drain, proposed bellmouths and proposed construction trackways approximately 200 m to the north and in fields to the west which the property overlooks. These activities would temporarily cause a comprehensive change to the setting of the asset due to increased noise, light, traffic, dust and proximity with the works. This would have a large magnitude of impact on an asset of low heritage value, resulting in a temporary moderate adverse significance of effect which is significant. The presence of proposed pylons LW106 – LW112 and associated overhead line in the agricultural landscape to the north and north-east of the asset would introduce new features into the asset's setting within views from the farmhouse, partially diminishing its agricultural setting. The permanency of the infrastructure in the landscape would have little effect on the setting of the asset and causing no real change in the ability to experience and appreciate the asset. For an asset of low value, this would have a negligible magnitude of impact, resulting in a negligible adverse effect which is not significant.
- 5.7.23 Asperton Farm, Wigtoft (MLI122814) is located approximately 25 m north of the draft Order Limits. This non-designated heritage asset comprises a partially extant 19th century farmstead with the farmhouse detached from the main working complex. The farmhouse remains extant with large modern agricultural sheds located to the north of the farmhouse. The farmhouse overlooks the surrounding agricultural fields to the south, east and west. The land within the draft Order Limits forms part of the rural setting and the property's southern elevation and fenestration affords open views towards the Project. The construction activities within close proximity to the asset include two proposed bellmouths approximately 45 m directly south of the asset, the construction access haul road and trackway 50 m directly south of the asset and a pylon works area to the south-east. These activities would temporarily cause a comprehensive change to the setting of the asset due to increased noise, light, traffic, dust and intervisibility with the works. This would have a large magnitude of impact on an asset of low heritage value, resulting in a temporary moderate adverse significance of effect which is significant. The presence of proposed pylon LW171 and associated overhead line approximately 130 m south-east of the asset would introduce new features into the asset's setting which would be partially screened by mature vegetation. The permanency of the infrastructure in the landscape would have a slight impact on the ability to understand and appreciate the heritage value of the asset. On an asset of low value, this small magnitude of impact would result in a permanent negligible adverse significance of effect, which is not significant.

Operation

- 5.7.24 Impacts during the operation of the Project that may affect heritage assets would be limited to any restrictions on accessibility to heritage assets.
- 5.7.25 In accordance with the PINS Scoping Response (Ref 3; 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.

- 5.7.26 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

- 5.7.27 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, as set out below. **Table 5.6** then summarises the findings of the preliminary assessment with respect to all 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 4 Appendix 5B Preliminary Summary of Non-Significant effects**.

Conservation Areas within the 3km Section 4 Study Area

- 5.7.28 Wigtoft Conservation Area is located approximately 710 m north-east of the draft Order Limits. Located within the conservation area is the grade I listed Church of St Peter and St Paul (NHLE 1237405), approximately 940 m north-east of the draft Order Limits, and two grade II listed buildings: Stanhope Cottage (NHLE 1276849) and The Old Vicarage (NHLE 1232868). The historic core of the village is concentrated along Main Road, with buildings lining the road either side highlighting its linear character with the church forming the nucleus. The A17 runs parallel to Main Road to the south-west of the village, from which it is screened by mature trees and hedges helping to reduce noise and visual impacts from the road. Despite the proximity of the conservation area and associated listed buildings to the proposed alignment of the Project, the A17 has effectively severed the village from its wider agricultural setting to the south-west. Taking into account the screening along the A17 and the traffic associated with this road, there are anticipated to be no setting alterations or changes to the character of the Wigtoft Conservation Area or value of the listed buildings within it from the Project. The temporary works and the permanency of the infrastructure in the landscape will have no change upon these assets that would affect their value. On assets of high value (grade I listed building) and medium value (conservation area and grade II listed buildings), this would result in neutral effects that are not significant.
- 5.7.29 Kirton Holme Conservation Area is located approximately 940 m west of the draft Order Limits. There are two listed buildings located within the conservation area, Holme House (NHLE 1062024) and an associated stable block (NHLE 1165222), both of which are grade II listed. The conservation area is concentrated around the historic core of the village, including a row of buildings along Kirton Holme Road and Kirton Holme House to the west set back from the road with a surrounding garden. Kirton Holme House and stables were both built in the 18th century of red brick. The principal fenestration of the house is to the north, overlooking the garden, and views

beyond are screened by mature trees. The setting of the conservation area comprises its rural village position and surrounding agricultural fields. The land within the draft Order Limits forms part of the wider rural landscape setting of the conservation area, whereas the setting of the two listed buildings is formed by their relationship and connection to the village. The land around the village consists of flat agricultural land and there are long views to the east from the north-eastern edge of the conservation area. Views from within the rest of conservation area towards the draft Order Limits are limited by modern houses and mature trees at the eastern end of the village. The conservation area may experience some temporary setting change during construction due to increased noise and traffic, and the construction access haul road proposed along Kirton Road. There may also be some setting change from the permanency of the modern infrastructure within the landscape, which would diminish views of the wider agricultural landscape from certain points in the conservation area. The temporary change would have a negligible magnitude of impact on the conservation area of medium value, which would result in a negligible adverse significance of effect which is not significant. The permanency of the infrastructure in the landscape within the wider agricultural setting (proposed pylons LW156-LW160) of the conservation area would have a negligible impact hardly affecting its value and how it is appreciated. On an asset of medium value this would result in a negligible adverse effect that is not significant. The construction activities and the permanency of the infrastructure in the landscape would not alter the setting of the grade II listed Holme House or the associated stables nor the ability to understand or appreciate the buildings. On assets of medium value these would have no change, resulting in neutral effects which are not significant.

- 5.7.30 Burgh le Marsh Conservation Area is located approximately 1.2 km west of the Section 4 draft Order Limits. The conservation area covers the historic core of the village and includes 17 listed buildings, comprising the Grade I listed Church of St Peter and St Paul (NHLE 1222765) and associated Grade II listed lychgate (NHLE 1222674), Vicarage (NHLE 1267666) and war memorial (NHLE 1450497). The remaining listed buildings are all Grade II listed and are post-medieval houses (1267571; 1267668; 1222677; 1222948; 1222681; 1222683; 1267483; 1223053; 1223015; 1222672; 1267650; 1222671) and a public house (NHLE 1223032). The buildings are mostly of red brick or rendered with pantile and slate roofs. The setting of the conservation area and buildings consist of their rural village position in the agricultural landscape. The conservation area was historically the centre of the settlement, however, there has been a large area of residential development added to the east, between the conservation area and the land in the draft Order Limits. The land within the draft Order Limits historically formed part of the wider agricultural setting of the conservation area, however this has been severed by the modern developments to the east, removing any former intervisibility between them and affecting the experience of approaching the conservation area from its rural hinterland on that side. The church tower is visible to the east of the village on the historic approach road along Skegness Road. However, the addition of the Project is unlikely to affect these kinetic views of the church as most of the views are to the west of the draft Order Limits. The conservation area and listed buildings within it are therefore not expected to experience a change to their setting from the temporary construction works or the permanency of the infrastructure in the landscape. On assets of high value (grade I listed building) and medium value (conservation area and grade II listed buildings), there would be no change to the assets resulting in neutral effects, which are not significant.

Listed Buildings or Structures within the 3km Section 4 Study Area

- 5.7.31 The Church of All Saints, Croft (NHLE 1223215), Croft is a grade I listed building located approximately 750 m south-east of the draft Order Limits. Built in the 14th century, the church consists of a west tower positioned to the east of the grade II listed Old Vicarage (NHLE 1267406). The church is surrounded by mature trees but the tower is visible from the approach roads to the north, along Church Lane and Low Road South, across the agricultural fields which are within the Croft parish and form part of its wider setting including the land within the draft Order Limits where the proposed pylon LW50 is proposed. Pylons and existing overhead lines are already in the landscape running west to east, north of the church, which would stand between the proposed infrastructure for the Project and the asset. The addition of new infrastructure for the Project in the landscape would add to the existing visual distraction from the church tower in views along Low Road South, further diminishing the wider setting of the asset. A proposed stringing position around proposed pylon LW50 would be located approximately 760 m north-west of the church and the church may experience temporary setting change during construction from increased noise, light and traffic associated with the construction activities. Temporary construction works and the permanency of the infrastructure in the landscape within the wider agricultural setting (proposed pylons LW49-LW51) of the church would have a negligible impact hardly affecting the asset's value and how it is appreciated. On an asset of high value these would result in minor adverse effects that are not significant.
- 5.7.32 Dobson's Windmill (NHLE 1222732) is a grade I listed building in Burgh Le Marsh, located approximately 1.6 km west of the draft Order Limits where works are proposed along the A158. The historic mill was built in 1813 of tarred brick and has five storeys. The cap and sails were damaged and removed in 2020. The setting of the windmill consists of its rural village position at the eastern edge of the village. The land within the draft Order Limits forms part of the surrounding agricultural landscape within the Burgh le Marsh parish and wider setting of the mill. Modern development has expanded Burgh Le Marsh to the east of the windmill diminishing its setting and there are limited views on the approach to the town along Skegness Road from the east due to intervening vegetation and buildings. Temporary construction works and the permanency of the infrastructure in the landscape within the wider agricultural setting (proposed pylons LW39-LW43) of the windmill would have a negligible impact hardly affecting its value and how it is appreciated. On an asset of high value these would result in minor adverse effects that are not significant.
- 5.7.33 The Bridge over Barlode Drain next to Bell Water Bridge (NHLE 1168163) is a grade II listed structure, located approximately 150 m east of the 4 draft Order Limits in Midville. The bridge was built around 1812 of red brick and ashlar as part of a drainage programme of the Fens by John Rennie between 1802-1812, including bowed wall parapets with ashlar copings. The setting of the bridge consists of its position over Barlode Drain (Bell Water Drain) acting as a means of access to a property to its south and its position alongside Hobhole Drain. Its wider setting includes the Fenland landscape and the land within the draft Order Limits forms part of that setting. The access road along Bell Water Drain Bank to the west of the bridge would cause an increase in noise, mechanical plant and traffic during construction which would temporarily alter the wider setting of the bridge. The temporary construction works would have a small magnitude of impact slightly altering the setting of the bridge temporarily changing how the asset is experienced. On an asset of medium value this would result in a minor adverse effect, which is not significant. The addition of the modern infrastructure, which crosses Barlode Drain (Bell Water

Drain) to the west, with the proposed pylons LW91-LW94 along with the overhead line would be prominent in the surrounding flat, Fenland landscape. Whilst this would disrupt views altering the wider setting of the bridge, the proposed pylons are not directly in the sightline when viewing the alignment of the bridge. The introduction of the new infrastructure in the landscape would only slightly alter the value of the listed bridge and how it is experienced and appreciated. On an asset of medium value this would have a small magnitude of impact resulting in a minor adverse effect, which would not be significant.

- 5.7.34 The Church of St Peter (NHLE 1359743) is a grade II listed building located approximately 150 m east of the draft Order Limits in Midville. The church was built in 1819 and is a small red brick building with an octagonal wooden cupola to the west end. The setting of the church comprises the surrounding churchyard (MLI116307), bordered by mature trees and its position within the Fenland opposite Hobhole Drain. The church is approached to the west along a path through the churchyard from Midville Road, with a break in the bordering vegetation, which provides a long view from the entrance of the church across the Fens to the west and of Midville Parish which includes the land opposite within the draft Order Limits which forms part of this setting. A stringing position is proposed approximately 280 m north-west of the church, a bellmouth 290 m to the south-west and the construction access haul road passing approximately 270 m to the west. These activities with noise, traffic and intervisibility will temporarily alter the asset's setting which would have a small magnitude of impact affecting how the asset is understood and experienced. These would result in a minor adverse effect on an asset of medium value, which is not significant. The proposed overhead line would be visible in views directly opposite the entrance to the church, with the proposed pylons LW95 positioned approximately 368 m to the north-west and LW96 positioned approximately 420 m to the south-west set at oblique angles from the asset and so would not be directly visible when looking out across the landscape from within the churchyard. The permanency of the infrastructure in the landscape would slightly alter the setting of the church and the ability to appreciate it. On an asset of medium value, this would have a small magnitude of impact, resulting in a minor adverse effect which is not significant.
- 5.7.35 Clarey's Bridge (NHLE 1267366) is a grade II listed building located approximately 1.2 km north of the draft Order Limits. The bridge was built in around 1812 of red brick and ashlar as part of a drainage programme of the Fens by John Rennie between 1802-1812. The setting of the bridge consists of its position over Thorpe Drain and Royalty Drain within the Fenland landscape. The land within the draft Order Limits forms part of this setting. The listed bridge may experience a temporary setting change from increased noise and traffic during construction activities approximately 1.1 km to the south-east. The temporary construction works would have a negligible impact hardly affecting the setting of the bridge or how it is understood and experienced. On an asset of medium value this would result in a negligible adverse effect which is not significant. The addition of the Project infrastructure (proposed pylons LW77-LW78) to the south of the bridge would disrupt views along Royalty Drain in the flat Fenland landscape, diminishing the historic setting of the bridge. The permanency of the infrastructure in the landscape would have a negligible impact which would hardly affect the building's setting or the way in which it is experienced and appreciated. On an asset of medium value, this would have a negligible adverse effect which is not significant.
- 5.7.36 Blands Farmhouse (NHLE 1224571) is a grade II listed building located approximately 640 m north-west of the draft Order Limits. The farmhouse was built in 1779 of red brick and consists of two storeys. It was formerly known as Burgh

Cottage on historic maps with a 19th century farmstead (MLI93404) extending to the south-east of the farmhouse. The principal fenestration is to the north with views restricted by dense vegetation and mature trees surrounding the property. The land within the draft Order Limits forms part of the wider agricultural setting and the proposed pylons (LW47 and LW48 approximately 710 m to the south-east) and the overhead line may be visible in glimpsed views which would be seasonally dependent. The asset may experience a temporary change to its setting from increased noise and traffic from the construction activities to the east which include a bellmouth, stringing position and the construction access haul road. The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a small magnitude of impact slightly altering the setting of the building and affect how the asset is understood and experienced. On an asset of medium value, these would result in minor adverse effects which are not significant.

- 5.7.37 The Hollies Farmhouse (NHLE 1267487) is a grade II listed building located approximately 430 m north-west of the draft Order Limits. The house was built in the mid-18th century of red brick and consists of two storeys. The principal fenestration is to the south-west which overlooks the surrounding garden. The setting of the farmhouse is formed by the associated farm complex, which are now mostly modern sheds, and its rural position in the agricultural landscape. There is a band of mature trees at the southern end of the garden as well as at the southern end of the field to the south of the house, screening longer views of the landscape. The farmhouse may experience a temporary change to its setting from increased noise and traffic during construction due to its proximity to the proposed stringing position, approximately 560 m to the south-east. The building may also experience a change to its setting from the permanency of the modern infrastructure in the landscape (proposed pylons LW49-LW51), which may be visible above the tree line and possible glimpsed views through the trees to the east of the house. The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a negligible magnitude of impact slightly altering the setting of the building hardly affecting how the asset is understood or experienced. On an asset of medium value, these would result in negligible adverse effects, which are not significant.
- 5.7.38 The Cottage (to the west of No 8) (NHLE 1223749) is a grade II listed building located along Thorpe Bank approximately 850 m north-west of the draft Order Limits. The cottage was built in around 1800 of red brick and consists of a single storey and garret. The principal fenestration is to the south-east, with views overlooking the flat, agricultural fields of the surrounding Fenland landscape, and the land within the draft Order Limits is part of this setting within the parish of Thorpe-St-Peter. The proposed pylons would be located approximately 950 m south-east of the cottage and aligned north-east to south-west through the fields. The building may experience some temporary change to its setting during construction from increased noise and traffic from construction activities. The addition of the modern infrastructure (proposed pylons LW71-LW74) into the flat Fenland landscape would also interrupt views from the cottage, which would diminish the wider rural setting of the building. The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a small magnitude of impact slightly altering the setting of the building and affect how the asset is experienced. On an asset of medium value, these would result in minor adverse effects on an asset of medium value, which are not significant.
- 5.7.39 Old Marsh Chapel (NHLE 1223096) is a grade II listed building located approximately 320 m east of the draft Order Limits. The chapel was built between 1865-7 of red

brick with ashlar dressings. The chapel has two storeys with a three bay south front. It also has a gabled bellcote and a cross finial to the gable ends. The principal fenestration is to the north-west and south-east elevations, with views across the surrounding flat agricultural fields. Formerly St Michael's and all the angels Church, the setting of the chapel is formed by its rural position along Middlemarsh Road and the surrounding Fenland landscape. The construction of the Project may temporarily alter the setting of the chapel due to increased noise, light and traffic associated with the construction activities, particularly the proposed construction compound approximately 320 m to the north-west of the chapel. The presence of the proposed pylons (LW41-LW44) within the surrounding landscape of the chapel would also alter the building's rural setting, from the addition of modern infrastructure. The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a small magnitude of impact slightly altering the setting of the building and affecting how the asset is understood and experienced. On an asset of medium value, these would result in minor adverse effects, which are not significant.

- 5.7.40 Casterton House (NHLE 1232910), and associated coach house and gin house (NHLE 1232867) and pigeoncote (NHLE 1276845) are all grade II listed buildings within a farm complex located approximately 350 m east of the draft Order Limits. The house was built in the later 18th century of red brick with ashlar facing, consisting of three storeys and a three bay front. The principal fenestration is to the south and is set within surrounding grounds along with the outbuildings. The coach house, gin house and pigeoncote were built in the early 19th century, all of red brick. The coach house/ gin house is located directly to the west of the house and the pigeoncote is to the north-east within the grounds. The historic setting of the buildings is formed by their relationship to each other as well as their surrounding grounds and rural position. The house is approached from Clover Lane by a long drive to the south, which is lined by mature trees. A band of deciduous trees screens views to the west towards the draft Order Limits from the drive, and large modern sheds are located to the north-west of the house. There is potential for the buildings to experience a temporary change to their setting from increased noise, light and traffic associated with the construction, particularly with the proposed stringing position to the north-west and the construction access haul road to the west. There may also be glimpsed views of the proposed pylons (LW176-LW178) to the west of the house, particularly during the winter months. The temporary construction works and the permanency of the infrastructure in the landscape within the assets' setting would have a negligible magnitude of impact slightly altering the setting of the buildings hardly affecting how the assets are understood or experienced. On an asset of medium value these would result in negligible adverse effects, which are not significant.
- 5.7.41 The barn at Elms Farm (NHLE 1360472) and Stable and store at Elms Farm (NHLE 1062057) are both grade II listed buildings located approximately 370 m west of the draft Order Limits. The buildings were both constructed in the 18th century and comprise two storeys. The setting of the two buildings comprise their relationship with each other and the Elms Farmhouse, which is not listed, although the building appears on the 19th century OS mapping to the east of the outbuildings, and the surrounding agricultural landscape, which has been eroded by modern development to the west. The land to the east towards the draft Order Limits is screened by mature trees around Elms Farm. There is potential for the buildings to experience some temporary change to their setting during construction due to increased noise and traffic from construction activities to the east. There is also potential for setting changes from the permanency of the modern infrastructure in the landscape

(proposed pylons LW152-LW154), which may be visible above the tree line to the east. As the agricultural setting of the buildings have been eroded by modern developments and screening already exists to the east, any changes to the setting would have little impact on how the assets are understood or experienced. The temporary construction works and the permanency of the infrastructure in the landscape within the assets' setting would have a negligible magnitude of impact. On assets of medium value these would result in negligible adverse effects, which are not significant.

- 5.7.42 Lymm Bank Farmhouse (NHLE 1223830) is a grade II listed building located approximately 450 m south of the Section 4 draft Order Limits. The farmhouse was built in around c.1740 of red brick and consists of one and a half storeys. The principal elevation fenestration is to the south overlooking a small garden and the fields beyond. The setting of the farmhouse is formed by the farm complex to the east and the surrounding flat, fenland landscape. The land to the north is flat agricultural fields, and there would be views from the house towards the land within the draft Order Limits. The farmhouse may experience a temporary change to its setting from increased noise and traffic during construction due to its proximity to the proposed stringing position, approximately 800 m to the north-west and the construction activities in the fields to the north of the house. There are existing pylons located in the fields to the north of the farmhouse, and the addition of further modern infrastructure (proposed pylons LW52-LW554) would further diminish the wider agricultural setting. The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a negligible magnitude of impact having little effect slightly altering the setting of the building and affect how the asset is understood and experienced. On an asset of medium value these would result in negligible adverse effects which are not significant.
- 5.7.43 Burtoft Manor Farmhouse (NHLE 1232866) is a grade II listed building located approximately 500 m east of the draft Order Limits. The farmhouse was built in the 18th century and consists of two storeys with a five bay front. The principal fenestration is to the east overlooking the surrounding garden and bordered by mature trees, although there are glimpsed views across the fields beyond. The setting of the farmhouse is formed by the farm complex to the south and west and the surrounding flat, agricultural landscape. Views to the west are screened by outbuildings, limiting views towards the land within the draft Order Limits. The farmhouse may experience a temporary change to its setting from increased noise and traffic during construction due to its proximity to the proposed stringing position, approximately 620 m to the south-west. The building may also experience a change to its setting from the permanency of the modern infrastructure in the landscape (proposed pylons LW181-LW182), which may be visible above the buildings to the west of the house. The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a negligible magnitude of impact hardly affecting how the asset is understood or experienced. On an asset of medium value these would result in negligible adverse effects, which are not significant.
- 5.7.44 Bridge House (NHLE 1267365) is a grade II listed building located approximately 820 m south-east of the draft Order Limits. The house was built in the mid-18th century with later additions and consists of two storeys with the principal fenestration to the north-west. The setting of the house is formed by its rural position and surrounding agricultural land. The landscape around the house is flat and there are views from the principal fenestration across the surrounding fields. The farmhouse may experience a temporary change to its wider setting from the construction activities to the north-

west. The building may also experience a change to its setting from the permanency of the modern infrastructure in the landscape (proposed pylons LW49-LW50). The temporary construction works and the permanency of the infrastructure in the landscape within the asset's setting would have a small magnitude of impact slightly altering the setting of the building and affecting how the asset is understood and experienced. On an asset of medium value these would result in minor adverse effects, which are not significant.

- 5.7.45 Wykes Manor (NHLE 1359286) is a grade II* listed building located approximately 1.9 km west of the draft Order Limits. The farmhouse was built in 1680 and consists of two storeys with garret in a T-shaped plan. The principal fenestration is to the south-east, which overlooks the garden and surrounding fields. The setting of the house is formed by its relationship with the outbuildings to the east and its isolated position in the agricultural landscape. The land around the farmhouse is flat and open and there would be views of the Project to the east, although not from the principal fenestration. The agricultural setting of the farmhouse has already been partially diminished by the presence of existing pylons approximately 340 m east of the house. Additional modern infrastructure in these views would further erode its historic setting. The building is not expected to experience any temporary setting change from construction activities due to the distance from the draft Order Limits. On an asset of high value this would have no change, resulting in a neutral effect which is not significant. The house may experience some change from the permanency of the infrastructure in the landscape. The proposed pylons (LW177-LW179) would be visible in the flat landscape beyond the existing pylons to the east. However, given the intervening distance, on an asset of high value this would have a negligible magnitude of impact, hardly affecting the value of the asset. This would have a negligible adverse effect, which is not significant.
- 5.7.46 Northlands Bridge (NHLE 1168221) is a grade II listed building located approximately 460 m south of the draft Order Limits. The road bridge was built around 1812 by John Rennie as part of a programme of drainage of the Fens. The bridge is situated over the Stone Bridge Drain and its setting is formed by its position in the surrounding Fenland landscape. A proposed construction trackway is located 460 m to the north and a proposed stringing position approximately 870 m to the north, and the bridge may experience some temporary setting change from increased noise, light and traffic from associated construction activities. The temporary works would have a negligible impact, hardly affecting the ability to understand the asset. On a medium value asset this would result in a negligible effect, which is not significant. The proposed line of the overhead line is located to the north of bridge, with proposed pylon LW110 approximately 980 m north-east and proposed pylon LW111 approximately 890 m north-west of the bridge. The proposed pylons may be visible in the landscape to the north-east and north-west of the bridge, however these would not affect the ability to understand or appreciate the bridge or its relationship to its Fenland setting. The permanency of the infrastructure in the landscape would have no change to the bridge. On an asset of medium value this would result in a neutral effect, which is not significant.
- High Value Designated Heritage Assets within the 3 - 5 km Section 4 Study Area
- 5.7.47 Twenty scheduled monuments have been identified within the 3-5 km Section Study Area, none of which are considered likely to experience significant effects. Six scheduled monuments including one that is also grade I listed, four other grade I listed buildings and three grade II* listed buildings are discussed in the section below.

Two of the listed assets are situated within the grade II registered Well Hall Park and Garden which extends from the 3 km Section 4 Study Area into the 3 – 5 km Section 4 Study Area. Due to its value and setting relationships with the two high value listed assets located within it, it is discussed in this section.

- 5.7.48 A group of three scheduled monuments, Neolithic long barrows including Neolithic long barrow 525 m north east of Valley House: one of a group known as Deadmen's Graves (NHLE 1017464), Neolithic long barrow 495 m north of Moon Wood, one of a pair of long barrows known as Deadmen's Graves (NHLE 1013923), and Neolithic long barrow 575 m NNW of Moon Wood, one of a pair of long barrows known as Deadmen's Graves (NHLE 1013921) are located between 3.5 km and 3.8 km west of the draft Order Limits, lying on a south-facing slope below the summit of a spur and above the valley of Burlands Beck. All three scheduled monuments are of high value. Two of the long barrows survive as earthworks (NHLE 1013923 and NHLE 1013921), with the location of the third (NHLE 1017464) identified as a cropmark on aerial photographs and grouped with the others. The extant mounds measure between 65 m in length, 28 m in width, and stand at approximately 2.3 m in height. The monuments are located in close proximity to the Bronze Age scheduled monument Bowl barrow at Mill Hill Quarry, 350 m north-west of Claxby church (NHLE 1015769) and are located within a wider prehistoric funerary landscape, with further Neolithic barrow sites located to the west of this group close to Fordington, including Giants Hills, a Neolithic long barrow 575m north west of Lodge Farm (NHLE 1014832) and Neolithic long barrow 750m north west of Lodge Farm: also known as Giants Hills III (NHLE 1014935). The Project lies within this prehistoric landscape however, due to the undulating landscape between the Project and the monument to the east, there are no views with the Project. The Project does lie within a wider prehistoric landscape, however, these assets are not located in the immediate setting of the Project with the valley to the west and south-west forming the prehistoric setting for these scheduled monuments. The Project is not located within the setting of these three scheduled monuments. Consequently, there would be no change to their heritage value, resulting in neutral effect which would not be significant.
- 5.7.49 Neolithic long barrow 320 m north-west of Skendleby Psalter (NHLE 1013918) is located approximately 4.8 km west of the draft Order Limits. This high value designated heritage asset comprises of the cropmarks of an enclosure measuring approximately 50 m by 20 m, aligned north to south and delineated by an infilled, unbroken ditch. There are no extant surviving earthworks related to the monument. The monument is part of a wider prehistoric funerary landscape and is located close to other surviving scheduled barrow monuments that includes Neolithic long barrow 525 m north east of Valley House: one of a group known as Deadmen's Graves (NHLE 1017464), Neolithic long barrow 495 m north of Moon Wood, one of a pair of long barrows known as Deadmen's Graves (NHLE 1013923), Neolithic long barrow 575m NNW of Moon Wood, one of a pair of long barrows known as Deadmen's Graves (NHLE 1013921) and Bowl barrow at Mill Hill Quarry, 350 m north west of Claxby church (NHLE 1015769). The monument has a group value associated with these monuments. The setting of the monument is defined as the wider prehistoric funerary landscape, to the west and south west. The Project lies within this prehistoric landscape however, due to the undulating landscape and distance, there is no intervisibility between the monument and the Project. Neither the construction of the Project or its presence within the wider landscape during its operation, would impact this designated heritage asset, resulting in no change to its setting or value. This would be a neutral effect which would not be significant.

- 5.7.50 Bowl barrow at Mill Hill Quarry, 350 m north-west of Claxby church (NHLE 1015769) is located approximately 3.3 km west of the draft Order limits. The monument has a high value and is comprised of a circular barrow mound approximately 15 m in diameter with a rounded profile and stands to a height of approximately 1.3 m. An encircling ring ditch is not visible on the surface but survives below ground. The monument is located on a high ridge which has been encroached by quarrying in the 19th and 20th centuries. The monument is located in close proximity to a group of three other scheduled barrow monuments, Neolithic long barrow 480 m north east of Valley House (NHLE 1017464), Neolithic long barrow 495 m north of Moon Wood (NHLE 1013923) and Neolithic long barrow 575 m NNW of Moon Wood (NHLE 1013921) and holds a group value with these Bronze Age scheduled monuments. The setting of the monument is the wider prehistoric funerary landscape. The landscape to the east is a notable Bronze Age landscape, with further Bronze Age funerary scheduled monument Butterbump round barrow cemetery (NHLE 1003615) and the potential extension of the cemetery and small settlement (MLI42930). The Project lies within this prehistoric landscape and due to the undulating landscape, there are limited views between the Project and the monument to the east. The Project lies on the periphery of the wider prehistoric landscape in which the asset is situated and is not located within the setting of the asset. Consequently, there is no change to their heritage value, resulting in a neutral effect which would not be significant.
- 5.7.51 Sibsey Trader Mill (NHLE 1013828; 1063535) is a scheduled monument and Grade I listed building located approximately 2.7 km south of the draft Order Limits. The tower mill was built in the 19th century and consists of a five storey tower with an ogee cupola with small ball finial, fan-tail and six double sided sails. The setting of the mill is formed by the associated mill complex and the surrounding agricultural fields. The flat landscape allows the mill to be a feature of the skyline from the surrounding roads. Views of the mill from the north are limited past the settlement along Littlemoor Lane, which screens views further south towards the mill. The draft Order Limits are located approximately 2.7 km north of the windmill and the proposed construction works will not affect the ability to understand or appreciate the building within its setting. The overhead line is located approximately 3.2 km north of the mill (proposed pylon LW111) and there would be no interrupted views of the windmill created by the Project. As such, the temporary construction works and permanency of the infrastructure in the landscape would not affect the value of the building or the ability to understand it within its setting. The temporary works and the permanency of the infrastructure within the landscape, on an asset of high value, would result in no change to its setting, resulting in neutral effects which are not significant.
- 5.7.52 Church of St Helen in West Keal (NHLE 1146806) is a grade II* listed building located approximately 4.77 km north-west of the draft Order Limits. The church was built in the 13th century and consists of a west tower, clerestoried nave, aisles, chancel, vestry and south porch. The tower has three stages and was rebuilt between 1881-4. The setting of the church consists of its rural village location and prominent position on a hill which overlooks the flat Fenland landscapes to the south. The land within the draft Order Limits forms a part of this setting and views towards the church from Bell Water Drain Bank and Midville Road would be interrupted by the Project. Due to the distance from the draft Order Limits, the church would not experience any increased noise, light or traffic. The impact would have no change. On an asset of high value, this would result in a neutral effect, which is not significant. The addition of the Project may interrupt views from and to the church within the wider landscape although given the distance between the draft Order Limits and the

church, any change to its setting would be limited. The permanency of the infrastructure within the landscape would have a negligible impact having little effect with no real change in how it is understood or appreciated. On an asset of high value this would result in a minor adverse effect, which is not significant.

- 5.7.53 Well Hall (NHLE 1000992) is a grade II Registered Park and Garden located approximately 1.99 km west of the draft Order Limits in the 3 km Section 4 Study Area. The park extends into the 3-5 km Section 4 Study Area which includes the grade I listed Church of St Margaret (NHLE 1359700) located approximately 3.3 km west of the draft Order Limits and the grade II* listed Wellvale House (NHLE 1168883), approximately 3.05 km west of the draft Order Limits. Wellvale House, formerly listed as Well Hall, was built in the early 17th century with later remodelling. The park was designed in the early 18th century and consists of a garden with lawns around the house, with the site of a former terrace to the east. The parkland extends predominantly to the south of the hall, with areas of woodland, two lakes to the east and west of the hall, and a kitchen garden to the north-east. The hall consists of two storeys with attics and the principal elevation is to the south-west. The church lies to the south-west of the hall, set on a hill within the park, with views to the north-east towards the hall. The church was built in the 18th century and consists of a small, single cell plan building with an eastern Tuscan tetrastyle portico and topped with a hexagonal, timber bellcote. The setting of the park and listed buildings within is formed by their relationship with each other as well as their rural position as part of the historic parish of Well.
- 5.7.54 The park is situated on higher ground than the land to the east towards the draft Order Limits. There may be views from within the higher ground within the park towards the Project, although the bands of woodland at the eastern end of the park screen views from the lower ground within the park. These bands of woodland are historic features of the park and were recorded on the historic mapping of the park. As such, it is unlikely that there were designed views from the park which extend to the land within the draft Order Limits. The land within the draft Order Limits does not fall within the parish of Well and there is not thought to be any historic connection between the hall and the land within the draft Order Limits. There may be views of the Project from the church situated on a hill, although the designed views are between the church and the hall, and views of the draft Order Limits would be incidental. The park and associated buildings are unlikely to experience a temporary change to their setting from construction activities due to their distance from the draft Order Limits. The temporary works and the permanency of the infrastructure within the landscape would not alter the setting of the assets nor the way in which they are understood or experienced. On assets of high value (grade I and II* listed buildings) and medium value (grade II registered park and garden), this would result in impacts of no change with neutral effects, which are not significant.
- 5.7.55 Gunby Hall (NHLE 1063656) is a grade I listed building located approximately 4.4 km north-west of the draft Order Limits. It is situated within Gunby Hall grade II registered park and garden (NHLE 1000979) with six other listed buildings located in the park, including the grade II* listed stable block (NHLE 1063657). The grade I listed Church of St Peter (NHLE 1359687), while located outside of the park boundary, is surrounded by the parkland and located to the south-east of the hall. The registered park and garden is included within the 3-5 km Section 4 Study Area as an asset for assessment as, despite it being a grade II registered asset, it has a direct relationship with the high value listed assets within it; consequently Gunby Hall park and garden is included in the assessment of this group of assets. Gunby Hall (NHLE 1063656) dates to 1700, comprising three storeys with the principal elevation facing the west

where the driveway circles from the approach road to the property via a tree-lined drive to the north. A complex of associated outbuildings, including the stable block, stand to the north of the hall. The landscaped gardens and pleasure grounds are laid to the east, south and west of the Hall which fenestration in the building's elevations overlook. The whole site covers about 50 hectares with the park extending about 32 hectares around the Hall, with scatters of mature trees and tree plantations around the boundaries of the park. The church is late 19th century with a three-stage squat tower. Between the church and the hall is a band of mature trees, screening views between the buildings. The setting of Gunby Hall and the associated listed buildings is formed by their historic relationship and proximity to each other as well as the designed landscape park they stand within. The former parish of Gunby extends to the south of the park but is not within the draft Order Limits. There are no designed views towards the draft Order Limits which would be affected by the presence of the overhead line or other infrastructure. The temporary works and the permanency of the infrastructure within the landscape would not alter the setting of the assets or the way in which they are experienced or understood. On assets of high value (grade I and II* listed buildings), this would result in impacts of no change with neutral effects which are not significant.

High Value Designated Assets Beyond the 5 km Section 4 Study Area

- 5.7.56 The scheduled monument Tattershall Castle and College (NHLE 1018394), along with six grade I listed buildings within the scheduled monument boundary, have been identified beyond the 5 km Section 4 Study Area that could potentially be impacted by the Project. The grade I listed buildings are Tattershall Castle (NHLE 1215317), Round Towers, Tattershall Castle (NHLE 1216195), Kitchen Ruins to Tattershall Castle (NHLE 1288162), Moat Walls at Tattershall Castle (NHLE 1215318), Stable Ruins at Tattershall Castle (NHLE 1215319) and Ticket Office and Shop, Tattershall Castle (NHLE 1287738). The grade I listed assets are included in the scheduled monument designation and all the assets are of high value.
- 5.7.57 They assets are located 9.5 km to the north east of the nearest draft Order Limits. Tattershall Castle is a moated red brick building built in the 15th century as a fortified residence for Ralph Cromwell, Lord High Treasurer. It comprises five storeys on a rectangular plan with four corner turrets with parapets affording views over the surrounding landscape. The present building is located on the site of the earlier 13th century Tattershall Castle. The scheduled monument comprises a mixture of surviving extant building remains, extant earthworks and buried archaeological remains.
- 5.7.58 The immediate setting of the assets includes their proximity to one another and their historical relationships which contributes significantly to their group value. Their wider setting includes the relationship with the village of Tattershall and other nearby associated historic buildings as well as the wider landscape with designed views from the windows and towers of the Castle extending over the countryside. The wider setting has been diminished with later developments including recreational holiday parks, 20th century housing and RAF Coningsby.
- 5.7.59 The proposed alignment of the Project is not within the setting of these high value assets, with neither the construction activities or the permanency of the Project in the landscape affecting the ability to appreciate the assets themselves or the surrounding landscape which contributes to how the assets are experienced within their setting. Therefore, there would be no change to the setting of the assets resulting in a neutral effect that would not be significant.

Non-designated Assets within the draft Order Limits

- 5.7.60 The preliminary assessment has identified non-designated heritage assets within the draft Order Limits that have the potential to experience temporary or permanent non-significant effects. Two 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.
- 5.7.61 The medieval settlement of Wyche (MLI88789) is an asset of medium value and is located partially within the draft Order Limits. The settlement comprises a mixture of surviving earthworks and buried remains which includes enclosures, house platforms, tofts, and trackways. These have been identified through LiDAR analysis and aerial photography. The settlement is located in a wider medieval landscape, with further medieval assets located nearby, including ridge and furrow (MLI98596) representing the remains of the former open field associated with the settlement.
- 5.7.62 It is not anticipated there will not be any physical impacts to the asset through the construction of the Project. Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise and plant movement immediately to the west of the asset. These temporary and reversible impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of proposed new pylons (LW25 to LW33) and infrastructure in the landscape west of the medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.63 The medieval settlement of Ashington in Hogsthorpe parish (MLI88788) is an asset of medium value and extends across the draft Order Limits. The settlement is comprised of a mixture of extant earthworks, and buried remains and includes house platforms, trackways, and tofts identified through LiDAR analysis and aerial photography. The settlement is located in a wider medieval landscape with further medieval occupational and agricultural remains located nearby, including medieval enclosures (MLI98636, MLI98638), and ridge and furrow (MLI98596) and the medieval settlement of Wyche (MLI88789), located to the north of the asset.
- 5.7.64 Further archaeological evaluation is required to confirm the extent and character of the buried archaeological remains. Topsoil stripping and ground works for the construction access haul road, the working area for proposed pylons LW32 and LW33 and associated drainage will result in the partial loss or disturbance of the asset. This is assessed as a small magnitude of impact, resulting in a minor adverse effect which would not be significant prior to the implementation of additional mitigation measures. This would be reduced to a negligible residual effect after the completion of additional mitigation measures comprising an appropriate programme of archaeological investigation.
- 5.7.65 The Project is located within the setting of the medieval settlement. Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds. These temporary and reversible impacts would have a small magnitude of impact and a minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and infrastructure in the landscape west of the medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and its agricultural

setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.

Non-designated Assets within the 1 km Section 4 Study Area

- 5.7.66 The preliminary assessment has identified 45 non-designated heritage assets within the 1 km Section 4 Study Area, including ten non-designated archaeological assets and 35 built heritage assets, 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 **PEI Report Volume 3 Part B Section 4 Appendix 5B Preliminary Summary of Likely Non-Significant Effects**.
- 5.7.67 Welland House Farm, Surfleet (MLI122570) is located approximately 850 m north-east of the draft Section 4 Order Limits and 220 m to the north of the draft Section 5 Refined Siting Zone. The property is a 19th century farmhouse which is detached set in its own grounds bounded by mature trees predominantly on its west and east perimeters. The earlier historic farmstead to its north east has been demolished and replaced with modern large barns which have diminished its setting. The principal elevation of the farmhouse is to the south-west, which partial views across the surrounding agricultural fields. The land within the draft Order Limits forms part of the wider agricultural setting of the asset and the Project, in both Sections 4 and 5, would be visible within the view from the farmhouse. There are existing pylons in the landscape to the south-west of the farmhouse which are partially visible in views from the asset and which have contributed to further eroding its setting. Temporary construction activities, including the construction access haul road and pylon working areas in Section 4 and anticipated construction activities in Section 5, would slightly alter the setting of the farmhouse. This would result in a small magnitude of impact which, on an asset of low value, would result in negligible adverse effects which would not be significant. The permanency of the infrastructure in the landscape, in both Section 4 and Section 5, would alter the setting of the asset but these are anticipated to have a negligible magnitude of impact resulting in a negligible adverse effect, which is not significant.
- 5.7.68 The Former School, Bilsby (MLI126598) is situated in Section 4 to the east of the village of Bilsby, along Thurlby Road, approximately 90 m east of the Section 3 draft Order Limits and 640 m south-west of the Section 4 draft Order Limits. Built in 1877, its principal elevation faces north-east across the road and the flat open landscape of the parish. Its setting includes its isolated prominent position along the B1449 with the agricultural fields to the north and east, with its historical relationship with the parish. The building became derelict following the closure of the school and is now a residential property. The proximity of the building to the Project with views across the fields towards both works and infrastructure in Section 3 (Lincolnshire Connection Substations A and B) and Section 4, would impact upon its setting and the ability to appreciate and experience the asset. The Former School will be impacted by the construction activities associated with both Section 3 and Section 4, including stringing positions, mechanical plant, construction traffic, mitigation planting, noise and dust, with intervisibility of the works. These works would cause a temporary change to the setting of the asset that would alter how the asset is understood and appreciated. This will have a medium magnitude of impact on an asset of low value, resulting in a negligible adverse effect that is not significant. The introduction of

permanent infrastructure in the landscape, including the LCS B substation, proposed pylons LW1 – LW6 and the overhead line, would alter the wider agricultural setting of the asset but this would partially be mitigated by the screening for the substation. The permanency of the infrastructure would have a small magnitude of impact that will result in a negligible adverse effect that is not significant.

- 5.7.69 Hollutrix Farm (MLI116625) is situated in Section 4 to the east of the village of Bilsby, along Thurlby Road, approximately 350 m west of the Section 4 draft Order Limits and 400 m south of the Section 3 draft Order limits. Built in the 19th century, the farmhouse is square on plan with principal elevations both to the east and west overlooking the flat open landscape of the parish. Its setting includes its isolated, prominent position along the B1449 with the agricultural fields to the east and west. The proximity of the building to the Project with views across the fields towards both works and infrastructure in Section 3 (Lincolnshire Connection Substations A and B) and Section 4, would impact upon its setting and the ability to appreciate and experience the asset. Construction activities associated with both Section 3 and Section 4, including stringing positions, mechanical plant, construction traffic, mitigation planting, noise and dust will cause a temporary change on the setting of the asset and would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect, which is not significant. Hollutrix Farm will be impacted by the introduction of permanent infrastructure in the landscape, including the LCS (B) substation, proposed pylons LW6 and LW7 and the overhead line. This would alter the wider agricultural setting of the asset but this would be partially mitigated by the screening for the substation. On an asset of low value, the permanency of the infrastructure would have a small magnitude of impact, resulting in a negligible adverse effect that is not significant.
- 5.7.70 Grove Farm (MLI116613) is located approximately 380 m north-east of the proposed alignment draft Order Limits. The farm consists of a redeveloped 19th century farmstead which has large modern sheds located on the site to the north and east of the farmhouse. The farmhouse overlooks the surrounding fields to the west and the proposed pylon LW8 which would be within the asset's wider agricultural setting. Construction works, with a stringing position to the west alongside other construction works such as increased noise, light and traffic may have temporary impacts which would noticeably alter the setting of the asset and how it is experienced. These temporary changes would have a medium magnitude of impact on an asset of low value, resulting in a minor adverse significance of effect which is not significant. The addition of the modern infrastructure would slightly alter the setting of the asset which would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect which is not significant.
- 5.7.71 Thurlby House (MLI116612) is located approximately 400 m east of the proposed alignment draft Order Limits. The farm consists of a partially extant 19th century farmstead which has experienced more than 50% loss of its traditional buildings. The principal elevation of the farmhouse is to the west, overlooking the surrounding fields which would include proposed pylon LW8 which would be within the asset's wider setting. Construction works with a stringing position to the west alongside other construction works such as increased noise, light and traffic during construction may have temporary impacts which would alter the setting of the asset. These temporary changes would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect, which is not significant. The property is situated in a garden bordered to the west and south by mature trees and vegetation, which would screen views towards the new infrastructure although there may be some intervisibility with partial glimpses which would vary seasonally. The

introduction of proposed pylons LW8 and LW9, with the overhead line, into the wider agricultural setting of the property would have little effect on the setting and value of the asset which would be a negligible magnitude of impact, resulting in a negligible effect which is not significant.

- 5.7.72 Rose Cottage (MLI118904) is located approximately 400 m east of the proposed alignment draft Order Limits. This non-designated heritage asset consists of a partially extant 19th century farmstead with the farmhouse attached to a range of working buildings. There has been significant loss of traditional buildings with large modern sheds located to the west of the farmhouse. The principal fenestration of the farmhouse is to the west with views now partially obstructed by the large modern sheds. There would be a temporary setting change during construction due to increased noise and traffic from construction activities including a stringing position approximately 750 m to the north-west. This would have little effect of the ability to understand the asset's heritage value. On an asset of low value, this negligible magnitude of impact results in a negligible adverse effect which is not significant. The introduction of proposed pylons LW12 and LW13 would be visible in views approximately 600 m and 850 m to the west of the farmhouse from its principal elevation, although these views are already partially obscured by modern sheds within the farmstead. The permanency of the infrastructure within the asset's setting would have a negligible magnitude of impact on an asset of low value, resulting in a negligible adverse effect which is not significant. Field House Farm (MLI118905) is located approximately 400 m east of the proposed alignment draft Order Limits. This non-designated heritage asset consists of a partially extant 19th century farmstead with a farmhouse attached to a range of working buildings. There has been some partial loss of traditional buildings and there are some large modern sheds located on the site. The principal fenestration of the farmhouse is to the west, with uninterrupted views across the surrounding fields. Construction activities in the vicinity of the asset include the erection of pylons and the construction and use of the main construction access haul road to 500-700 m to the west of the asset. There would be a temporary setting change during construction due to increased noise, light and traffic from construction activities. This would have little effect of the ability to understand the asset's heritage value. On an asset of low value, this negligible magnitude of impact results in a negligible adverse effect which is not significant. The addition of proposed pylons LW13 – LW15 and overhead line would be visible within views approximately 500 m to 700 m to the west of the farmhouse from its principal elevation. The permanency of the infrastructure within the asset's setting would have a negligible magnitude of impact on an asset of low value, resulting in a negligible adverse effect, which is not significant.
- 5.7.73 Unnamed Farmstead, Orby (MLI119853) is located approximately 150 m west of the draft Order Limits. It is a 19th century farmstead that remains partially extant and comprises a farmhouse attached to an L-plan range and an additional detached element which is no longer extant. Two structures are depicted on the 1843 tithe map under the same ownership as other land parcels to the east and south-east of the farm. These land parcels are located within the draft Order Limits. The construction activities within close proximity to the asset include a proposed stringing position approximately 180 m to the east of the asset and a construction trackway approximately 300 m to the south-east. These activities would temporarily cause noticeable change to the setting of the asset, including the land historically associated with the asset, due to increased noise, light, traffic, dust and intervisibility with the works. This would have a medium magnitude of impact on an asset of low heritage value, resulting in a negligible adverse significance of effect which is not

significant. The presence of the proposed pylons LW34 and LW35, located approximately 300 m north-east and south-east respectively, are not included within land parcels historically associated with the farmstead. The permanency of the infrastructure in the landscape would cause little change to the setting and ability to appreciate this non-designated heritage asset. For an asset of low heritage value this would have a negligible magnitude of impact, resulting in a negligible adverse effect which is not significant.

- 5.7.74 Lloyds Farm (Marsh Farm) (MLI119892) is located approximately 100 m north-west of the proposed alignment draft Order Limits. This non-designated partially extant 19th century farmstead comprises of a two-storey farmhouse with other elements of the farmstead no longer extant. The house and agricultural buildings are depicted on the 1841 tithe map under the same ownership as other land parcels to the east of the farm. There are some modern agricultural buildings located to the north and west of the farmhouse. The principal elevation of the property is to the north, with fenestration overlooking the surrounding garden and wider agricultural landscape including the field to the east. Mature hedgerows bound the property to the north and east which would partially screen it from intervisibility with the Project. The construction activities within close proximity to the asset include a construction trackway and two bellmouths proposed a short distance to the east of the property and a stringing position to the north-east. These activities would temporarily cause a noticeable change to the setting of the asset due to increased noise, light, traffic, dust and intervisibility with the works. This would have a medium magnitude of impact on an asset of low heritage value, resulting in a minor adverse significance of effect which is not significant. The presence of the proposed pylon LW46 approximately 200 m south-east of the property, along with the associated overhead line, would partially diminish the agricultural setting of the farmhouse. The permanency of the infrastructure in the landscape would cause a slight change to the setting and ability to appreciate this non-designated heritage asset. For an asset of low heritage value this would have a small magnitude of impact, resulting in a negligible adverse effect which is not significant.
- 5.7.75 Lymn Bank, Thorpe St Peter (MLI120280), is located approximately 450 m from the draft Order Limits. It is a recorded 19th century farmstead that has experienced more than 50% loss of its traditional buildings. The farmhouse comprises a two-storey with the principal fenestration to the north overlooking the fenland. The land within the draft Order Limits forms part of the wider setting of the building and would be visible within the view to the north. There are existing pylons located in the fields to the north of the property and the addition of further modern infrastructure (proposed pylons LW52-LW55) would further diminish the wider agricultural setting. The temporary construction works and the permanency of the infrastructure within the landscape would have little effect on the asset's setting. These would result in a negligible magnitude of impact on an asset of low heritage value, resulting in a negligible adverse significance of effect which is not significant.
- 5.7.76 Millhill Farm, Irby in the Marsh (MLI119952) is located approximately 100 m south of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead of which the farmhouse is the only surviving structure. The tithe map of 1841 records the extent of the land parcels historically associated with this asset. This includes land parcels to the north-west of the asset which are within the draft Order Limits. This asset may experience temporary setting changes during construction due to increased noise, light, dust and traffic associated with construction activities, including stringing positions 320 m to the north-west and 390 m to the north-east, and the creation of proposed ecological mitigation areas to the

north and west. These changes would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect, which is not significant. The permanency of the proposed new pylons LW56 and LW57 and their associated overhead line within the landscape would have a slight impact on the ability to understand and appreciate the asset, assessed as a small magnitude of impact. On an asset of low value, this results in a negligible adverse effect that is not significant.

- 5.7.77 Outbuildings, south side of Lymn Bank, Lymn Bank West (MLI98274) is located approximately 160 m south of the draft Order Limits. This non-designated heritage asset is recorded as an open cart bay, stables and a cart shed dating from the late 19th century with some of the original pantile roofs surviving. The asset is predominantly inward looking but the land within the Order Limits forms part of the rural setting and the Project would be visible within the view from the asset. The asset may experience a temporary change in setting during construction due to increased noise, light, dust and traffic associated with the construction activities including a proposed stringing position approximately 200 m north of the asset and a proposed construction trackway approximately 240 m north. These changes would have little effect on the ability to understand and appreciate the heritage assets, assessed as a negligible magnitude of impact. On an asset of low value, this results in a negligible adverse significance of effect, which is not significant. The permanency of the proposed new pylons LW59 – LW61 and the associated overhead line within the landscape to the north of the asset would have a negligible magnitude of impact with little effect on this low value asset. This would result in a negligible adverse effect that is not significant.
- 5.7.78 West Royalty Farm (MLI120318) is located approximately 5 m from the draft Order Limits. It comprises a partially extant 19th century farmstead with a detached farmhouse separated from the main working complex. There has been a partial loss of traditional buildings and there are some large modern sheds located to the east of the site. The principal fenestration of the farmhouse is to the south and the Project would be visible within the view. The wider setting of the farm consists of the surrounding agricultural fields, which includes the land within the draft Order Limits. The property may experience a temporary setting change from increased noise and traffic during construction from its proximity to the Order Limits to the south, with a stringing position to the south-east of the farm. These changes would have a small magnitude of impact on the asset of low heritage value, resulting in a negligible adverse significance of effect which is not significant. Views of the Project to the south would include proposed pylons LW80-LW82, located approximately 260 m south-east, 130 m south and 480 m south-west of the farm respectively, and the associated overhead line. The permanency of the infrastructure within the landscape would have a negligible magnitude of impact on an asset of low heritage value, resulting in a negligible adverse significance of effect which is not significant.
- 5.7.79 The Shrubbery, New Leake (MLI120342) is located approximately 480 m south of the proposed alignment draft Order Limits. The principal fenestration is to south, with views across the surrounding fenland. The land within the Order Limits forms part of the rural setting and the Project would be visible within the landscape to the north of the farmhouse. The farm would experience a temporary setting change during construction due to an increase in noise, traffic and light associated with construction activities. These changes would have a negligible magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect, which is not significant. Views of the Project to the north would include proposed pylons LW82-LW85, located approximately 600 m north-east, 500 m north and 870 m north-west of

the farm respectively, and the associated overhead line. The permanency of the infrastructure within the landscape would have a negligible magnitude of impact on an asset of low heritage value, resulting in a negligible adverse significance of effect which is not significant.

- 5.7.80 Silver Pit Farm (MLI120380) is located approximately 200 m north of the draft Order Limits. This non-designated heritage asset is a partially extant 19th century farmstead which comprises a two storey farmhouse located to the south of a regular courtyard which has been partially lost and replaced with modern agricultural buildings. The principal fenestration of the property is south overlooking the surrounding garden and wider agricultural landscape. The construction activities within close proximity to the asset include a stringing position approximately 350 m south-west and a construction trackway approximately 400 m south of the asset. These activities would temporarily cause a noticeable change to the setting of the asset due to increased noise, light, traffic, dust and the intervisibility with the works. This would have a medium magnitude of impact on an asset of low heritage value, resulting in a minor adverse significance of effect which is not significant. The presence of the proposed pylons LW87-LW89, approximately 350 m – 500 m south of the property, along with the associated overhead line, would partially diminish the agricultural setting of the farmhouse. The permanency of the infrastructure in the landscape would cause a slight change to the setting and ability to appreciate this non-designated heritage asset. For an asset of low heritage value, this would have a small magnitude of impact, resulting in a negligible adverse effect which is not significant.
- 5.7.81 Hobhole Farm, Midville (MLI120407) is located approximately 70 m east of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead which has been redeveloped. It comprises a single storey residential property and an agricultural barn. The redevelopment has substantially reduced its heritage value to one that has historical interest only. Construction works including a proposed stringing position and proposed construction trackway are located approximately 75 m west of the asset. There may be temporary impacts which would temporarily alter the setting of the asset due to noise, traffic and mechanical plant movement. This would have little effect on understanding the asset's low value. This negligible magnitude of impact on a low value asset would result in a negligible adverse effect that is not significant. The permanency of the proposed new pylons LW98 and LW99 and associated overhead line in the landscape west of the asset would also have little effect on the ability to appreciate the asset. This negligible magnitude of impact on an asset of low value would result in a negligible adverse effect that is not significant.
- 5.7.82 The Laurels, New Leake (MLI120360) is located approximately 30 m west of the Section 4 draft Order Limits. The principal elevation of the farm is to the south with views across the surrounding fenland. The land within the Order Limits forms part of the rural setting and the Project would be visible within the view to the south of the farmhouse. The construction activities in the vicinity of the asset include a construction access haul road for the Project which runs to the north, east and south of the farm and there is a proposed stringing position approximately 200 m south of the farm complex. These activities would temporarily cause a noticeable change to the setting of the asset due to increased noise, light, traffic, dust and the intervisibility with the works. This would have a medium magnitude of impact on an asset of low heritage value, resulting in a minor adverse significance of effect which is not significant. The presence of proposed pylons LW103 and LW104, along with the associated overhead line, in the views south from the asset, would partially diminish the agricultural setting of the asset. The permanency of the infrastructure in the

landscape would cause a slight change to the setting and result in a small magnitude of impact changing the setting of the asset and slightly affecting the ability to experience and appreciate the asset. For an asset of low value, this would have a small magnitude of impact, resulting in a negligible adverse effect on an asset of low value that would which is not be significant

- 5.7.83 Avro Lancaster Aircraft Site and War Memorial, Sibsey Northlands (MLI116028) is located approximately 110 m south of the draft Order Limits. This non-designated heritage asset comprises a stone cross on a plinth within a small memorial area in the centre of a field which commemorates the crash site of an Avro Lancaster Bomber aircraft with the loss of all six of its crew in January 1943. The site of the memorial affords views in all directions across the surrounding agricultural fields which form part of the setting of the war memorial. The proposed pylons, LW113 – LW116, would be located approximately 520 to 630 m north-east to north-west in the fields adjoining the one with the asset. Due to the flat, open landscape there would be intervisibility with the construction activities which would include the stringing position proposed around proposed pylon LW116, drainage, pylon working areas along with increased noise and construction traffic. Filtering vegetation mitigation planting is also proposed along the northern field boundary where the memorial is located. These construction activities would result in a temporary change to the setting of the asset affecting the ability to appreciate and experience the heritage value of the memorial in its tranquil location. This would have a medium magnitude of impact on an asset of low heritage value, resulting in a minor adverse significance of effect which is not significant. The introduction of the infrastructure into the landscape would be visible within views from and to the war memorial altering its wider setting. Proposed filtering vegetation along the field boundary between the pylons and the memorial would soften views to some extent as the planting matures although the planting does in itself alter the open landscape setting of the asset. The long-term impact of the permanency of the infrastructure in the landscape would result in a small magnitude of impact changing the setting of the asset and slightly affecting the ability to experience and appreciate the asset. This would result in a negligible adverse effect on an asset of low value that would not be significant.
- 5.7.84 Cherry Tree House, Sibsey (MLI124548) is located approximately 20 m east of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead which has been redeveloped with an extension to the farmhouse. The principal elevation of the building faces south with views across the agricultural fields which are partially screened by mature vegetation. Construction works, with a proposed stringing position, two bellmouths and the proposed construction access haul road is located approximately 100 m south of the asset. Due to noise, traffic, dust, mechanical plant movement and construction traffic, these would temporarily alter the setting of the asset which would be noticeable affecting the way the asset is understood and appreciated. This would have a medium magnitude of impact on a low value asset, which would result in a minor adverse effect that is not significant. The permanency of the proposed new pylon LW116 and overhead line in the landscape would slightly alter the setting and the ability to appreciate the asset. On an asset of low value, this small magnitude of impact would result in a negligible adverse effect that is not significant.
- 5.7.85 Sycamore Farm, Sibsey (MLI124547) is located approximately 50 m north of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead with only the farmhouse surviving which has been extended. The principal fenestration of the farmhouse is to the south, with open views overlooking the surrounding agricultural fields. The land within the Order Limits forms part of the rural

setting and the Project would be visible within the view to the south of the farmhouse. The construction activities within close proximity to the asset include a proposed stringing position, two bellmouths and the proposed construction access haul road located approximately 100 m south. These activities would temporarily cause noticeable change to the setting of the asset due to increased noise, light, traffic, dust and proximity with the works. This would have a medium magnitude of impact on an asset of low heritage value, resulting in a minor adverse significance of effect which is not significant. The presence of proposed pylon LW116 which is directly within the view of the property to the south and the associated overhead line in the agricultural landscape would slightly alter the wider setting of the asset which would have a small impact affecting how the asset is appreciated. For an asset of low value, this would have a negligible magnitude of impact, resulting in a negligible adverse effect which is not significant.

- 5.7.86 Riggalls Farm, Frithville and Westville (MLI124654) is located approximately 120 m east of the draft Order Limits. This non-designated heritage asset is recorded as a partially extant 19th century farmstead with a regular courtyard of L-plan with additional detached buildings and a detached farmhouse. There are some modern agricultural sheds located on the site to the south and to the west which have diminished the asset's immediate setting, although the agricultural fields surrounding the asset form part of its wider setting. Temporary construction activities may have a temporary impact on the setting of this asset, which would have a slight effect on its setting. This would have a small impact which, on an asset of low value, would result in a negligible adverse effect that is not significant. Views towards the proposed pylons LW129 and LW130 and their associated overhead line would be limited with their presence in the landscape having little effect on the setting of the asset and how it is understood and appreciated. This would have a negligible magnitude of impact on this low value heritage asset, resulting in a negligible adverse effect that is not significant.
- 5.7.87 Saratoga, Thornton Le Fen (MLI124702) is located approximately 40 m north of the draft Order Limits. This non-designated heritage asset is recorded as a partially extant 19th century farmstead comprising a regular courtyard in an L-plan with additional detached buildings and a detached farmhouse. More than 50% of these traditional buildings have been lost and there are now a number of large modern sheds on the site. The asset overlooks the surrounding rural countryside in all directions and the Project will be visible in views to the south and east. Construction works include a proposed section of mitigation planting approximately 40 m south of the asset, a construction trackway approximately 115 m east and a stringing position located approximately 375 m south-east. These works will temporarily alter the setting of the asset due to increased levels of noise, light, dust, traffic and due to the intervisibility of the works. This would slightly change the ability to understand and appreciate the asset, having a small magnitude of impact. On a low value asset this would result in a negligible adverse effect that is not significant. The permanency of the proposed pylons LW134 and LW135 and associated overhead line in the landscape are assessed as a negligible magnitude of impact on this low value asset, which would result in a negligible adverse effect that is not significant.
- 5.7.88 Holme Farm, Langrville (MLI124767) is located approximately 35 m north-west of the draft Order Limits. The principal fenestration of the farmhouse is to the south-east, which overlooks the surrounding agricultural fields. The land within the Order Limits forms part of the rural setting and the Project would be visible within the view. The asset would experience a temporary change to its setting during construction due to increased noise, light and traffic associated with the construction activities, including

the proposed construction trackway and bellmouths located approximately 220 m south-east of the asset and the proposed stringing position approximately 280 m east. These temporary changes would have a small magnitude of impact on an asset of low value. This would result in a negligible adverse effect which is not significant. The proposed pylons LW138 and LW139 would be visible within the setting of the farmhouse. The permanency of the infrastructure in the landscape setting of the asset would result in a small magnitude of impact on a low value heritage asset which would result in a negligible adverse effect that is not significant.

- 5.7.89 Vicarage Farm, Holland Fen with Brothertoft (MLI122327) is located approximately 75 m west of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead which remains partially extant. It comprises a range of agricultural buildings in a U-plan courtyard with a detached farmhouse. It overlooks the surrounding rural countryside which contributes to its setting and the Project would be visible in views to the east of the asset. Construction works include mitigation planting approximately 75 m east of the asset and construction trackways approximately 400 m east. These may have temporary impacts that would temporarily alter the setting of the asset due to noise, traffic, dust and intervisibility with the works. These temporary works have been assessed as a small magnitude of impact slightly altering the way the asset is appreciated or understood. This would result in a negligible adverse effect that is not significant. Proposed pylon LW146 and its associated overhead line may also be visible within the setting of the asset for the duration of the Project. The permanency of the infrastructure in the landscape within the setting of the asset would have little effect on the ability to understand and appreciate the asset. This is assessed as a negligible magnitude of impact on this low value asset, resulting in a negligible adverse effect that is not significant.
- 5.7.90 Fieldside, Kirton (MLI122986) is located approximately 40 m west of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead which has retained more than 50% of its traditional buildings. On historic maps the farmstead comprised a regular L-plan courtyard with an attached farmhouse and a further detached outbuilding. The site currently contains two residential properties, a number of modern detached agricultural buildings and part of the historic agricultural range. The land within the Order Limits forms part of the rural setting of the asset and the Project would be visible within the view to the east. The farm would experience a temporary setting change during construction due to an increase in noise, traffic, light and dust associated with construction activities, including the construction access haul road and a stringing position located approximately 140 m south-east of the asset. This would result in a medium magnitude of impact on an asset of low value, resulting in a minor adverse effect, which is not significant. Views of the Project to the east would include proposed pylons LW155 and LW156 and the associated overhead line. The permanency of the infrastructure within the landscape would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse effect which is not significant.
- 5.7.91 Unnamed Farmstead, Willoughby with Sloothby (MLI118923) is located approximately 150 m west of the draft Order Limits. The partially extant 19th century farmstead is a non-designated heritage asset which comprises an L-plan farmstead with additional detached elements. The remaining historic barn is now surrounded by a copse of trees within agricultural fields. Whilst the buildings are not depicted on the tithe map of 1838, the historic landholding associated with the farm shows that the land parcels to the south of the farm were associated with it and comprise its functional setting. This does not include the land within the Order Limits. Therefore,

there would be no change to the setting of the asset, resulting in a neutral effect which is not significant.

- 5.7.92 Rabbit Breeding Farm, Holland Fen with Brothertoft (MLI122352) is located approximately 50 m west of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead that has been redeveloped. It comprised of a regular courtyard of agricultural buildings in a T-plan with a detached farmhouse. The site now contains a number of large modern agricultural sheds and a residential property. The site has open views across the surrounding rural countryside and the Project would be visible within views to the east of the asset. Construction works include a proposed construction access haul road and bellmouth approximately 50 m east of the asset. These may have temporary impacts which would temporarily alter the setting of the asset due to noise, traffic, dust and mechanical plant movement. However, given the redevelopment of the asset, which has substantially reduced its heritage value to one that has historical interest only, the temporary construction activities have been assessed as a small magnitude of impact which would slightly alter its setting and way in which it is understood and appreciated. This would result in a negligible adverse effect on an asset of low value that is not significant. The permanency of the proposed pylons and associated overhead line would have no impact on the setting or value of this asset, resulting in a neutral effect which is not significant.
- 5.7.93 Poplars Farm, Kirton (MLI123017) is located approximately 20 m south of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead that has been redeveloped with the site including a two storey house and a garage. The site has open views to the north, south and west overlooking the surrounding rural countryside. Construction works include a proposed bellmouth approximately 30 m north of the asset and another approximately 140 m to the west. It also includes proposed construction trackways approximately 70 m north and 130 m south-west of the asset. These may have temporary impacts which would temporarily alter the setting of the asset, due to noise, traffic and mechanical plant movement. However, given the redevelopment of the asset which has substantially reduced its heritage value to one that has a historical interest only, the temporary construction activities and the permanency of the proposed pylons LW163 and LW164 and overhead line in the landscape are assessed as a negligible magnitude of impact with little effect on this low value heritage asset. This would result in a negligible adverse effect that is not significant.
- 5.7.94 Blackjack Farm, Swineshead (MLI122443) is located approximately 310 m west of the draft Order Limits. The principal fenestration of the farmhouse is to the east, which overlooks the surrounding agricultural fields. The land within the Order Limits forms part of the rural setting and the Project would be visible within the view from the farmhouse to the east. The asset would experience a temporary change in setting during construction due to increased noise, light and traffic associated with the construction activities, including a proposed stringing location approximately 350 m east of the asset. These changes would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect, which is not significant. The proposed pylons LW164 – LW166 and their associated overhead line would be visible within the setting of this non-designated heritage asset. The permanency of the infrastructure in the landscape around the asset would have a slight impact on the ability to understand and appreciate the asset's heritage value. This is assessed as a small magnitude of impact on an asset of low value, resulting in a negligible adverse effect, which is not significant.

- 5.7.95 Unnamed Farmstead, Wigtoft (MLI122813) is located approximately 10 m south of the draft Order Limits. This non-designated heritage asset is recorded as a 19th century farmstead. The farmhouse and other surviving buildings are heavily screened by mature trees to the north, east and south. Construction activities in the vicinity of the asset include a construction access haul road 40m north of the asset, a stringing position 15 m north of the asset and a construction and bellmouths also proposed 100 m to the north would temporarily cause a noticeable change to the setting of the asset due to increased noise, light, traffic and dust. This would have a medium magnitude impact on an asset of low heritage value, resulting in a minor adverse effect which is not significant. The presence of proposed pylon LW172 and associated overhead line in the landscape to the north-west of the asset would introduce new features into the asset's setting. The permanency of the infrastructure in the landscape would have a slight impact on the ability to understand and appreciate the heritage value of the asset. On an asset of low value, this small magnitude of impact would result in a negligible adverse effect, which is not significant.
- 5.7.96 Unnamed Farmstead, Wigtoft (MLI122812) is located approximately 120 m east of the draft Order Limits. This 19th century farmstead is a non-designated heritage asset of which only the farmhouse survives. The principal fenestration of the farmhouse is to the south which overlooks the surrounding agricultural fields that contribute to its setting. The land within the Project would be visible in longer views to the south but is mostly screened by mature trees to the west of the property. Temporary construction activities may have a temporary impact through change to the setting of this asset, including a stringing position approximately 140 m west and through increased noise, traffic and dust due to the proximity of the works. This has been assessed to have a small magnitude of impact on the setting of this low value asset and would result in a negligible adverse effect which is not significant. The permanency of proposed pylons LW175 and LW176 and their associated overhead line would have a negligible magnitude of impact with little effect on the ability to understand and appreciate this low value heritage asset. This would result in a negligible adverse effect that is not significant.
- 5.7.97 Goosegreen Farm, Wigtoft (MLI122840) is located approximately 50 m east of the draft Order Limits. The principal fenestration of the farmhouse is to the north-east, which overlooks the surrounding agricultural fields. The land within the Order Limits forms part of the rural setting and the Project would be visible within the view from the farmhouse to the north-east. The asset would experience a temporary change in setting during construction due to increased noise, light and traffic associated with the construction activities, including a proposed construction trackway and bellmouths approximately 270 m east and a stringing position approximately 350 m south-east of the asset. These changes would have a negligible magnitude of impact on an asset of low value, resulting in a negligible adverse significance of effect, which is not significant. The introduction of proposed pylons LW185 and LW186 and their associated overhead line into the landscape around the asset, would be visible in views from the farmhouse's principal elevation. This would have a slight impact on the ability to understand and appreciate the asset's heritage value. On an asset of low value, this small magnitude of impact would result in a negligible adverse effect, which is not significant.
- 5.7.98 Thurlsbys deserted medieval village (MLI41486), is an asset of medium value, and extends partially within the draft Order Limits. The asset survives as extant earthworks, visible through aerial imagery. The remains of a moat (MLI116615) have been identified, with buried remains of trackways, tofts, house platforms and

enclosures likely survive within the site. The asset is located within a wider medieval landscape, with surviving ridge and furrow (MLI98708 and MLI80625) and the deserted medieval village of Bilsby (MLI41489) identified approximately 1.38 km to the west of the asset.

- 5.7.99 Topsoil stripping and ground works associated with the construction of the access road bell mouth will result in a partial removal of the asset, and a small magnitude of impact. This will result in a minor adverse effect, which is not significant. This would be reduced to a negligible residual effect after the completion of additional mitigation measures comprising a programme of appropriate archaeological mitigation.
- 5.7.100 Construction of the Project may also temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds to the west of the asset. These temporary and reversible impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of proposed new pylons (LW2 to LW12) and LCS B substation infrastructure in the landscape to the north and west of the deserted medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.101 A medieval moated site (MLI41476) within the Thurlby deserted medieval village is an asset of medium value and is located approximately 70 m east of the draft Order Limits. The asset is comprised of an extant mound earthwork enclosed by a moat. Within the moat, there are likely surviving buried archaeological remains including remains of the manor house and a pond. The setting of the asset is the wider medieval agricultural landscape, and the nearby medieval settlements, which includes Thurlby deserted medieval village (MLI41486), Bilsby deserted medieval village (MLI41489) and nearby ridge and furrow (MLI98708 and MLI80625). The Project is located within the agricultural setting of the asset.
- 5.7.102 Construction of the Project may temporarily alter the setting of the moated site 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 would result in a minor adverse residual effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of proposed new pylons LW2 to LW12) and LCS B substation infrastructure in the landscape to the north and west of the moated site. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.103 Probable late medieval shrunken village, Farlesthorne (MLI89119) is an asset of medium value and is located approximately 70 m west of the draft Order Limits. Extant earthworks have been identified within the settlement through aerial photography and LiDAR analysis include tofts, crofts, and field boundaries, with further buried remains that may consist of house platforms and trackways. The setting of the asset is the local medieval agricultural landscape in which it was originally situated and served, and any nearby medieval settlements, including Probable shrunken medieval village, Cumberworth (MLI89121) and Deserted

settlement at Bonthorpe (MLI84121). The Project is located within the wider agricultural setting of the asset.

- 5.7.104 Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds to the east of the asset. These temporary and reversible impacts would have a small magnitude of impact and would result in a minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and infrastructure in the landscape east of the medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.105 The probable shrunken medieval village of Cumberworth (MLI89121) is an asset of medium value located adjacent to the draft Order Limits. Aerial photographic analysis has identified extant earthworks within the settlement including boundary ditches, enclosures, tofts, trackways, a pond and ridge and furrow. There is potential for further surviving buried remains to be located within shrunken medieval village including house platforms and occupational features such as pits and postholes. The setting of the asset is the local medieval agricultural landscape in which it is situated and any nearby medieval settlements, including the probable late medieval shrunken village of Farlesthorne (MLI89119), the deserted settlement at Bonthorpe (MLI84121), and Thurlby Deserted Medieval Village (MLI41486). The Project is located within the setting of the asset.
- 5.7.106 Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds to the west of the asset. These temporary and reversible impacts would have a small magnitude of impact upon the asset, which will result in a minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and infrastructure in the landscape west of the medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.107 The medieval settlement of Sloothby (MLI83297), is an asset of medium value and is located approximately 20 m west of the draft Order Limits. Aerial photographic analysis have identified extant earthworks within the settlement including boundary ditches, and ridge and furrow. There is potential for further surviving buried remains to be located within the shrunken medieval village including house platforms, tofts, crofts trackways and occupational features such as pits and postholes. A watching brief undertaken in 1999 within the shrunken medieval village recorded two field boundary ditches aligned perpendicular to one another, on and east to west and north to south alignment. The setting of the asset is the local medieval agricultural landscape in which it is situated and any nearby medieval settlements, including the probable late medieval shrunken village of Farlesthorne (MLI89119), deserted settlement of Bonthorpe (MLI84121), and Thurlby Deserted Medieval Village (MLI41486). The Project is located within the setting of the asset.
- 5.7.108 Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds to the east of the asset. These temporary and reversible impacts would have a small

magnitude of impact upon the asset, which will result in a minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and infrastructure in the landscape east of the medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the magnitude impact to the asset would be small, resulting in a minor adverse effect which is not significant.

- 5.7.109 The deserted settlement at Bonthorpe (MLI84121) is an asset of medium value and is located approximately 10 m west of the draft Order Limits. Extant earthworks have been identified within the settlement and include tofts, crofts, field boundaries, with further buried remains that may consist of house platforms and trackways. The setting of the asset is the local medieval agricultural landscape in which it is situated and includes the shrunken medieval village of Cumberworth (MLI89121), medieval settlement at Sloothby (MLI83297) and the probable late medieval shrunken village of Farlesthorpe (MLI89119). The Project is located within the setting of the asset.
- 5.7.110 Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds to the east of the asset. These temporary and reversible impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and overhead line infrastructure in the landscape. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.111 Medieval settlement and field system, Thorpe St Peter (MLI90855) is an asset of medium value and is located approximately 900 m south of the Project. The asset survives as a mixture of extant earthworks that includes ridge and furrow, building platforms, enclosures, and buried archaeological remains that may include tofts, trackways, and further structures. The asset is located within a wider medieval landscape, with nearby surviving ridge and furrow (MLI90857), field systems (MLI90859), and enclosures (MLI90858) identified in close proximity to the asset.
- 5.7.112 Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, plant movement and scaffolds to the north of the asset. These temporary and reversible impacts would have a small magnitude of impact and would result in a minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and infrastructure in the landscape north of the medieval village. Despite the presence of new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse effect which is not significant.
- 5.7.113 Armtree Deserted Medieval Village, Langrville (MLI40657) is an asset of medium value and is located approximately 650 m west of the draft Order Limits. Extant earthworks have been identified within the settlement, and includes likely house platforms, tofts, and trackways. Further surviving buried archaeological remains may also survive within the settlement. The setting of the asset is the local medieval agricultural landscape encompassing the fields in which it is situated the surrounding

fields that would have comprised the medieval open fields that supported the village. The Project is located within the setting of the asset.

- 5.7.114 Construction of the Project may temporarily alter the setting of the medieval settlement 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 and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of new pylons and infrastructure in the landscape west of the medieval village. Despite the presence of the new pylons and infrastructure in the landscape, the relationship between the asset and the wider agricultural setting would still be legible. Therefore, the impact to the asset would be of a small magnitude, resulting in a minor adverse residual effect which is not significant.
- 5.7.115 The shrunken medieval village of Firsby (MLI42192) is an asset of medium value and is located approximately 650 m north of the draft Order Limits. Extant earthworks have been identified within the settlement and include banked enclosures, and remains of trackways and roads. Further surviving buried remains relating to the settlement including tofts and house platforms may be located within the settlement. The setting of the asset is the local medieval agricultural landscape in which it is situated and includes the surrounding fields that would have comprised the medieval open fields that supported the village.
- 5.7.116 Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, plant movement and scaffolds in incidental views to the south and south west of the asset. These temporary and reversible impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset may arise from the presence of proposed new pylons and infrastructure between LW62 and LW70 in the landscape to the south and south west of the asset. Despite the presence of the new pylons and infrastructure in the landscape, the relationship between the asset and its wider agricultural setting would still be legible. Therefore, the impact to the asset would have a small magnitude, resulting in a minor adverse residual effect which is not significant.
- 5.7.117 Casterton House Park, Wigtoft (MLI92287), is an asset of low value and is located partially extending within the draft Order Limits. The parkland is associated with Casterton House (NHLE 1232910) to the north of the park and extends over a wide area that encompasses a small area of woodland to the east. The limits of the parkland extend into the fields south of Wigtoft and partially within the draft Order Limits. The park is bounded by and delineated on its southern extent by urban development related to the settlement of Wigtoft and is bounded on its northern, eastern and western boundaries by enclosed agricultural fields. The setting of the asset encompasses the nearby settlement of Wigtoft and the surrounding agricultural landscape in which it is situated. The Project forms part of the wider agricultural setting of the parkland.
- 5.7.118 No physical impacts to the asset are anticipated from the construction of the Project which will result in no change to the asset and a neutral residual effect. Construction of the Project would temporarily alter the setting of this low value heritage asset through construction traffic, noise and plant movement south west of the asset. These temporary impacts would have a medium magnitude of impact upon the asset and would result in a minor adverse residual effect which would not be significant. Permanent and noticeable changes of medium magnitude, arising from the presence

of the proposed new pylons (LW170 to LW185) and overhead line infrastructure within the setting of the asset would result in a minor adverse residual effect which would not be significant.

Operation

- 5.7.119 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 5.6 Preliminary overview of non-significant Historic Environment effects – Section 4

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	12	The Project does not form part of the setting of these assets 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	12	The Project does not form part of the setting of these assets 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.
Grade I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible or no change	2	0	13	Temporary changes to the setting of grade I listed buildings arising from construction of the project have the potential to either have little change, or to result in no change to the value of these

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
							assets or how they are appreciated, resulting in minor adverse 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.	Negligible or no change	2	0	13	The permanency of the infrastructure in the landscape within the wider setting of the grade I listed buildings has the potential to either have little change, 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.
Grade II* listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible or no change	2	0	10	Temporary changes to the setting of grade II* listed buildings arising from construction of the project have the potential to either have a slight effect, or to result in no change to the value of these assets or how they are appreciated, resulting in minor adverse or neutral effects to these assets of high value. This would result in minor adverse or

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
							neutral effects that are not significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	Negligible or no change	3	0	10	The permanency of the infrastructure in the landscape within the wider setting of the grade II* listed buildings has the potential to either have little change, 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 Areas	Medium	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible or no change	0	1	5	Temporary changes to the setting of the conservation areas arising from construction of the project have the potential to either have little change, or to result in no change to the value of these assets or how they are appreciated. The resulting negligible adverse or neutral effects to these assets of medium value would not be significant.
	Medium	Potential permanent change to setting or value of the assets arising from	Negligible or no change	0	1	5	The permanency of the infrastructure in the landscape within the wider setting of the conservation areas has the

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
		construction of the Project and throughout its operational duration.					potential to either have little change, or to result in no change to the value of these assets or how they are appreciated. The resulting negligible adverse or neutral effects to these assets of medium value would not be significant.
Grade II Registered Parks and Gardens	Medium	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 these assets 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.
	Medium	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 these assets 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.
Grade II listed buildings	Medium	Potential temporary change to setting or value of the assets arising from construction of the Project.	Small, negligible or no change	8	24	170	Temporary changes to the setting of grade II listed buildings arising from construction of the project have the potential to have a slight change, little change, or to result in no change to the value of these assets or how they are

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
							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.	Small, negligible or no change	8	24	170	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 change, 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.
Grade II Registered Parks and Gardens	Medium	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 this grade II registered park and garden and will not alter its value or the way in which it is appreciated or understood. This would result in a neutral effect that is not significant.
	Medium	Potential permanent change to setting or value of the assets	No Change	0	0	1	The Project does not form part of the setting of this grade II registered park and garden and

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
		arising from construction of the Project and throughout its operational duration.					will not alter its value or the way in which it is appreciated or understood. This would result in a neutral effect that is not 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	18	The Project does not form part of the setting of these conservation areas 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	18	The Project does not form part of the setting of these conservation areas 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.
Grade I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible or no change	1	0	8	Temporary changes to the setting of grade I listed buildings arising from construction of the project have the potential to either have little change, or to result in no change to the value of these assets or how they are appreciated, resulting in minor adverse or neutral effects to

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
							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.	Negligible or no change	1	0	8	The permanency of the infrastructure in the landscape within the wider setting of the grade I listed buildings has the potential to either have little change, 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.
Grade II* listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change	0	0	18	The Project does not form part of the setting of these grade II* listed buildings 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	No Change	0	0	18	The Project does not form part of the setting of these grade II* listed buildings and will not alter their value or the way in which they are appreciated or understood. This would result in

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
		throughout its operational duration.					a neutral effect that is not significant.
High Value Designated Assets beyond the 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	The Project does not form part of the setting of this scheduled monument and will not alter its value 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 of the Project and throughout its operational duration.	No Change	0	0	1	The Project does not form part of the setting of this scheduled monument and will not alter its value or the way in which it is appreciated or understood. This would result in a neutral effect that is not 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	6	The Project does not form part of the setting of these grade I listed buildings 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	No Change	0	0	6	The Project does not form part of the setting of these grade I listed buildings and will not alter their value or the way in which they

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
		construction of the Project and throughout its operational duration.					are appreciated or understood. This would result in a neutral effect that is not significant.
Non-designated heritage assets within the draft Order Limits							
	Medium or Low	Permanent physical construction impacts resulting in the partial loss or disturbance of the asset.	Negligible or no change	0	14	16	The partial loss or disturbance of non-designated heritage assets of medium or low value, resulting in negligible adverse or neutral effects that are not significant. Archaeological mitigation measures i.e. appropriate archaeological investigation and recording would further off-set the significance of the residual effects to not significant.
	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	Small, negligible or no change	4	12	14	Temporary changes to the setting of the non-designated heritage assets arising from construction of the Project have the potential to have slight or little change or would 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 and low value. These effects would not be significant.

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
	Medium or Low	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	Small, negligible or no change	4	12	14	The permanency of the infrastructure in the landscape within the wider setting of these non-designated heritage assets has the potential to have slight or little change or would 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 and low value. These effects would not be significant.
Non-designated Heritage Assets within 1km Study Area							
	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	Small, negligible or no change	20	137	201	Temporary changes to the setting of the non-designated heritage assets arising from construction of the Project have the potential to have slight or little change, 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 and low value. These effects would not be significant.

Heritage Asset	Value of the Asset	Potential Impact	Range of Impact Magnitude	Significance of Effect			Rationale
	Medium or Low	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	Small, negligible or no change	9	145	204	The permanency of the infrastructure in the landscape within the wider setting of these non-designated heritage assets has the potential to either have slight or little change, or to result in no change, to the value of these assets or how they are appreciated, resulting in minor adverse, negligible adverse or neutral effects to these assets of medium or 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 additional archaeological 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 Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 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 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 within Section 4 (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 4 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** 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 the Section 4 Study Area, based upon the assessment completed to date (section 1.7); and
- viii. An outline of the proposed monitoring requirements in relation to Water Environment and Flood Risk effects (section 6.8).
- ix. 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 6.1 Water Environment Receptors and Study Area</p> <p>Figure 6.2 Principal Local Water Environment Regulators</p> <p>Figure 6.3 Surface Water Flood Risk</p> <p>Figure 6.4 Water Framework Directive Surface Water Body Status</p>
PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment	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.
PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Assessment	Preliminary assessment of the potential implications of the Project with respect to compliance with the Water Framework Directive (WFD). Provides further details on the WFD water body status and ecological and chemical characteristics for those waterbodies relevant to the Section 4 assessment.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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 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
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 DCO application.

6.1.2 There are also interrelationships between the potential effects on 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 4 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 4 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 4 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

- 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 (Adopted 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.
 - Strategic Policy 27 Renewable and Low Carbon Energy: large-scale renewable energy and low carbon energy development, development for the transmission and interconnection of electricity and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to factors including the water environment and water quality.
 - iv. South East Lincolnshire Local Plan (Adopted March 2019) (Ref 4):
 - Policy 2 Development Management: states that development proposals requiring planning permission will be permitted provided that sustainable development considerations are met, specifically in relation to factors including sustainable drainage and flood risk and impacts or enhancement of areas of natural habitats.
 - Policy 3 Design of New Development: all development must use high quality and inclusive design which demonstrates how issues including, but not limited to, the mitigation of flood risk through flood-resistant and flood-resilient design and sustainable drainage systems will be secured.
 - Policy 4 Approach to Flood Risk: states that development proposed within an area at risk of flooding will be permitted where it can be demonstrated that there are no other sites available at a lower risk of flooding, that essential infrastructure provides wider benefits that outweigh flood risk and that the application is supported by a site-specific flood risk assessment.
 - Policy 30 Pollution: outlines that development proposals will not be permitted where, taking account of any proposed mitigation measures, they would lead to unacceptable adverse impacts upon health and safety of the public,

amenities of the area and the natural, historic and built environment by way of surface and groundwater quality.

- Policy 31 Climate Change and Renewable and Low Carbon Energy: with the exception of wind energy, the development of renewable energy facilities and associated infrastructure will be permitted, provided that individually, or cumulatively, there would be no significant harm to, amongst other factors, the natural environment.
- v. Lindsey Marsh Drainage Board (2018) (Ref 5), Witham Fourth District Internal Drainage Board (2018) (Ref 6), Black Sluice Internal Drainage Board (2022) (Ref 7), Welland and Deepings Internal Drainage Board (2022) (Ref 8).
 - These documents set out policies and byelaws for managing flood risk and surface water runoff from new developments, and for reducing the effects of flooding on local communities.

6.3 Scope of Assessment

- 6.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 9) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 10). 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 assessment 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 resource 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
Construction Phase		
Aquatic environment receptors , comprising: <ul style="list-style-type: none">– Main rivers– WFD river and transitional water bodies	WFD and WFD (Standards and Classification) Directions (England and Wales) 2015 (Ref 11).	<ul style="list-style-type: none">• 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.

Receptor	Relevant Assessment Criteria	Potential Effects Considered
<ul style="list-style-type: none"> Internal Drainage Board (IDB) - maintained watercourses Ordinary watercourses <p>Water resource receptors, comprising:</p> <ul style="list-style-type: none"> Licensed surface water abstractions Unlicensed surface water abstractions for private water supply Discharges to surface waters 		<ul style="list-style-type: none"> Potential effects on the hydromorphology and flow conveyance as a result of increased sediment inputs or direct watercourse disturbance (including from new watercourse crossings). 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). Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants in groundwater and subsequently surface water. Impact from any dewatering for construction from temporary works impacting groundwater – surface water interactions. The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.
Flood risk receptors (property and infrastructure at risk of flooding)	National Planning Policy Framework (NPPF) (Ref 12)	<ul style="list-style-type: none"> 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. 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. Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance. Changes to fluvial flood risk associated with compartmentalisation of the floodplain. Impacts on the integrity of flood defence and land drainage infrastructure as a

Receptor	Relevant Assessment Criteria	Potential Effects Considered
		result of physical impingement of Project infrastructure.
Operational Phase		
Flood risk receptors (property and infrastructure at risk of flooding)	NPPF (Ref 12)	<ul style="list-style-type: none"> 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. Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance.

- 6.3.5 The receptor types identified in Table 6.2 are briefly introduced below. Features in these three classes are only identified as receptors where they intersect with the Section 4 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 13) 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 resource 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 4 Chapter 7 Geology and Hydrogeology**.
- 6.3.8 Discharges to surface water from other parties are also 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 value 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 14) that supports the NPPF (Ref 12). 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 value 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 2 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 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.
- 6.4.2 The text in 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 purpose of this PEI Report. The methodology has been applied to the construction and operation phases of the Project to provide a preliminary assessment of impacts and effects. 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 15). 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 Statement 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 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 5A Preliminary Flood Risk Assessment**.
- 6.4.5 An assessment of compliance with the WFD will be produced in line with Nationally Significant Infrastructure Projects: Advice on the Water Quality Framework Directive

(Ref 16) and included in the ES. A summary of the assessment approach and Stage 1 Screening assessment is included within the PEIR 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**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 4.
- 6.4.8 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.

6.5 Baseline Conditions

Study Area

- 6.5.1 The Study Area for the Water Environment and Flood Risk assessment includes the area within the Section 4 draft Order Limits and extends to a 500 m buffer around the draft Order Limits. This is in accordance with the Scoping Report (Ref 10) and 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 buffers, 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 9). The Section 4 Study Area is presented in **PEI Report Volume 2 Part B Section 4 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 4 Study Area associated.

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, as summarised in Table 6.3. A site walkover will be undertaken in 2025 to supplement the data described below and inform the assessment reported in the ES. The understanding obtained from the baseline data will also be supplemented by subsequent 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 EA flood model outputs (including flood extent and flood depth data) for the floodplains that are proposed to be crossed by the Project infrastructure for Section 4 include:
- Willoughby Defended Model and Report (Ref 17);
 - Tidal Welland Model and Report (Ref 18);
 - Main East Coast Breach Model and Report (Ref 19); and
 - Northern Area Tidal Modelling (NTM) East Coast Overtopping Model and Report (Ref 20).
- 6.5.5 The known or predicted current and future baseline environment described in this section has been informed by the data sources listed in Table 6.3.
- 6.5.6 The Flood Map for Planning was updated in March 2025 to represent the latest available data arising from the Environment Agency's updated National Flood Risk Assessment (NaFRA2) (Ref 28). This is not reflected within this PEI Report and the screening exercise presented in the Preliminary Flood Risk Assessment (PFRA) (**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 Coningsby (Ref 21)
Topography	Ordnance Survey Mapping (Ref 22)
Geology	British Geological Survey (BGS) Geology of Britain Viewer (Ref 23)
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 24); National Soil Research Institute Soilscales map viewer (Ref 25)
Hydrology	Environment Agency Statutory Main River Map for England (Ref 26) Flood Estimation Handbook Web Service (Ref 27)
Flood risk	Environment Agency Flood Map for Planning (Ref 28) Environment Agency Risk of Flooding from Surface Water (RoFSW) (Ref 29) National Flood Risk Assessment (NAFRA) Dataset (Ref 30) Environment Agency Risk of Flooding from Reservoirs (Ref 31) Environment Agency Flood Defence Asset database (Ref 32) National River Flow Archive (NRFA) (Ref 33)
Water quality and Water Framework Directive status	Catchment Data Explorer database (Ref 34) of Cycle 2 and 3 WFD information

Data topic	Sources of 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 35) (Ref 36) (Ref 37) (Ref 38)

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

Existing Baseline

- 6.5.10 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:
- i. **PEI Report Volume 2 Part B Section 4 Figure 6.1 Water Environment Receptors and Study Area;**

- ii. **PEI Report Volume 2 Part B Section 4 Figure 6.2 Principal Local Water Environment Regulators;**
- iii. **PEI Report Volume 2 Part B Section 4 Figure 6.3 Flooding from Surface Water;**
- iv. **PEI Report Volume 2 Part B Section 4 Figure 6.4 Water Framework Directive Surface Water Body Status;**
- v. **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment;** and
- vi. **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Screening Assessment.**

- 6.5.11 Section 4 comprises the overhead line spanning approximately 66 km between the New Lincolnshire Connection Substations (LCS) A and B (Section 3) and the Refined Weston Marsh Substation Siting Zone (Section 5). The overhead line route in Section 4 commences north east of Billsby and runs in a southerly direction towards Burgh le Marsh. To the south of this town, the draft Order Limits run in a south westerly direction towards Boston, routing around this settlement to the west, before continuing in a southerly direction and crossing the River Welland. There are a total of 194 pylons (LW5 to LW199) within Section 4, generally positioned at approximately 350 m spacing. Infrastructure included within the Section 4 Study Area is further discussed in **PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section.**
- 6.5.12 The draft Order Limits are located within three local authority districts; East Lindsey, Boston, and South Holland. These local authorities constitute the LLFAs within Section 4. The draft Order Limits also cross four IDB districts, including the Lindsey Marsh IDB, Witham Fourth District IDB, Black Sluice IDB and Welland and Deepings IDB, as shown on **PEI Report Volume 2 Part B Section 4 Figure 6.2 Principal Local Water Environment Regulators.**
- 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 21). This demonstrates the average annual total rainfall in the locality of Section 4 was approximately 594 mm, based on the Coningsby station record (NGR TF225567) located approximately 8 km from the Study Area for Section 4. This is lower than the Eastern and Northeastern England regional average (1991-2020) of 793 mm.
- 6.5.15 The distribution of rainfall throughout the year varied based on the Coningsby 1991-2020 record. The highest monthly average precipitation was recorded during August and October (59 mm) followed by June (57 mm). The driest months were March (35 mm) and February (38 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 of England.

- 6.5.17 Across the Eastern and Northeastern district there has been a 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 Ordnance Survey (OS) mapping shows Section 4 to be generally flat lying throughout, with no steeply sloping ground identified throughout the Section 4 Study Area. The north of Section 4 is noted to be at a higher topographic elevation (10 m above ordnance datum (AOD)) than the south (between 0 and 5 m AOD), although given the extent of Section 4 this is not considered to represent a significant elevation change.
- 6.5.19 The land within the the Section 4 Study Area is predominantly used for agricultural purposes, characterised by a network of large open fields and a network of drainage ditches and hedgerows. The draft Order Limits cross a number of key highway links (including B1449, A158, B1195, A16, B1183, B1184, A1121, B1192, A52, B1391, A17, B1397 and A16) and many minor/local roads, due to the Section length. Existing electrical infrastructure crosses the Study Area in several places along the length of Section 4. Multiple isolated farms and residential properties along with other infrastructure such as solar farms, railways, warehouses, petrol stations and fabricators can also be found within the Section 4 Study Area outside the draft Order limits.

Hydrology and Surface Water Features

- 6.5.20 Surface water features identified within the Section 4 Study Area are shown in **PEI Report Volume 2 Part B Section 4 Figure 6.1 Water Environment Receptors and Study Area**. These receptors comprise a dense network of either heavily modified or artificial drains that are maintained by riparian landowners and IDBs, primarily for agricultural drainage purposes. IDB districts are shown in **PEI Report Volume 2 Part B Section 4 Figure 6.2 Local Water Environment Regulators**.
- 6.5.21 Within the Section 4 Study Area there are seven main rivers that will be crossed by the draft Order Limits, namely:
- i. Willoughby High Drain – crossed by the draft Order Limits to the north of Sloothby;
 - ii. Little River Lymn and Cowcroft Drain – crossed by the draft Order Limits north of Thorpe St Peter;
 - iii. Steeping River - crossed by the draft Order Limits north west of Thorpe Culvert;
 - iv. East Fen Catchwater Drain – crossed by the draft Order Limits to the north of Northlands;
 - v. West Fen Catchwater Drain - crossed by the draft Order Limits to the north of Northlands;
 - vi. River Witham - crossed by the draft Order Limits to the east of Langrick Bridge; and

vii. South Forty Foot Drain - crossed by the draft Order Limits to the east of Hubbert's Bridge.

- 6.5.22 It is also noted that the River Welland is located in the far south of the Section 4 Study Area, but at the point where it is crossed by the draft Order Limits, the river itself is located in Section 5, in close proximity to the Section 4/Section 5 boundary. The Marine Management Organisation (MMO) has advised that a Marine Licence will be required for the overhead line crossing of the River Welland.
- 6.5.23 The Willoughby High Drain flows in an easterly direction and discharges to the North Sea via a pumping station in the town of Chapel St Leonards (NGR TF560729). The remaining six main rivers drain to The Wash. There are also numerous tributaries of these rivers, classified as ordinary watercourses and IDB maintained watercourses.
- 6.5.24 The northern part of the Section 4 Study Area from the New LCS B to the southern edge of the Steeping River falls within the Lindsey Marsh Drainage Board district. There is limited information on the nature of the IDB, but it is assumed that large parts of the catchment are reliant on pumped drainage to maintain water levels. A number of IDB-maintained watercourses with adjoining pumping stations are crossed by the Section 4 draft Order Limits, including a tributary of the Wyche Drain (NGR TF513701), the Common Drain (NGR TF507649), and the Steeping River (NGR TF471604). Further information on the workings of IDB infrastructure in the Lindsey Marsh region will be sought through consultation and will be presented within the ES.
- 6.5.25 South of the Lindsey Marsh Drainage Board is the Witham Fourth District IDB, which is crossed by the draft Order Limits from the south of Steeping River to the north of the River Witham as it flows into Boston. Witham Fourth District IDB maintains 702 km of watercourse and is responsible for seven pumping stations. The IDB is split into six smaller catchments, of which the Section 4 Study Area transects two, namely the East Fen Catchment and the Wildmore and West Fen Catchment. One of the largest pumping stations is in the East Fen Catchment on the Hobhole Drain (NGR TF379544) which is crossed by the Section 4 draft Order Limits further upstream. It houses six pumps and manages an area of 12,783 ha. The remaining pumping stations are predominantly along the coastal perimeter south of the East Fen Catchment and therefore not influenced by the Project.
- 6.5.26 After crossing the River Witham, the Section 4 draft Order Limits enter Black Sluice IDB district to Asperton Road perpendicular to the B1391. The very western edge of the Section 4 Study Area south of this point is still within the Black Sluice IDB district until the B1397. The Black Sluice IDB is split into 37 smaller pumped catchments with a total of 34 pumping stations situated predominantly along the South Forty Foot Drain. The Section 4 draft Order Limits transect three of the catchments, namely the Boston West Catchment, the Kirton and Frampton Catchment and the Swineshead Catchment; all of which drain to the South Forty Foot Drain via Cook's Lock (NGR TF313432), Chain Bridge (NGR TF307432) and Swineshead (NGR TF229430) pumping stations respectively.
- 6.5.27 The final IDB district to be crossed by Section 4 is the Welland and Deepings IDB district, which runs along the northern edge of the River Welland and is split into 19 smaller catchments. The board operates 14 pumping stations and three tidal sluices and maintains over 70 water level management structures. The Section 4 draft Order Limits transect two of the catchments, namely the Five Towns Catchment and the Risegate Eau Catchment. The Section 4 Study Area also intersects the Surfleet Catchment just north of the River Welland. All three catchments are reliant on pumping stations along the River Welland to manage water levels, namely the Five

Towns Pumping Station (NGR TF317322), the Risegate Eau Pumping Station (NGR TF303316) and the Surfleet Marsh Pumping Station (NGR TF284298) respectively.

- 6.5.28 It is also noted that the South Holland IDB District is located within the Section 4 Study Area. Given that this district is located within Section 5, further detail is provided within **PEI Report Volume 2 Part B Section 5 Chapter 6 Water Environment and Flood Risk**.
- 6.5.29 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
Boygrift Drain (GB105029061720)	High	<ul style="list-style-type: none"> An IDB-maintained watercourse and WFD designated 'blue line' river water body supporting moderate status in the Cycle 3 classifications. Crossed by the draft Order Limits. One new temporary assumed closed culvert will cross Boy Grift Drain.
Anderby Main Drain (GB105029061730)	High	<ul style="list-style-type: none"> A WFD designated river water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project northwest of Cumberworth. No watercourse crossings (temporary or permanent) proposed for Anderby Main Drain, so no potential for direct effects from Section 4 works.
Willoughby High Drain (GB105029061710)	High	<ul style="list-style-type: none"> A main river and WFD designated 'blue line' river water body supporting moderate status in the Cycle 3 classifications. One new temporary single span bridge will cross Willoughby High Drain.
Ingoldmells Main Drain (GB105029061700)	High	<ul style="list-style-type: none"> A WFD designated river water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project northeast of Burgh le Marsh. No watercourse crossings (temporary or permanent) proposed for Ingoldmells Main Drain, so no potential for direct effects from Section 4 works.
Wedlands and North Drains (GB105030056441)	High	<ul style="list-style-type: none"> A WFD designated 'blue line' river water body, supporting moderate status in the Cycle 3

Receptor	Value	Rationale
		<p>classifications. Crossed by the draft Order Limits southeast of Burgh le Marsh.</p> <ul style="list-style-type: none"> One temporary single span bridge will cross Wedland's Drain.
Cow Bank Drain (GB105030056442)	High	<ul style="list-style-type: none"> A WFD designated river water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project Study Area southeast of the A52 Croft Bank near Windrush House. No watercourse crossings (temporary or permanent) proposed for Cow Bank Drain, so no potential for direct effects from Section 4 works.
The Lymn	High	<ul style="list-style-type: none"> A main river. One new temporary single span bridge will cross The Lymn.
Steeping River (GB105030062430)	High	<ul style="list-style-type: none"> A main river and WFD designated 'blue line' river water body supporting moderate status in the Cycle 3 classifications. No watercourse crossings (temporary or permanent) proposed for Steeping River.
East and West Fen Drains (GB205030056405)	High	<ul style="list-style-type: none"> A WFD designated 'blue line' river water body, supporting bad status in the Cycle 3 classifications. Crossed by the draft Order Limits from west of the Steeping River to north of the River Witham. One new temporary single span bridge will cross the Newham Drain.
Maud Foster and Fen Catchwater Drain (GB205030056465)	High	<ul style="list-style-type: none"> 2 main rivers – East Fen Catchwater Drain and West Fen Catchwater Drain. A WFD designated 'blue line' river water body, supporting moderate status in the Cycle 3 classifications. Crossed by the draft Order Limits north of Northlands. One new temporary single span bridge will cross East Fen Catchwater Drain and one new temporary single span bridge will cross West Fen Catchwater Drain.
Lower Witham – conf Bain to Grand Sluice (GB205030062426)	High	<ul style="list-style-type: none"> A main river. Navigable river owned by Canal and River Trust. A WFD designated 'blue line' river water body, supporting moderate status in the Cycle 3

Receptor	Value	Rationale
		<p>classifications. Intersected by the Project west of Anton's Gowl.</p> <ul style="list-style-type: none"> No watercourse crossings (temporary or permanent) proposed for the River Witham.
Black Sluice IDB draining to the South Forty Foot Drain (GB205030051515)	High	<ul style="list-style-type: none"> A main river. WFD designated 'blue line' river water body supporting poor status in the Cycle 3 classifications. Intersected by the Project south of the River Witham. No watercourse crossings (temporary or permanent) proposed for South Forty Foot Drain.
Fosdyke Bridge Outfall (GB205031055535)	High	<ul style="list-style-type: none"> A WFD designated river water body, supporting bad status in the Cycle 3 classifications. Intersected by the Project between Asperton and Sutterton Dowdyke. No watercourse crossings (temporary or permanent) proposed for the 'blue line' watercourse, so no potential for direct effects from Section 4 works.
Risegate Eau (GB205031055525)	High	<ul style="list-style-type: none"> A WFD river water body supporting poor status in the Cycle 3 classifications. Supports the Wash SSSI downstream. No watercourse crossings (temporary or permanent) proposed, so no potential for direct effects from Section 4 works.
Welland (GB530503100400)	High	<ul style="list-style-type: none"> Main river. A WFD transitional and coastal water body supporting moderate status in the Cycle 3 classifications. Supports The Wash SSSI downstream. It is currently assumed one new temporary single span bridge will cross the River Welland. Location to be determined. The crossing is within the Section 5 Refined Siting Zone so there is no potential for direct effects from Section 4 works.
Whaplode River (GB205031055495)	High	<ul style="list-style-type: none"> A WFD river water body supporting moderate status in the Cycle 3 classifications. The WFD catchment intersects the Study Area although the 'blue line' watercourse is located outside of the Study Area. Therefore, any effects on the 'blue line' watercourse are considered negligible.

Receptor	Value	Rationale
IDB-maintained watercourses	Medium	<ul style="list-style-type: none"> A network of artificial or heavily modified IDB watercourses within Lindsey Marsh Drainage Board, Witham Fourth District IDB, Black Sluice IDB and Welland and Deepings IDB that are all reliant on pumping stations to maintain water levels within the catchments. Potential for direct impacts as a result of watercourse crossings and diversions. Potential for indirect impacts via changed runoff rates and water quality as a result of construction activities.
Ordinary watercourses	Low	<ul style="list-style-type: none"> Network of heavily modified or artificial drainage channels mainly in the form of field drains along arable field boundaries. Tributary drains to the IDB-maintained network. Potential for direct impacts as a result of watercourse crossings and diversions. Potential for indirect impacts via changed runoff rates and water quality as a result of construction activities.

6.5.30 There are four Environment Agency gauging stations watercourses traversing the Section 4 Study Area, as shown in Table 6.5. Given that this area is located in IDB-managed pumped catchments, data from nearby flow gauging stations are unlikely to serve as a useful proxy for the hydrological behaviour of the catchment. Further engagement with Lindsey Marsh IDB, Witham Fourth District IDB, Black Sluice IDB and Welland and Deepings IDB will be carried out prior to finalisation of the ES to ensure that watercourse connectivity and the level management regime in this catchment is fully understood

Table 6.5 Summary of river flows - Data from the UK National River Flow Archive (Ref 33)

Gauge Ref, Name and NGR	Watercourse	Catchment Area (km ²)	Mean Flow (m ³ /s)	Q10* (m ³ /s)	Q95** (m ³ /s)	BFI***	Period of Record
30004: Lymn at Partney Mill, TF401675	River Lymn	61.6	0.505	0.95	0.152	0.64	1962-2022
30003: Bain at Fulsby Lock, TF240609	River Bain	197.1	1.289	2.99	0.121	0.59	1962-2022
30006: Sleas at Leasingham Mill, TF088484	River Sleas	48.4	0.557	1.48	0	0.91	1974-2022

Gauge Ref, Name and NGR	Watercourse	Catchment Area (km ²)	Mean Flow (m ³ /s)	Q10* (m ³ /s)	Q95** (m ³ /s)	BFI***	Period of Record
30014: Pointon Lode at Pointon, TF127312	South Forty Foot Drain	11.9	0.07	0.154	0.001	0.49	1972- 2022

*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

- 6.5.31 The Section 4 Study Area is located entirely within the Anglian River Basin District and travels through five Operational Catchments and 14 water bodies, as shown in **PEI Report Volume 2 Part B Section 4 Figure 6.4 Water Framework Directive Surface Water Body Status**.
- 6.5.32 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 water bodies share similar quality characteristics. Ten of the surface water bodies within Section 4 currently achieve moderate status, two achieve poor status and a further two achieve bad status. Generally, water bodies in the Section 4 Study Area do not achieve good status due to reasons such as sewage discharge, poor nutrient management, poor livestock management, land drainage, poor soil management, and urbanisation. All water bodies in the Section 4 Study Area have a chemical status of 'fail' due to exceedance of priority hazardous substances, in particular mercury and its compounds, dissolved oxygen, phosphate, polybrominated diphenyl ethers (PBDE) and perfluorooctane sulphonate (PFOS).
- 6.5.33 Summary details of the current status for the WFD water bodies relevant to Section 4 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 Screening Assessment**. Information on groundwater water bodies is included in **PEI Report Volume 2 Part B Section 4 Chapter 7: Geology and Hydrogeology**.

Table 6.6 WFD water bodies in direct connectivity with Section 4

Water Body (ID)	Water Body Type	Water Body Type (Cycle 3)	Overall Water Body status (Cycle 3) (2022) ¹
Boygrift Drain Water Body (GB105029061720)	River	Artificial	Moderate
Anderby Main Drain Water Body (GB105029061730)	River	Artificial	Moderate

Water Body (ID)	Water Body Type	Water Body Type (Cycle 3)	Overall Water Body status (Cycle 3) (2022) ¹
Willoughby High Drain Water Body (GB105029061710)	River	Artificial	Moderate
Ingoldmells Main Drain Water Body (GB105029061700)	River	Artificial	Moderate
Wedlands and North Drains (GB105030056441)	River	Heavily modified	Moderate
Cow Bank Drain Water Body (GB105030056442)	River	Heavily modified	Moderate
Lymn/Steeping Water Body (GB105030062430)	River	Artificial	Moderate
East & West Fen Drains Water Body (GB205030056405)	River	Artificial	Bad
Maud Foster and Fen Catchwater Drain Water Body (GB205030056465)	River	Artificial	Moderate
Lower Witham – conf Bain to Grand Sluice (GB205030062426)	River	Heavily modified	Moderate
Black Sluice IDB draining to the South Forty Foot Drain Water Body (GB205030051515)	River	Heavily modified	Poor
Fosdyke Bridge Outfall Water Body (GB205031055535)	River	Artificial	Bad
Risegate Eau Water Body (GB205031055525)	River	Artificial	Poor
Welland (GB530503100400)	Transitional water	Heavily modified	Moderate

¹ These are the 2022 statuses as obtained from the Catchment Data Explorer

- 6.5.34 The Section 4 Study Area is not located within a surface water Drinking Water Safeguard Zones. With the exception of the very north of this Section, the Study Area lies almost entirely within several Nitrate Vulnerable Zones (NVZs) which span beyond the Scoping Boundary to all surrounding land. Information on groundwater Safeguard Zones is included in **PEI Report Volume 2 Part B Section 4 Chapter 7 Geology and Hydrogeology**.

Surface Water-Dependent Nature Conservation Sites

- 6.5.35 No statutory nature conservation sites that are dependent on surface water have been identified within the Section 4 Study Area for Water Environment and Flood Risk. Five non-statutory nature conservation sites have been identified within the Section 4 Study Area. These are:

- i. Sloothby Low Lane Local Wildlife Site (LWS) - coastal and floodplain grazing marsh adjacent draft Order Limits;
- ii. The Lymm LWS - flowing stream within a ditch that runs alongside a small country road, adjacent draft Order Limits;
- iii. Hobhole Drain, Boston Corporation Farm to Station Cottages LWS - manmade drain that carries water from Fenland north of Boston, crossed by the draft Order Limits;
- iv. South Forty Foot Drain LWS – man-made watercourse and bankside communities, crossed by the draft Order Limits; and
- v. Risegate Eau LWS - the central 9 km of a 15 km long watercourse, crossed by the draft Order Limits.

6.5.36 Further detail, including a preliminary assessment of the likely effects of the Project upon these receptors, is provided within **PEI Report Volume 2 Part B Section 4 Chapter 4 Ecology and Biodiversity**. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) will be addressed separately in the ES.

Water Resources

6.5.37 Data to characterise existing water interests has been collected from the Environment Agency. Based on the available data, there are 82 surface water abstractions within the Section 4 Study Area, nine of which are within the draft Order Limits. There are also nine surface water discharges within the Section 4 Study Area, none of which fall within the Section 4 draft Order Limits.

6.5.38 An assessment of effects upon any identified groundwater abstractions, including private water supplies, is provided in **PEI Report Volume 2 Part B Section 4 Chapter 7 Geology and Hydrogeology**.

6.5.39 The Steeping, Great Eau and Long Eau Abstraction Licensing Strategy (Ref 36) indicates that the north eastern part of the Section 4 Study Area is 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 6, Willoughby High Drain). South of Skegness, at Assessment Point 9 on the lower River Steeping, there is restricted water availability of just 138 days a year. The Witham Abstraction Licensing Strategy (Ref 37) suggests there is restricted water availability within the Section 4 Study Area and may be available just 122 days a year in the worst case (Assessment Point 7, South Forty Foot Outfall) but available 365 days a year from nearby Maud Foster outfall at Assessment Point 12. The Welland Catchment Abstraction Licensing Strategy (Ref 38) indicates that the southern extent of the Section 4 Study Area (at Assessment Point 4, Surfleet) has restricted water availability with water available for licensing just 98 days a year. Correspondence with East Lindsey District Council and Boston District Council indicates that there are no private water supplies that coincide with the Section 4 Study Area.

Flood Risk and Land Drainage

6.5.40 The EA's Flood Map for Planning (Ref 28) 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 28) likelihood of flooding respectively. Flood Zone extents are shown on **PEI Report Volume 2 Part B Section 4 Figure 6.1 Water Environment Receptors and Study Area**.

- 6.5.41 According to the EA Flood Map for Planning (Ref 28) the Section 4 Study Area is located almost entirely in Flood Zone 3 (high risk), equivalent to an annual chance of flooding from rivers of 1 in 100 (1 per cent) or greater. This is attributed to this part of the Project crossing large extents of fluvial and tidal floodplain. Small pockets of Flood Zone 1 (low risk), equivalent to an annual chance of flooding from rivers and the sea of less than 1 in 1,000 (0.1 per cent) are located in the northern part of the Section 4 Study Area, as well as the Section 4 Study Area that extends north of Irby in the Marsh.
- 6.5.42 According to the EA Asset Information and Maintenance (AIMS) database (Ref 39), flood defences associated with major watercourses are present in the Section 4 Study Area. High ground is the predominant flood defence structure and can be found along Willoughby High Drain, the Lymn, East Fen Catchwater Drain and West Fen Catchwater Drain. Embankments are also located along the Lymn, Steeping River, West Fen Catchwater Drain, River Witham and the South Forty Foot Drain. The majority of the major flood defences listed above are maintained by the Environment Agency with some maintained by third parties. The Section 4 Study Area benefits from these extensive flood defences along the main rivers.
- 6.5.43 In addition, the operation of IDB-maintained infrastructure is likely to be influential in controlling water levels within ditch networks crossed by the draft Order Limits. Engagement with Lindsey Marsh IDB, Witham Fourth District IDB, Black Sluice IDB and Welland and Deepings IDB will be carried out to determine the degree to which this infrastructure provides mitigation of fluvial flood risk within IDB Districts. This will be evaluated further in the ES and FRA. At this preliminary stage, a precautionary approach has been taken to inform the **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment** and the preliminary assessment of effect included in section 6.7.
- 6.5.44 There are many small areas at risk of surface water flooding within the Section 4 Study Area according to the Environment Agency's surface water flood risk mapping (Ref 29), which are generally associated with small watercourses and localised topographic low points, as shown in **PEI Report Volume 2 Part B Section 4 Figure 6.3 Surface Water Flood Risk**. However, the overall extent of surface water flooding is small, and the risk of flooding from this source is minor compared with that from tidal/fluvial flooding.
- 6.5.45 Risk of flooding from sewers is not considered as a significant source of flooding in the Section 4 Study Area due to the predominantly rural setting.
- 6.5.46 The Environment Agency's on-line flood risk mapping for reservoirs (Ref 31) shows that the Main rivers could convey floodwater originating from the failure of upstream reservoirs. Generally, the risk of flooding from reservoir extents are smaller than the fluvial Flood Zones along the same river reaches. Risk of flooding from reservoir failure is identified within the Section 4 Study Area associated with Birkwood Hall No.3 (TF2683560080) and Horncastle Reservoir (TF2303575374). However, the risk will be mitigated, as discussed in further detail within the **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**.
- 6.5.47 A number of external receptors for flood risk effects from the Project have been identified within the Section 4 Study Area. The receptors and their associated values are listed in Table 6.7 below.

Table 6.7 Identified flood risk receptors and associated sensitivity

Receptor	Sensitivity	Rationale
Agricultural land and undeveloped land	Low	Water compatible development.
Agricultural premises and commercial property designated as 'Less Vulnerable'	Medium	Less vulnerable development.
Residential properties and other 'Highly vulnerable' development types in villages such as Cumberworth, Sloothby, Eastville, Northlands, Frithville, Gipsev Bridge, and Wigtoft.	High	More vulnerable development.
Flood defence high ground and embankments along the main rivers crossed by the draft Order Limits, 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

- 6.5.48 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 by other confirmed development projects which will be complete prior to construction of the Project.
- 6.5.49 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.

Climate and Flood Risk

- 6.5.50 Climate change is likely to lead to significant changes in hydrological conditions within the Study Area over the lifetime of the Project. Outputs from UKCP18 (Ref 40) and the Future Flows and Groundwater Levels (FFGWL) Project (Ref 41) have been used to assess likely changes in ambient conditions for the purposes of the future baseline.
- 6.5.51 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 42). For the upstream catchment of the River Witham, using the Witham at Claypole Mill (30001) datapoint, 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 10 and 60 percent by 2080, depending on the model used (Ref 43). An assessment of seasonal average changes within the region of the Section 4 Study Area indicates that in the 2050s winter flows will increase up to 20 percent or even 40 percent in some scenarios, spring flows will decrease by up to 20 percent in most scenarios, summer flows will decrease up to 40 percent in most scenarios and autumn flows will decrease by up to 20 percent in most cases (Ref 44).

- 6.5.52 For the FRA, the impacts of climate change on future flood risk would be assessed in line with current Environment Agency guidance (Ref 45). Current Environment Agency recommendations for climate change factors to be applied to extreme rainfall and river flow for the Project area and 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 (Ref 46)

Allowance Category	Potential Change Anticipated for the 2020s	Potential Change Anticipated for the 2050s	Potential Change Anticipated for 2080s
Witham Management Catchment			
Upper	27%	32%	57%
Higher	14%	15%	32%
Central	9%	8%	21%
Welland Management Catchment			
Upper	22%	26%	53%
Higher	10%	10%	28%
Central	5%	4%	17%

Table 6.9 3.3 per cent Annual Exceedance Probability (AEP) peak rainfall climate change allowances (Ref 46)

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

Table 6.10 1 per cent AEP peak rainfall climate change allowances (Ref 46)

Allowance Category	Potential Change Anticipated for the 2050s	Potential Change Anticipated for the 2070s
Witham Management Catchmen		
Upper	40%	40%
Central	20%	25%
Welland Management Catchment		
Upper	40%	40%
Central	20%	25%

- 6.5.53 Net sea level rise in northern England will be lower than in the south due to glacial isostatic adjustment¹, 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 1.15 to 1.55 m by 2125, based on higher central and upper end allowances (Ref 45). In the Anglian region, net sea level rise from the year 2000 is expected to increase by 1.20 to 1.60 m by 2125, according to the same allowances (Ref 45).

Topography and Land Use

- 6.5.54 Land use change can affect the permeability of the ground, which can affect surface water run-off. Given that most of the areas within the Section 4 Study Area comprise productive agricultural land outside of established settlement boundaries and no large scale topographical changes are anticipated, it is unlikely that the run-off regime will change significantly within and surrounding the Section 4 Study Area.

Water Quality and Water Framework Directive Status

- 6.5.55 Given the current overall status of the WFD water bodies within the Section 4 Study Area ranges from moderate to bad, it is anticipated the future status will improve, ultimately to good, as required by the WFD. Improvements to WFD water body status associated with improvements to individual quality elements (i.e. PBDE) would result in higher-quality, aquatic environments in these water bodies. Given that the sensitivity of WFD water bodies is not determined by their status, this does not influence the assessment relative to the existing or future baseline.
- 6.5.56 The WFD reasons for not achieving good status within the Study Area are included in **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Screening Assessment**.

Water Resources

- 6.5.57 The location and rate of surface water abstractions in the area could vary over time. The Steeping, Great Eau and Long Eau ALS (Ref 36) suggests some water is available for new abstractions. However, the Witham ALS (Ref 37) and the Welland ALS (Ref 38) have restricted water availability for new abstractions. Any new licences would be subject to volume, hands-off flow and/or minimum residual flow restrictions to ensure sufficient flow remained for environmental support purposes.

¹ **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.

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 48) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 49) 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 50) 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 In Section 4 this has included locating the draft Order Limits to avoid sensitive Water Environment and Flood Risk receptors, where practicable, which is also consistent with the sequential approach to management of flood risk advocated in NPS EN-1 (Ref 47); and NPPF (Ref 12).
- 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. For permanent access roads and temporary haul roads, the Project requires the crossing of multiple ditches, drains and watercourses. Crossings of large or sensitive watercourses, for example those designated as main river, and those with WFD status, have been avoided where reasonably practicable, through termination of haul roads either side of these watercourses and use of the existing road network and crossing points. Where new temporary crossings of large or sensitive watercourses are required, they would be or crossed using clear span bridges;
 - ii. Pylons would not be located within the relevant permitting stand-off distances around watercourses;
 - iii. Flood protection design measures are to be designed in accordance with National Grid's best practice requirements; and
 - iv. 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.
- 6.6.4 The non-statutory consultation response from the EA refers to potential Project infrastructure within Flood Zone 3. Further discussions will be held with the EA on this matter and regarding the definition of the functional floodplain (Flood Zone 3b). The FRA, to be submitted with the ES, will outline the proposed mitigation measures and commitments to ensure no detrimental effects on flood risk from rivers and the sea or the functioning of flood defences.

- 6.6.5 The preliminary assessment of effects presented herein assumes that the embedded 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

- 6.6.6 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. Aspects of the control measures pertinent to Water Environment and Flood Risk 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.

6.6.7 The control and management measures included within this document 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

- 6.6.8 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.
- 6.6.9 Potential additional mitigation measures which may be required to reduce the effects of the Project upon Water Environment and Flood Risk 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. This may include a requirement for compensatory flood storage volume, subject to further development of the FRA.
- 6.6.10 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 Environment Agency and reported in the ES.
- 6.6.11 No additional mitigation measures have been assumed within the Preliminary Assessment of Effects reported in the following section.

6.7 Preliminary Assessment of Effects

- 6.7.1 The following section presents the findings of the preliminary assessment of effects upon Water Environment and Flood Risk receptors identified within the Section 4 Study Area, as a result of construction, operational and/or maintenance activities.
- 6.7.2 The preliminary assessment of effects reported below takes 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 4 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 detailed assessment will be included within the ES submitted with the DCO application.

Infrastructure Overview

- 6.7.5 The receptors listed and described in section 6.5 have the potential to be directly or indirectly impacted due to the construction and permanent presence of new pylons within Section 4, including associated temporary haul roads and construction compounds.
- 6.7.6 The proposed temporary and permanent features within Section 4 are illustrated on the following figures:
- i. **PEI Report Volume 2 Part B Section 4 Figure 1.2 Permanent and Operational Features;** and
 - ii. **PEI Report Volume 2 Part B Section 4 Figure 1.3 Temporary and Construction Features.**
- 6.7.7 Temporary watercourse crossings would be required to facilitate access during construction of the new overhead line. As set out within **PEI Report Volume 3 Part A Appendix 5C Indicative Bridge and Culvert Schedule**, a total of 220 temporary crossings are currently assumed to be required within Section 4. These would result in direct impacts on the receptors including those listed below, through the installation of either single span bridges and closed culverts.
- i. Willoughby High Drain (LW-WCX-23);
 - ii. The Lymn (LW-WCX-66);
 - iii. East Fen Catchwater Drain (LW-WCX-128);
 - iv. West Fen Catchwater Drain (LW-WCX-134);
 - v. IDB-maintained watercourses; and,
 - vi. Ordinary watercourses.
- 6.7.8 No permanent watercourse access crossings are proposed within Section 2.
- 6.7.9 Of the 194 pylons in Section 2, 193 are located in Flood Zone 2 and 3. 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 would remain operational during a flood event and would not pose a safety risk.

Likely Significant Effects

Construction

Aquatic Environment and Water Resource Receptors

- 6.7.10 Based upon the preliminary assessment, no significant effects are predicted for aquatic environment and water resource receptors within the Section 4 Study Area, as a result of the construction phase of the Project. Further discussion is provided in the following sections in relation to the predicted non-significant effects of the Project.

Flood Risk

Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance

- 6.7.11 The loss of floodplain storage as a result of the overhead line construction within Section 4 could result in adverse impacts upon flood risk, as cumulatively, the volumes of flood storage displaced could be significant, given the location of infrastructure and associated temporary works in Flood Zone 3. It is assumed there will be soil stockpiling in the floodplain due to the requirement for topsoil strip to establish temporary access tracks and crane pads. This will involve importing aggregate for these temporary design elements to be constructed to a level above existing ground level, temporarily reducing floodplain storage.
- 6.7.12 The area within the Section 4 draft Order Limits is mostly defended floodplain with small parts undefended or in Flood Zone 1. Therefore, under normal conditions, there will be no effect on floodplain storage and conveyance arising from the Project's construction activities. However, under conditions of flood defence overtopping or breach, the presence of the project construction works could lead to a change in residual flood risk for external receptors, through reducing floodplain storage or impeding flood conveyance.
- 6.7.13 The potential for loss of the floodplain and changes in floodplain flow conveyance will be managed through embedded control measures, including ensuring that temporary access watercourse crossings have sufficient conveyance capacity (Preliminary CoCP Measure W04), ensuring that access roads and working areas in the floodplain are as close to ground level as possible (W06) and that appropriate provision for disruption of drainage is provided (W10). It should also be borne in mind that construction activities are temporary and that following the completion of construction, temporary works infrastructure will be removed. The affected land and watercourses for which permanent crossings are not required during operation of the Project, will be fully reinstated following completion of construction.
- 6.7.14 A full assessment of potential changes in flood risk to external third party receptors has not yet been completed. There are several factors which require further assessment to inform the final FRA and ES, informed by engagement with the EA. Specifically these include confirmation of the standard of defence provided by the existing system of flood risk management assets; confirmation of compensatory storage requirements; review existing flood models and confirmation of the scope of future assessment to be reported within the FRA and ES. Further information has been provided in the **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**.

- 6.7.15 Notwithstanding the application of embedded measures, the magnitude of impacts upon flood risk due to potential loss of floodplain storage and/or change in floodplain flow conveyance is precautionarily assessed as medium adverse, given the large scale of the proposed works. Based upon the receptor values of essential infrastructure (very high), residential infrastructure (high), associated effects on these flood risk receptors during the construction phase are assessed as major adverse to moderate adverse and are therefore significant. Likely effects upon commercial infrastructure and local roads (medium) and agricultural land and undeveloped land (low) are minor adverse to negligible and are therefore not considered significant.

Operation and Maintenance

- 6.7.16 Based upon the preliminary assessment, no significant effects are predicted for Water Environment and Flood Risk receptors within the Section 4 Study Area, as a result of the operation and maintenance phase of the Project. Further discussion is provided in the following sections in relation to the predicted non-significant effects of the Project.

Non-Significant Effects

- 6.7.17 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.

Table 6.11 Preliminary summary of non-significant Water Environment and Flood Risk effects – Section 4

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
Construction Phase					
Aquatic Environment Receptors					
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.	Main Rivers and WFD river, transitional water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not significant (Negligible)	<p>During the construction phase of the 194 pylons there is potential to generate sediment laden runoff which could, in absence of 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"> • Construction and removal of access routes, construction compounds and working areas (including topsoil stripping, earthworks and excavations); • Runoff from installed access routes, temporary construction compounds and working areas; • Direct sediment disturbance from in channel works for the construction of access crossings; • Potential diversion/realignment of ordinary watercourses and IDB watercourses; and • The use and management of soil stockpiles.

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>The assignment of suspended sediment-related effects is considered precautionary, given that the watercourses across the Section 4 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>

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium – Low	Small adverse	Not Significant (Minor)	

Impact	Receptor		Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
Potential impacts on hydromorphology and flow conveyance as a result of increased sediment inputs from watercourse disturbance (including from new watercourse crossings).	Main Rivers and WFD river, transitional water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not significant (negligible)		Watercourse crossings and diversions could potentially result in a direct impacts on their hydromorphology. The direct impacts would be mitigated through the implementation of the measures set out within the Preliminary CoCP. This includes W01, W02 and W04. As a result, effects are not significant.
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium – Low	Small adverse	Not Significant (minor)		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 changes to existing morphology and flow conveyance, by adhering to embedded environmental measures W02. 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. 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, predicted effects are not significant.

Impact	Receptor		Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
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)	Main Rivers and WFD river, transitional water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not significant (negligible)	The construction works have the potential to further affect water quality conditions within surface water features via: <ul style="list-style-type: none">accidental spillage of fuel, oil, concrete or other chemicals used during construction;mobilisation/leaching of contaminants from historical soil contamination during excavation works; andcontaminated water pumped from excavations. The proposed embedded measures to prevent surface water pollution are set out in the Preliminary CoCP and include GG03, GG15, GG23, W02, W05, W09 and W11. 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.	
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium – Low	Small adverse	Not Significant (minor)		
Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants in groundwater and	Main Rivers and WFD river, transitional water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not significant (negligible)	Given the specifics of the construction activities together with the nature of the previous land use (agricultural land and an absence of historic landfill), the risk of the Project causing significant contamination of groundwater and thereby surface water (e.g. by mobilising old contamination due to ground disturbance) is negligible.	

Impact	Receptor		Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
subsequently surface water	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium – Low	Small adverse	Not Significant (minor)		Furthermore, based upon the implementation of embedded measures set out within the Preliminary CoCP (e.g. GG04, GH02), predicted effects upon surface water receptors due to the mobilisation of ground contaminants are not significant.
Impact from any dewatering for construction from temporary works impacting groundwater – surface water interactions.	Main Rivers and WFD river, transitional water bodies (referred to in Table 6.4 and Table 6.6)	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. Therefore, predicted effects upon surface water receptors due to dewatering of temporary works areas are not significant.
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium – Low	Small adverse	Not Significant (minor)		

Impact	Receptor		Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
Water Resource Receptors						
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"> Licensed surface water abstractions Unlicensed surface water abstractions for private water supply Discharges to surface waters 	Low	Negligible	Not significant (negligible)		<p>Eighty two licensed surface water abstractions were identified within the Section 4 Study Area, nine of which are within the draft Order Limits. Nine surface water discharges were identified within the Study Area outside the draft Order Limits.</p> <p>Any effects on the abstraction or discharge infrastructure and any indirect effects on flow or quality in receiving watercourses as a result of the construction of the Project would 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 4 Study Area are not significant.</p>
Flood Risk Receptors						
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 to small adverse	Not significant (negligible to minor)		<p>During construction, there will be temporary changes to land surface permeabilities. Temporary surfaces with lower permeability relative to the baseline include stone aggregate surfaces on the following: haul roads, pylon working areas, construction 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 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,</p>

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>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 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 Code of Construction Practice, and include W06 and W10. 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 to minor adverse, and therefore not significant.</p>
Changes to watercourse flow conveyance arising from the presence of new or modified temporary watercourse crossings increasing the risk of flooding to flood risk receptors.	Property and Infrastructure at risk of flooding	Low – very high	Negligible	Not Significant (negligible to minor)	<p>There are 219 new temporary watercourse crossings proposed within the Section 4 draft Order Limits. In the absence of appropriate measures, these crossings could impact flow conveyance, which could potentially influence flood risk upstream of the watercourse crossing.</p> <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. Based upon the implementation of these measures, predicted effects upon flood risk due to new or temporary watercourse crossing are not significant.</p>

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
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>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 would only impact watercourses which have flood defence embankments present such as the main rivers in Section 4. The Study Area is defended floodplain, therefore, existing flood risk 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> <ul style="list-style-type: none"> • Avoid where possible; • Pre-commencement survey; • Minimise invasive works to the flood defence through bridging or placing of additional material; • Ensure any crossings are designed to bear design loads to avoid compaction settlement of the flood defence; • Ensure full restoration of flood defence following completion of works, followed by completion survey; and • 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

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>protection, through realignment around works would be required.</p> <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 to minor adverse, and therefore not significant.</p>
Operation Phase					
Flood Risk Receptors					
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>There will be no significant increase in permanent impermeable area associated with the foundation elements of pylons along this section of the route and therefore these elements alone are not likely to result in significant change.</p> <p>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 4 Project infrastructure on flood risk receptors are considered negligible and not significant.</p>
Changes to fluvial flood risk associated with loss of floodplain storage and/or	Property and infrastructure at risk of flooding	Low – very high	Negligible	Not significant (negligible to minor)	The effects on flood risk receptors from the operation of the Project have been scoped into the assessment for the overhead line. There are 193

Impact	Receptor	Value of Receptor ¹	Magnitude of Change ²	Significance ³	Rationale
change in floodplain flow conveyance.					<p>new overhead line pylons located within Flood Zone 2 and 3 within the Section 4 draft Order Limits.</p> <p>There will be no significant increase in permanent impermeable area associated with the foundation elements of pylons along this section of the route and therefore these elements alone are not likely to result in significant loss of floodplain storage capacity. The presence of pylons in the floodplain could result in snagging of debris causing debris accumulation on the pylon legs. This too is unlikely to result in significant effects upon flood risk due to impacts upon floodplain storage or flow conveyance.</p> <p>The operational overhead line will not involve a significant loss of floodplain. Therefore, the impacts of the operation of Section 4 Project infrastructure on flood risk receptors is considered negligible and not significant.</p>

6.8 Monitoring

- 6.8.1 Significant and non-significant effects have been identified within this assessment. Given the hydrological sensitivity within Section 4, 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 Substation (LCS) B to the Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 methodology of the Geology and Hydrogeology assessment within Section 4 (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 4 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 4 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 7.1 Artificial Geology</p> <p>Figure 7.2 Superficial Geology</p> <p>Figure 7.3 Bedrock Geology</p> <p>Figure 7.4 Groundwater Source Protection Zones</p> <p>Figure 7.5 Aquifer Designations: Superficial Deposits</p> <p>Figure 7.6 Aquifer Designations: Bedrock Geology</p> <p>Figure 7.7 Landfills, Waste and Potentially Contaminative Previous Land Uses</p>
PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification	A list of identified sites with potentially contaminative uses within the Study Area for Section 4, 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 1-7 Appendix 7B Wardell Armstrong 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.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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 B 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 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

Supporting Information	Description
	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.

- 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 4 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 Dependent Terrestrial Ecosystems (GWDTE), and Sites of Specific Scientific Interest (SSSI);
 - ii. **PEI Report Volume 2 Part B Section 4 Chapter 6 Water Environment and Flood Risk** 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 4 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 4 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics based on 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 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 Local Plan, 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 (Paragraph 4.10) 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 25 (SP24) – Biodiversity and Geodiversity: sets out considerations for development proposals with regards to minimising impacts on features of geodiversity value; and
 - 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. South East Lincolnshire, 2019. South East Lincolnshire Local Plan 2011 – 2036 (Ref 2):
 - Policy 28 – The Natural Environment: sets out the requirements for development proposals to prevent impacts on locally-designated sites (relevant for Geological Conservation Sites); and
 - Policy 30 – Pollution: sets out requirements for development proposals to prevent impacts on the land quality/condition (relevant for geology receptors) and groundwater quality (relevant for hydrogeology receptors).
- iii. Greater Lincolnshire Nature Partnership, 2021. Geodiversity Strategy 2022 – 26 (Ref 3): 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
- iv. Lincolnshire County Council, 2017. Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (Ref 4): 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 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following 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 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 of human health are addressed in **PEI Report Volume 2 Part C Chapter 10 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 4 Chapter 8 Agriculture and Soils**);
 - v. Structures; and
 - vi. Designated geological conservation sites (none present within the Section 4 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 (none present for the operation and maintenance phases for Section 4).

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 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 are outlined below.

- 7.4.2 The assessment for Geology and Hydrogeology has been undertaken in line with Land Contamination Risk Management (LCRM) guidance (Ref 7), which includes an approach for contaminated land 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 8) including the requirements noted in that guidance in relation to Nationally Significant Infrastructure Projects. The EA's guidance 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 9), 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 Geology and Hydrogeology are listed within **PEI Report Volume 3 Part A Appendix 4A EIA Technical Assessment Methodologies and Scope**. There are no limitations specific to the Geology and Hydrogeology assessment for Section 4.
- 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 5). As outlined within the Scoping Report (Ref 6), 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 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 10));

- ii. Geological mapping published by the British Geological Survey (BGS) (1:50,000 scale) (Ref 11);
- iii. Historical borehole records held by the BGS (Ref 11), details of which are provided within **Table 7.2**;
- iv. 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;
- v. Department for Environment, Food and Rural Affairs (DEFRA) groundwater aquifer information, provided through MAGIC (Multi-Agency Geographic Information for the Countryside) (Ref 12);
- vi. Source Protection Zones (SPZ) data, available under Open Government License (Ref 13);
- vii. EA Catchment Data Explorer records on groundwater quality (Ref 14);
- viii. Natural England designated Sites, i.e. Geological SSSIs, provided through MAGIC (Ref 12);
- ix. Zetica Unexploded Ordnance (UXO) online hazard mapping (Ref 15);
- x. 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;
- xi. Records from Boston Borough Council, including historical and current potentially contaminative land uses and records relating to private supplies, obtained through a formal data request and received on 06 November 2024;
- xii. Records from South Holland District Council, including location of any private water supplies, obtained through a formal data request and received on 07 November 2024; and
- xiii. 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 6). 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 ha in a 100 m wide swathe for the Project), originally obtained relative to earlier provisional engineering design alignment options. This dataset covers approximately 80 per cent of the draft Order Limits for Section 4.

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 4 Figure 7.1 Artificial Geology;**
- ii. **PEI Report Volume 2 Part B Section 4 Figure 7.2 Superficial Geology;**
- iii. **PEI Report Volume 2 Part B Section 4 Figure 7.3 Bedrock Geology;**
- iv. **PEI Report Volume 2 Part B Section 4 Figure 7.4 Groundwater Source Protection Zones;**
- v. **PEI Report Volume 2 Part B Section 4 Figure 7.5 Aquifer Designations: Superficial Deposits;**
- vi. **PEI Report Volume 2 Part B Section 4 Figure 7.6 Aquifer Designations: Bedrock Geology;**
- vii. **PEI Report Volume 2 Part B Section 4 Figure 7.7 Landfills, Waste and Potentially Contaminative Previous Land Uses;**
- viii. **PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification; and**
- ix. **PEI Report Volume 3 Part B Sections 1 to 7 Appendix 7B Wardell Armstrong Minerals Safeguarding Report.**

Topography and current land use

- 7.5.5 Section 4 covers the overhead line from the New LCS B to the Refined Weston Marsh Substation Siting Zone, from Alford in the north to Spalding in the south. Section 4 includes approximately 66 km of overhead line with pylons at regular intervals (generally at approximately 350 m spacing), including pylons LW5 to LW199.
- 7.5.6 The land within the draft Order Limits for this Section is used largely for agricultural purposes with major roads (including the B1449, A158, B1195, A16, B1183, B1184, A1121, B1192, A52, B1391, A17, B1397, A16) and many minor/local roads within the Section 4 Study Area. A review of Ordnance Survey (OS) mapping shows Section 4 to be generally flat lying throughout, with no steeply sloping ground identified throughout the Section 4 Study Area. The north of Section 4 is noted to be at a higher topographic elevation (10 m above ordnance datum (AOD)) than the south (between 0 m and 5 m AOD), although given the extent of Section 4 this is not considered to represent a significant elevation change. Existing electrical infrastructure (overhead line) crosses the Section 4 Study Area in several places, parallel to and south of the draft Order Limits orientated north east to south west between pylons LW48 and LW56, perpendicular to the draft Order Limits orientated north east to south west and directly north of pylon LW162, and parallel to and west of the draft Order Limits orientated north west to south east between pylons LW192 and LW199.
- 7.5.7 Three current railways are located within the Section 4 Study Area. The Grantham and Skegness Railway is located north west of Thorpe Culvert, orientated north west to south east cutting perpendicular through the draft Order Limits between pylons LW61 and LW62. The Grantham and Skegness Railway crosses the Section 4 Study Area again at Thorpe Fen, orientated north east to south west through the draft Order Limits between pylons LW76 and LW77. A separate branch of the Grantham and Skegness Railway is also present at Hubberts Bridge along the length of the South Forty Foot Drain and the A1121, orientated east to west and perpendicular to the draft Order Limits between pylons LW152 and LW153.

- 7.5.8 Surface water features are present across Section 4, as ponds, drains, streams and rivers, including the Steeping River, located to the north west of Thorpe Culvert and orientated north west to south east through the draft Order Limits; the River Witham, located east of Langrick Bridge and orientated east to west through the draft Order Limits; the South Forty Foot Drain, to the east of Hubbert's Bridge and orientated east to west perpendicular to the draft Order Limits; and the River Welland in the far south of the Section 4 Study Area but not within the draft Order Limits, crossing perpendicular to the Section 4 Study Area to the west of Moulton Marsh.
- 7.5.9 Although no current structures (e.g. residential properties, farm buildings, commercial/industrial buildings) are evident on recent aerial imagery within the draft Order Limits, due to the agricultural setting of the Section 4 Study Area there are many farms and residential properties located within the Section 4 Study Area with some in close proximity to the draft Order Limits.
- 7.5.10 Evidence of ground disturbance was observed from aerial imagery between the A158 (east of Burgh le Marsh) and Fendike Bank (from pylon LW43 to LW67), present as a linear feature orientated north east to south west, crossing through the draft Order Limits between pylons LW58 and LW59. Similar evidence of ground disturbance was observed at Midville, orientated north east to south west through the draft Order Limits and in close proximity (approximately 50 m) to pylon LW95, and to the south of Stickney off the A16 (from pylons LW108 to LW142), orientated north east to south west. This feature includes a compound area and a warehouse in very close proximity to pylons LW108 and LW109. These areas are all understood to be associated with works for installation of a third-party underground cable and the land is understood to have been restored throughout.
- 7.5.11 Aerial imagery indicates that there are several further areas of commercial built development or notable current land use within the Section 4 Study Area, but outside of the draft Order Limits. These include disturbed/burnt ground, solar farms, a waste recycling and disposal site, a scrap yard, agricultural manufacturers and agricultural engineering contractors, warehouses, vehicle repair and auto centres, a concrete plant, an electrical distribution substation, petrol stations, a plant nursery, a steel fabricator, a plastic fabricator and sewage treatment works. Further details about these land uses (e.g. locations and distances from the draft Order Limits) are provided in **PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification**.

Historical land use

- 7.5.12 A historical railway (London Northeastern Railway) is recorded in the north of Section 4, from Willoughby through Farlesthorne and within the draft Order Limits between pylons LW10 and LW11. Cuttings recorded on the 1887 OS mapping are recorded along this feature, approximately 180 m north west of pylon LW11 and outside of the draft Order Limits.
- 7.5.13 The London Northeastern Railway is also shown on historical mapping further to the south, orientated east to west and perpendicular to Section 4, located at Midville with Midville Station noted. This feature passes through the draft Order Limits directly south of pylon LW94 and is shown on historical mapping up to the 1970's. Residential properties are present in the location of the former station, although no evidence of the railway remains within the Section 4 Study Area, suggesting it was fully removed between the 1970's and present day.

- 7.5.14 A historical railway (Lincolnshire Loop – Great Northern Railway) is located within the draft Order Limits in the south of Section 4, to the north of Surfleet Seas End and orientated north east to south west perpendicular through the draft Order Limits, directly east of pylon LW195. This railway is shown on historical mapping from the 1880's through to the 1970's, with current aerial imagery indicating that the former route of the railway in the draft Order Limits is currently occupied by the A16 road. The Lincolnshire Loop historical railway is also present within the draft Order Limits and Section 4 Study Area, between pylons LW141 and LW142 at Langrick Bridge, from Boston to the south east up to Coningsby to the north west.
- 7.5.15 Several blacksmiths are recorded within the Section 4 Study Area, one of which is located within the draft Order Limits in the far south of Section 4 off Marsh Drove, which is only present on the earliest available mapping, dated 1887.
- 7.5.16 A number of historical features outside the draft Order Limits but within the Section 4 Study Area have been identified within this assessment. These include two ponds (and recorded surface workings), unspecified workings, a historical railway, two former brickworks, a former Royal Air Force (RAF) station and airfield, and a historical filling station. Further details about these land uses (e.g. locations and distances from the draft Order Limits) are provided in **PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification**.

Geology

Made ground

- 7.5.17 There are no recorded artificial deposits within the draft Order Limits for Section 4, though there are a total of four areas of artificial deposits located within the Section 4 Study Area.
- 7.5.18 The first area is located immediately west of the draft Order Limits at Bank House Farm, to the west of Sutterton Dowdyke, but no details of composition or depth of these materials are available. The historical mapping shows the presence of various tracks across the area, but no specific labelled features are present. The other three areas are located at least 300 m from the draft Order Limits within the same area to the west of Sutterton Dowdyke.
- 7.5.19 Made Ground would also be expected across the Section 4 Study Area in minor deposits within isolated areas along roads and access tracks (such as the major roads including B1449, A158, B1195, A16, B1183, B1184, A1121, B1192, A52, B1391, A17, B1397, A16), and in areas of historical and current land use, as noted within the 'Topography and Current Land Use' and 'Historical Land Use' sections above.

Superficial deposits

- 7.5.20 The Section 4 Study Area is underlain entirely by various superficial deposits along its length, which includes the following:
- Glacial Till deposits – comprising heterogeneous clay, sand, gravel and boulders, within the draft Order Limits surrounding pylons LW5 to LW8, LW15, LW16 and LW18, and within surrounding areas within the north of the Section 4 Study Area, as well as within areas of indicative temporary highway improvements within the centre of Section 4;

- ii. Tidal Flat deposits – comprising clay and silt, present widespread across the northern third of the Section 4 Study Area beneath pylons LW9 to LW14, LW17 and LW19 to LW78, then again from Stickney to the south through the remainder of the Section 4 Study Area from pylons LW99 to LW199;
- iii. Glaciofluvial deposits – comprising sand and gravel, present in localised areas within the north of the Section 4 Study Area, but not beneath any pylon locations; and
- iv. Peat – typically comprising decomposed vegetation under waterlogged conditions and spongy in texture, present in one localised area within the north of the Section 4 Study Area (west of pylon LW12) and in one large area across the Section 4 Study Area width from Thorpe Fen to Stickney between pylons LW79 and LW98.

7.5.21 The distribution of the superficial deposits within the Section 4 Study Area is shown on **PEI Report Volume 2 Part B Section 4 Figure 7.2 Superficial Geology**.

Bedrock

7.5.22 The bedrock within the Section 4 Study Area is recorded to comprise:

- i. Chalk of the Welton Chalk Formation in the far north of the Section 4 Study Area from pylon LW5 to LW15 – generally described as massive or thickly bedded chalk with occasional but well-developed flint bands.
- ii. Chalk of the Ferriby Chalk Formation in the north of the Section 4 Study Area from Bilsby to Orby Marsh from pylon LW16 to LW33 – generally described as soft, marly, flint-free chalk.
- iii. Sandstone of the Carstone Formation present within one area in the north of the Section 4 Study Area, between Orby and Burgh le Marsh from pylon LW34 to LW38 and LW41 – generally described as coarse grained, cross-bedded, oolitic, ferruginous sandstone and typically up to approximately 10 m in thickness.
- iv. Interbedded mudstone and limestone of the Claxby Ironstone Formation, Tealby Formation and Roach Formation, present to the east and south of Burgh le Marsh within the north of the Section 4 Study Area surrounding pylons LW39 and LW40 and from pylon LW42 to LW56. These three formations are generally described as follows:
 - Claxby Ironstone Formation – ferruginous, oolitic silty clay with varying concentrations of oolitic ironstone;
 - Tealby Formation – clays, oolitic and glauconitic in part, with a sandy limestone in the middle of the formation; and
 - Roach Formation – sandy, bioturbated, ooidal mudstones and very fine grained, clayey, bioturbated ooidal sands;
- v. Sandstone of the Spilsby Sandstone Formation present as a localised deposit within the north of the Section 4 Study Area from pylon LW57 to LW62, between the interbedded mudstone and limestone to the north and the Kimmeridge Clay Formation to the south - generally described as coarse-grained pebble sandstone with iron oolites.
- vi. Mudstone of the Kimmeridge Clay Formation present across the Section 4 Study Area width between Thorpe Culvert and Frithville from pylon LW63 to LW131 –

generally described as calcareous, kerogen-rich, silty or sandy mudstones with thin siltstone and cementstone beds. The strata are also interbedded with sandstones and conglomerates at various levels.

- vii. Mudstone of the Ampthill Clay Formation across the Section 4 Study Area width between Frithville and Fenhouses from pylon LW132 to LW165 – generally comprising mudstones with limestone nodules.
- viii. Mudstone and siltstone of the West Walton Formation in the south of the Section 4 Study Area between Fenhouses and Burtoft from pylon LW166 to LW181 – generally comprising calcareous mudstone, silty mudstone and siltstone with fine-grained sandstones and limestone or siltstone nodules.
- ix. Mudstone of the Oxford Clay Formation in the far south of the Section 4 Study Area, from Burtoft up to the boundary with Section 5 from pylon LW182 to LW199 – generally comprising silicate mudstone with sporadic beds of argillaceous limestone nodules.

7.5.23 The distribution of the bedrock strata within the Section 4 Study Area are shown on **PEI Report Volume 2 Part B Section 4 Figure 7.3 Bedrock Geology**.

Geological setting

7.5.24 No linear geological features (e.g. faults, breaklines, etc.) are recorded within the Section 4 Study Area. Published geological mapping (Ref 11) shows the bedrock strata as being generally horizontal across the Section 4 Study Area, with no indication of strata dip.

7.5.25 Borehole records published by the BGS within the draft Order Limits were reviewed as part of this assessment to help confirm the anticipated geological sequence in line with the published geological mapping. Eleven boreholes are located within the draft Order Limits in Section 4. The available logs from these are summarised below in **Table 7.2**. Due to the remote nature and lack of development across much of Section 4, there is an absence of borehole information within the centre of this Section, though a greater concentration of boreholes is present within north and south of Section 4.

Table 7.2 Summary of British geological survey boreholes within the draft Order Limits Section 4

Borehole ID	Location (E,N)	Location Description	Stratigraphy
TF47NE4	548672, 376007	East of pylon LW7, south east of Bilsby	<ul style="list-style-type: none"> • 0 – 0.61 m: Topsoil • 0.61 – 6.10 m: Boulder clay, gravel seam at 2.29 m
TF47NE55	549154, 375697	On the edge of the draft Order Limits, east of pylon LW8 south of Thurlby	<ul style="list-style-type: none"> • 0 – 3.05 m: No record • 3.05 – 3.66 m: Marl Clay • 3.66 – 3.96 m: Chalk gravel • 3.96 – 14.63 m: Marl • 14.63 – 16.15 m: Bearings • 16.15 – 20.73 m: Chalk

Borehole ID	Location (E,N)	Location Description	Stratigraphy
TF57SW16	550370, 371590	South of pylon LW21, north east of Sloothby	<ul style="list-style-type: none"> 0 – 1.83 m: Clay 1.83 – 3.66 m: Peat 3.66 – 7.32 m: Clay 7.32 – 9.14 m: Sand 9.14 – 22.86 m: Chalk
TF56NW21	551780, 367470	Directly beneath overhead line between pylon LW33 and pylon LW34, off Marsh Lane	<ul style="list-style-type: none"> 0 – 2.80 m: Clay 2.80 – 3.30 m: Peat 3.30 – 3.50 m: Clay 3.50 – 8.20 m: Boulder Clay
TF56NW20	551830, 367500	Directly beneath overhead line between pylon LW33 and pylon LW34, off Marsh Lane	<ul style="list-style-type: none"> 0 – 4.80 m: Clay 4.80 – 8.50 m: Boulder Clay
TF56NW17	551880, 367530	Directly beneath overhead line between pylon LW33 and pylon LW34, off Marsh Lane	<ul style="list-style-type: none"> 0 – 2.40 m: Clay 2.40 – 4.20 m: Peat with clay/Peaty Clay 4.20 – 10.00 m: Boulder Clay
TF56NW19	551940, 367560	Directly beneath overhead line between pylon LW33 and pylon LW34, off Marsh Lane	<ul style="list-style-type: none"> 0 – 1.50 m: Clay 1.50 – 2.50 m: Peaty Clay 2.50 – 5.10 m: Clay 5.10 – 5.80 m: Peaty Clay 5.80 – 7.40 m: Boulder Clay
TF25SE13	529810, 351440	On the edge of the draft Order Limits adjacent to access routes east of pylon LW129, north west of Frithville	<ul style="list-style-type: none"> 0 – 0.80 m: Topsoil 0.80 – 3.50 m: Alluvium 3.50 – 4.00 m: Peat 4.00 – 4.90 m: Silt 4.90 – 5.50 m: Sandy Gravel 5.50 – 18.00 m: Till
TF23SE5	527280, 331770	South east of pylon LW193, at Bicker Haven, east of Gosberton	<ul style="list-style-type: none"> 0 – 0.60 m: Topsoil 0.60 – 1.80 m: Silty Sandy Clay 1.80 – 5.50 m: Clayey Sand
TF23SE12	528190, 330740	South of pylon LW197, north east of Surfleet Seas End	<ul style="list-style-type: none"> 0 – 12.19 m: Sandy Silt/Silty Sand
TF23SE11	528460, 330460	South of pylon LW198, north east of Surfleet Seas End	<ul style="list-style-type: none"> 0 – 0.30 m: Topsoil 0.30 – 1.22 m: Sandy Clay

Borehole ID	Location (E,N)	Location Description	Stratigraphy
			<ul style="list-style-type: none"> 1.22 – 10.06 m: Clayey/Silty Sand

- 7.5.26 It should be noted that the peat identified within several boreholes in **Table 7.2**, is not located within the recorded peat areas from published geological mapping (Ref 11), west of pylon LW12 and in one large area between pylons LW79 and LW98. Given its limited thickness it is likely that this represents localised layers of peat within other superficial deposits (e.g. Tidal Flat deposits).
- 7.5.27 No Local Geological Sites or sites nationally designated for their geological importance (e.g SSSI) are located within the Section 4 Study Area.
- 7.5.28 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 4 Figure 7.2 Superficial Geology** should be made for the areas affected by the classifications described.
- 7.5.29 The Tidal Flat deposits are classified as Class D in relation to compressibility, meaning that compressibility and uneven settlement hazards are probably present. A large area between pylons LW79 and LW98 where peat is recorded is classified as Class E for compressibility, defined as ‘highly compressible strata are present’.
- 7.5.30 Medium plasticity clays (classified as Class C for shrink-swell clays) and running sands designated as Class D (running sand conditions are ‘probably present’), are recorded across the majority of Section 4, associated with the Tidal Flat deposits.
- 7.5.31 The bedrock geology in the north of Section 4 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 north of the Section 4 Study Area.
- 7.5.32 An area of saltmarsh is recorded in the far south of Section 4 within the draft Order Limits on either side of the River Welland, east of Surfleet. This area is classified by the EA as Mid-Low degree or frequency of immersion in seawater.

Hydrogeology

- 7.5.33 The superficial deposits within the Section 4 Study Area have the following aquifer designations:
- Secondary A Aquifer:
 - Glaciofluvial deposits – present in localised areas within the north of Section 4, but not beneath any pylon locations.
 - Secondary Undifferentiated Aquifer:
 - Glacial Till – present within the north of Section 4, beneath pylons LW5 to LW8, LW15, LW16 and LW18, and in one localised area within the centre of Section 4 within an area of indicative temporary highway improvements.

iii. Unproductive Strata:

- Tidal Flat deposits – present widespread across the northern third of Section 4 beneath pylons LW9 to LW14, LW17, LW19 to LW78, then again from Stickney to the south through the remainder of Section 4 beneath pylons LW99 to LW199; and
- Peat – present in one localised area within the north of Section 4 west of pylon LW12 and in one large area across the Section 4 Study Area from Thorpe Fen to Stickney beneath pylons LW79 and LW98.

7.5.34 The bedrock within the Section 4 Study Area has the following aquifer designations:

i. Principal Aquifer:

- Welton Chalk Formation – present in the far north of Section 4 from pylon LW5 to LW15;
- Ferriby Chalk Formation – present in the north of Section 4 from Bilsby to Orby Marsh from pylon LW16 to LW33;
- Sandstone of the Carstone Formation – present in one area in the north of Section 4 between Orby and Burgh le Marsh from pylon LW34 to LW38 and pylon LW41; and
- Spilsby Sandstone Formation – present as a localised deposit within the north of Section 4 from pylon LW57 to LW62.

ii. Secondary B Aquifer:

- Interbedded mudstone and limestone of the Claxby Ironstone Formation, Tealby Formation and Roach Formation – present to the east and south of Burgh le Marsh within the north of Section 4 from pylon LW39 to LW40 and pylon LW42 to LW56.

iii. Unproductive Strata:

- Mudstone of the Kimmeridge Clay Formation – present within the centre of Section 4 between Thorpe Culvert and Frithville from pylon LW63 to LW131;
- Mudstone of the Ampthill Clay Formation – present within the centre of Section 4 between Frithville and Fenhouses from pylon LW132 to LW165;
- Mudstone and siltstone of the West Walton Formation – present in the south of Section 4 between Fenhouses and Burtoft from pylon LW166 to LW181; and
- Mudstone of the Oxford Clay Formation – present in the far south of Section 4 from pylon LW182 to LW199.

7.5.35 The designations and spatial distribution of the superficial and bedrock aquifers within the Section 4 Study Area are shown on **PEI Report Volume 2 Part B Section 4 Figure 7.5 Aquifer Designations – Superficial Deposits** and **PEI Report Volume 2 Part B Section 4 Figure 7.6 Aquifer Designations – Bedrock Geology** respectively. 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.
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 consist of strata with low permeability that naturally offer protection to any aquifers that may be present beneath.

7.5.36 BGS borehole records (Ref 11) were reviewed within the draft Order Limits 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 chalk aquifer of between 10 and 15 m within the north of the Section 4 Study Area, primarily comprising Glacial Till and Tidal Flat deposits. The BGS report on the Chalk Aquifer System of Lincolnshire (Ref 16) indicates that the chalk strata within this region is typically confined by the Glacial Till deposits.

7.5.37 The north of Section 4 is located within the South Lincolnshire Chalk Unit groundwater body, which has been classified by the EA as having Poor status in 2019, due to poor nutrient management from agriculture. A small area of Section 4 (between pylons LW57 and LW61) is located within the Spilsby Sandstone Unit groundwater body, which has been classified by the EA as having Poor status in 2015, although there are no published reasons for this classification. From pylon LW61 to the south through Section 4 to pylon LW199, the Section 4 Study Area is not located within any groundwater catchments, due to the unproductive nature of the strata within these areas.

7.5.38 The Section 4 Study Area is not located within any drinking water safeguard zones for groundwater. A small area within the northern end of the Section 4 Study Area enters into the Lincolnshire Chalk nitrate vulnerable zone (NVZ) designated for groundwater. No other NVZs designated for groundwater are present within the Section 4 Study Area.

Groundwater levels

7.5.39 The BGS does not hold any records for groundwater levels within the Section 4 Study Area within their online published records. The closest borehole with groundwater

level information in the BGS records is located approximately 18 km west of the Section 4 Study Area north west of Spalding and data from this borehole is not considered relevant to the baseline conditions within Section 4, so has not been referenced within this assessment.

- 7.5.40 The EA also does not hold any records for groundwater levels within the Section 4 Study Area. The closest borehole monitored by the EA for groundwater levels is located approximately 2.85 km north of the draft Order Limits for Section 4 (borehole reference Washdyke Bridge, Beesby (6/104)), which monitors the groundwater levels within the Southern Lincolnshire Chalk bedrock. Topographical mapping shows the north of Section 4 as lying at a similar topographic elevation to that of the monitoring borehole. The groundwater levels within this borehole are shown to be variable, ranging between -0.5 and 2.1 m AOD (0.2 and 2.7 m bgl), with a consistent seasonal variation and peak groundwater levels recorded within the summer months. Overall, the average groundwater level within this borehole is gradually increasing over time. Whilst a log from the borehole is not available, it is in a location where Glacial Till superficial deposits are mapped to overlie the chalk. The recorded shallow groundwater levels in the monitoring standpipe may reflect confined sub-artesian groundwater at depth in the chalk, rather than the presence of very shallow groundwater.

Source Protection Zones

- 7.5.41 A SPZ I (inner catchment) is located within the north of the Section 4 Study Area, part of which is within the draft Order Limits. Pylon LW5 is located immediately adjacent to the SPZ I. Parts of the corresponding SPZ II (outer catchment) are also located within the draft Order Limits in Section 4, extending up to pylon LW6. A second area of SPZ II is located in the east of the Section 4 Study Area approximately 560 m east of pylon LW8. The full width of the Section 4 Study Area is located within an SPZ III (total catchment) area up to pylon LW44, with further isolated areas to the north through Irby in the Marsh also within SPZ III. The southern two thirds of Section 4 is not located within a SPZ designated area, due to the unproductive strata within these areas as described above. The spatial distribution of SPZs within the Section 4 Study Area are shown on **PEI Report Volume 2 Part B Section 4 Figure 7.4 Groundwater Source Protection Zones**.

Abstractions

- 7.5.42 There is one groundwater abstraction within the Section 4 Study Area (abstraction reference 4/29/15/*G/0097), which is a public water supply abstraction located in the north of the Section 4 Study Area (but outside the draft Order Limits) in the area to the east of Bilsby.
- 7.5.43 Records provided by East Lindsey District Council, Boston Borough Council and South Holland District Council have not identified any private water supplies within the Section 4 Study Area.

Environmental setting

- 7.5.44 Zetica UXO mapping shows the Section 4 Study Area as lying entirely within an area of Low bomb risk, with no strategic targets identified.
- 7.5.45 A historical landfill named Surfleet Bank Landfill is located within the Section 4 Study Area, approximately 770 m south west of pylon LW197 and approximately 80 m

south of the draft Order Limits in an area of a construction access route. This is recorded as an inert landfill and accepted waste between 1993 and 2006. There are no recorded current landfills within the Section 4 Study Area.

7.5.46 The following waste exemptions are located within the Section 4 Study Area:

- i. WEX254020 – located immediately west of the draft Order Limits and approximately 220 m west of pylon LW41, recorded for use of waste in construction on a farm;
- ii. WEX237643 – located within the draft Order Limits and approximately 170 m east of pylon LW110, recorded for use of waste in construction on a farm;
- iii. EPR/DE5944VE/A001 and EPR/EE5449VV/A001 – two waste exemptions recorded in one location with different reference IDs but relating to the same site, located approximately 170 m south east of pylon LW133 within the draft Order Limits. These are recorded for storage of sludge for non-agricultural waste only;
- iv. WEX110662 – located within the draft Order Limits approximately 120 m north of pylon LW148, recorded for storage of sludge on a farm; and
- v. EPR/DE5348EA/A001, EPR/KE5942NH/A001 and WEX005712 – three waste exemptions recorded in one location with different reference IDs but relating to the same site, located on the edge of the draft Order Limits and approximately 100 m north west of pylon LW148. These are recorded for storage of sludge on a farm for non-agricultural waste only.

7.5.47 A recorded Waste Site is located on the Section 4 Study Area boundary, to the south of pylons LW79 and LW80, comprising a composting facility.

7.5.48 Two recorded Waste Sites are present off Northlands Road, north of pylon LW125, labelled in the Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (Ref 4) as a 'Department of Trucking vehicle depollution' site and transfer station. These are associated with a waste recycling site, noted within the Current Land Use section above.

7.5.49 A further Waste Site is recorded within the south west of the Section 4 Study Area, to the north of Surfleet Seas End, off Surfleet Bank, approximately 260 m south of the draft Order Limits and approximately 800 m south west of pylon LW197. This Waste Site is labelled in the Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (Ref 4) as Boardsides Recycling. Aerial imagery indicates the presence of several warehouses and a compound/storage area at this site.

7.5.50 East Lindsey District Council has provided a list of potentially contaminated sites within their district area as part of a data request received on 3 December 2024. There were no features provided within this dataset beyond those discussed within the Historical Land Use section above. Additional records were provided for the area of the former RAF station (including a former military airfield at RAF Spilsby), to the north of Irby in the Marsh, to the north of pylon LW62. These records indicate former land uses across this area including sewage and quarrying of sand and gravel, although the historical mapping reviewed as part of this assessment only indicates the airfield.

7.5.51 The locations of these features are shown on **PEI Report Volume 2 Part B Section 4 Figure 7.7 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

- 7.5.52 Boston Borough Council has provided a list of historical contaminated land sites within their district area as part of a data request received on 6 November 2024. Again, this information did not provide any further potentially contaminated features above those detailed within the Historical and Current Land Use sections above.
- 7.5.53 South Holland District Council did not provide any information on potentially contaminated sites within their district area for use within this assessment.

Pollution incidents

- 7.5.54 The EA has reported a total of 88 historical pollution incidents within the Section 4 Study Area, dating between 2001 and 2023. The details of the incidents within the draft Order Limits are summarised as follows:
- There are no recorded Category 1 (major) or Category 2 (significant) pollution incidents to land or water within the draft Order Limits.
 - There are seven recorded Category 3 (minor) incidents within the draft Order Limits, three to water, three to land and one to both land and water. These relate to unauthorised waste activities, containment failure, fly tipping and fires, and detail various contaminants.
 - There are two Category 4 (no impact) incidents within the draft Order Limits, one of which relates to unauthorised discharge of construction and demolition materials and the other has no determined cause or pollutant.
- 7.5.55 The remaining 79 historical pollution incidents within the Section 4 Study Area are located outside the draft Order Limits. Of these, 22 historical pollution incidents are recorded only for air and have no recorded impacts on land or water, therefore these have not been referenced further within this assessment. The remaining 57 historical pollution incidents have been summarised as follows:
- There are no recorded Category 1 (major) pollution incidents within the Section 4 Study Area.
 - There are a total of four Category 2 (significant) pollution incidents within the Section 4 Study Area. These are as follows:
 - One Category 2 (water) - containment failure of vegetable cuttings from manufacturing processes, located approximately 510 m north of pylon LW51 and approximately 370 m north of the draft Order Limits;
 - One Category 2 (land) and Category 3 (water) - illegal waste activities for commercial waste, located approximately 370 m north east of pylon LW124 and approximately 100 m north of the draft Order Limits;
 - One Category 2 (land) – five records of the same incident recorded as unauthorised waste activities involving various waste types including commercial, tarry waste, soils and clay, located approximately 300 m south east of pylon LW135 and directly adjacent to the draft Order Limits; and
 - One Category 2 (water) - containment failure of silage liquors, located approximately 350 m east of pylon LW155 and approximately 60 m east of the draft Order Limits.
 - There are 45 recorded Category 3 (minor) pollution incidents within the Section 4 Study Area. These relate to a large range of sources, including contaminant failure, pipe failure, inadequate control, unauthorised waste activities,

unauthorised discharges and fires, and a wide variety of pollutants including, but not limited to, sewage, smoke, oils, asbestos, contaminated water.

- iv. There are eight Category 4 (no impact) pollution incidents within the Section 4 Study Area. These relate to a range of causes including fires, illegal waste activities, fly tipping and petrol stations, for a range of associated contaminants.

Discharge consents

7.5.56 There are a number of discharge consents within the Section 4 Study Area, a number of which are not relevant to this topic as they involve discharge to surface water. These are discussed within **PEI Report Volume 2 Part B Section 4 Chapter 6 Water Environment and Flood Risk**. Those relevant to this topic (i.e. discharge to land or groundwater) are listed below:

- i. EPRDB3997A – located approximately 220 m east of the draft Order Limits, 850 m north east of pylon LW8, discharge into land from a domestic property including a farm house;
- ii. PR3LFU1340 – located within the draft Order Limits, approximately 230 m east of pylon LW33, discharge into land from a domestic property including a farm house;
- iii. PR3LF53 – located approximately 350 m east of the draft Order Limits, 480 m south east of pylon LW38, discharge into land from a domestic property including a farm house;
- iv. PR3LFU1363 – located approximately 300 m north of the draft Order Limits, 400 m north of pylon LW69, discharge into land from a domestic property including a farm house; and
- v. PR3LFU3435 – located approximately 140 m north west of the draft Order Limits, 200 m north west of pylon LW137, discharge into land associated with an education or training venue facility, although the permit holder is not listed.

7.5.57 The locations of the discharge consents are shown on **PEI Report Volume 2 Part B Section 4 Figure 7.7 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

Minerals

7.5.58 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. There are no recorded safeguarded minerals or safeguarded areas within the Section 4 Study Area.

7.5.59 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 5).

Future Baseline

- 7.5.60 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.
- 7.5.61 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 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.
- 7.5.62 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.
- 7.5.63 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 north of the Section 4 Study Area.
 - iii. Change 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.
- 7.5.64 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 4. 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. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 19) 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 4. This has further contributed to the avoidance or reduction of the potential environmental impacts on the Project. Specific examples relevant to the assessment include the careful routing and siting of pylon LW5 outside of a SPZ I area (surrounding groundwater abstraction 4/29/15/*G/0097, a drinking water abstraction for Anglian Water) and siting of the pylon within the surrounding SPZ II area.

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 include:
- i. GH01: Intrusive ground investigations and assessment will be undertaken prior to construction which will inform appropriate geotechnical design in relation to the Study Area/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 EA guidance 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination'. (Ref 20).
 - 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 21).
 - v. GH05: Any temporary dewatering activities during construction will be undertaken in accordance with EA guidance (Ref 8), 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 22).

- 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 23), 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 Environment Agency, 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 Material 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 24). 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 mitigations 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 Section 4 Study Area, as a result of construction, maintenance and/or operational activities.
- 7.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described.
- 7.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 7.4**, based upon the assessment scope detailed in **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 and engagement. It should be 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 upon the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 4, as a result of the construction phase of the Project.

Operation and maintenance

- 7.7.7 Based upon the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 4, as a result of the operation and maintenance phase of the Project.

Likely Non-Significant Effects

- 7.7.8 Further to the approach described in Paragraph 7.7.4, a detailed explanation of the non-significant effects on the chalk and sandstone aquifers 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 aquifers within the Section 4 Study Area.

Construction

Chalk and Sandstone Aquifers and Source Protection Zones

- 7.7.9 The north of the Section 4 Study Area is underlain by chalk and sandstone bedrock strata and is located within SPZs, although no pylons are located within SPZ I areas.
- 7.7.10 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 (correct 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 I areas), GH10 (de-icer, salt and fuel storage outside of SPZ I areas wherever possible) and GG21 (materials movement controls). The expectation of predominantly low permeability superficial cover across the Section 4 Study Area also provides further assurance of protection in this regard.
- 7.7.11 In relation to the risk of mobilising pre-existing contamination through construction activities, the primary instance in which adverse effects could occur would be the installation of piled foundations for pylons, which may introduce a risk of creating a pathway for vertical migration and mixing of groundwater between different geological strata. Typically, the construction of pylons would not involve ground disturbance in locations of potential historical land contamination (i.e. those locations with moderate or above risk previous land uses, as identified in **PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification**) in the areas underlain by the chalk and sandstone aquifers. Furthermore, the risk of adverse effects during piling 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 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, informed by adequate pre-construction ground investigation (control measure GH01). Examples include the selection of specific piling techniques that prevent the creation of open pathways and minimising any physical downwards transport of soils. Additionally, control measure GH11 would ensure that a suitable protocol is in place in the instance of encountering unexpected contamination at any stage during construction.
- 7.7.12 There are two locations where the Project would involve undergrounding of existing DNO assets on land identified to have previous potentially contaminative uses (i.e. land with moderate or above risk previous land uses, as identified in **PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification**). These are a railway (between pylons LW152 and LW153), and the waste recycling and disposal site with a Category 2 historical pollution incident to the north of pylon LW125. These works would be subject control measures GH01 and GH09 (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) to ensure suitable design and controls to prevent unacceptable mobilisation of pre-existing contamination.
- 7.7.13 In addition to the chemical/contamination effects discussed above, physical effects on the SPZ and chalk and sandstone aquifers require consideration in relation to any construction activities that could mobilise sediment/turbidity in the bedrock. The

majority of the construction work will involve near surface construction activities that would not be expected to interact with the bedrock, given the expected nature and thickness of the superficial deposits. Exceptions may include piling for pylon foundations or horizontal directional drilling (HDD) to underground existing lower voltage utilities. Any piling work will be controlled in accordance with control measure GH02 (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 an SPZ I or SPZ II. 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 or sandstone is anticipated, although this is subject to confirmation as the design progresses. As a general groundwater protection requirement, should HDD work be required then this would be subject to control measure GH09.

- 7.7.14 Given the expected depth of the chalk and sandstone aquifers 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.
- 7.7.15 Based on consideration of all of the above potential effects (release of contamination from construction activities, mobilisation of pre-existing contamination by construction activities, increase in sediment/turbidity in the aquifers as a result of construction, and changes in groundwater levels as a result of construction activities), it is concluded that the magnitude of change (impact) on the chalk and sandstone aquifers and SPZ, for all effect types identified in the Scoping Report (Ref 6), is negligible. Together with a high receptor sensitivity, this shows that the Project will have a negligible effect on these receptors.

[Groundwater Abstraction 4/29/15/*G/0097](#)

- 7.7.16 There is one groundwater abstraction within the Section 4 Study Area, which is located outside the draft Order Limits in the area to the east of Bilsby. This is a public water supply abstraction and has corresponding SPZ I, II and III zones which enter the draft Order Limits.
- 7.7.17 BGS borehole records within this area indicate a superficial cover of approximately 22 m comprising clay with sand layers, overlying chalk bedrock, with a resting encountered water level of approximately 4 ft (1.2 m) below ground level, possibly suggesting sub-artesian confined groundwater in the chalk (assuming that this is the screened geology).
- 7.7.18 Construction activities would be carried out within the SPZ II for this abstraction, including 11 pylons (LW1, LW2, LW3, LW4, LW5, LW6, LB17, LB18, LB19, LB20 and LB21) and undergrounding of approximately 540 m of existing low voltage assets (three short sections totalling 540 m rather than a single 540 m section of cabling). None of the construction activities associated with the Project are within 200 m of the abstraction. Other than piling (if required) for the pylon foundations and potentially HDD work for the undergrounding of existing DNO assets, construction work would be expected to be restricted to the superficial deposits rather than intersecting the chalk. Construction in the superficial deposits is unlikely to present a risk to the abstracted aquifer, as the superficial deposits are primarily cohesive in composition which will reduce hydrogeological connectivity with the chalk (e.g. minimise the potential for the downwards transport of solids mobilised by construction activities).

The risk of adverse effects on the chemical quality of the abstracted aquifer from construction work in the superficial deposits would be sufficiently mitigated by the implementation of control measures GH01, GH04, GH06, GH08, GH10, GH11 and GG21 (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**).

- 7.7.19 Should piling activities be required to intersect the chalk (following engineering design), then this would be controlled under control measures GH01, GH02 and GH11 provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) such that the resulting effects on water quality within the aquifer in proximity to the abstraction would be negligible, which is not considered to be significant.
- 7.7.20 In relation to undergrounding of existing DNO assets, there are no circumstances identified to date where HDD directly in chalk or sandstone is anticipated, as this would generally only be used where engineering design indicated undergrounding by trenching to be unfeasible, although this is subject to confirmation as the design progresses. Should further design identify such requirements, then these would be controlled under control measures GH01, GH09 and GH11 provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) such that the resulting effects on water quality within the aquifer in proximity to the abstraction would be negligible, which is not considered to be significant.
- 7.7.21 In summary, the effects on the abstraction are considered to be negligible and not significant because the Project involves construction activities at a distance of over 200 m away that would not be expected to have an interaction with the abstracted chalk aquifer (due to the anticipated depth of the aquifer and superficial geology cover), with the possible exception of piling for pylon foundations (the effects of which can be sufficiently mitigated through control measures within the Preliminary CoCP (**PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**)).
- 7.7.22 For completeness, **Table 7.4** below 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 effects Geology and Hydrogeology – Section 4

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
Construction					
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>A number of potential contamination features have been identified within the draft Order Limits for Section 4 with a moderate or greater contamination potential, including current and historical railways. The contamination sources within the Section 4 Study Area are summarised within PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification.</p> <p>None of the potential contamination sources are located within pylon working areas and the majority are not within areas where undergrounding of existing Distribution Network Operator (DNO) assets may be required, so would undergo either no ground disturbance or minimal ground disturbance (e.g. oversailed by overhead lines or crossed by construction accesses). The exceptions to this are a current railway (between pylons LW152 and LW153), and the waste recycling and disposal site with a Category 2 historical pollution incident to the north of pylon LW125.</p>

¹ The Peat, Tidal Flat deposits and Unproductive bedrock (Kimmeridge Clay Formation, Ampthill Clay Formation, West Walton Formation, Oxford Clay Formation) have not been included within this assessment as groundwater aquifers as they are designated as unproductive strata and are not considered to yield or store any groundwater based on their classification. Geological Conservation Sites have also not been included within this assessment due to their absence within the Section 4 Study Area.

² Ground gas effects are not included for the operational phase, as there are no receptors within this Section (i.e. no permanent new enclosed spaces/structures in which ground gas could accumulate).

Receptor ^{1,2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
					With the use of appropriate personal protective equipment (PPE) and the implementation of control measures (GH01 – pre-construction ground investigation, GH11 – protocol for unexpected contamination, and GG21 – control of earthworks and materials movement, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), the exposure pathways would be reduced/prevented such that the effect on construction workers is not considered to be significant.
		High (adjacent land users)	Negligible	Negligible – not significant	<p>Potential contamination sources within the draft Order Limits and Section 4 Study Area have been identified within PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification.</p> <p>With the implementation of control measures (GH01, GH11 and GH06 – dust and leachate control) detailed within the Preliminary CoCP (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), the exposure pathways would be reduced/prevented such that the effects on adjacent land users is not considered to be significant.</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
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 – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation), Sandstone bedrock (Carstone Formation and Spilsby Sandstone Formation)</p> <p>Medium – Glacial Till and Glaciofluvial deposits</p> <p>Low – Claxby Ironstone Formation, Tealby Formation and Roach Formation bedrock</p>	Negligible	Negligible – not significant	<p>Potential contamination sources identified within the Section 4 Study Area (PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification) have the potential to negatively affect sensitive aquifers if pre-existing contamination is mobilised during construction. None of these features are within pylon working areas but some are located nearby or within areas of undergrounding for existing DNO assets.</p> <p>Control measure GH02 provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) includes the use of suitable piling methods, in accordance with a foundation works risk assessment, to prevent pathway creation for contamination into the sensitive aquifers.</p> <p>Control measure GH09 within the Preliminary CoCP would provide suitable controls for undergrounding of existing DNO assets, should HDD be required for this.</p> <p>With the implementation of control measures (GH01, GH02, GH09 and GH11) detailed within the Preliminary CoCP, the exposure 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	High – Abstractions used for public drinking water supply	Negligible	Negligible – not significant	There is one groundwater abstraction within the Section 4 Study Area located outside the draft Order Limits in the area to the east of Bilsby. None of the potential contamination sources identified in PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification are within

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	the ground during construction that is affected by pre-existing contamination				<p>proximity to the abstraction. The potential sources are at least 2 km from the abstraction, so disturbance of pre-existing contamination in proximity of the abstraction is not anticipated.</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 measures GH02 and GH09 provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice, the pathways would be reduced/prevented such that the effects on this abstraction would not be 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 foundations for new structures) and changes to groundwater flows caused	High – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation), Sandstone bedrock (Carstone Formation and Spilsby Sandstone Formation)	Negligible	Negligible - not significant	<p>High sensitivity bedrock within the north of Section 4 comprises sandstone and chalk strata, which are recorded to be overlain by approximately 10 m of typically cohesive superficial deposits.</p> <p>Excavations for pylon construction and open trenching for undergrounding of existing DNO assets would be expected to be within the superficial deposits and not within the chalk bedrock. Therefore, it is not anticipated that pumping/dewatering from the bedrock aquifer will be required to facilitate the construction of pylons.</p> <p>The majority of construction work would be undertaken within the superficial deposits and not within the chalk bedrock. The exception to this is piling for pylon foundations or undergrounding of existing lower voltage assets through HDD. In relation to those activities, control measures (GH02 and GH09, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice)</p>

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	by construction activities and generation of solids through ground disturbance	Medium – Glacial Till and Glaciofluvial deposits	Low	Minor – not significant	<p>would prevent migration of solids towards the underlying chalk and sandstone aquifers and adequately control any release of solids from the chalk and sandstone. Therefore, there is not considered to be a significant effect.</p> <p>Superficial deposits of medium sensitivity underlie isolated areas within the north and centre of Section 4. The groundwater levels within these deposits are currently unknown, and no groundwater level information within Section 4 was available from the EA. Therefore, for the purposes of this assessment, a worst-case scenario has been assumed of shallow groundwater within these deposits.</p> <p>Section 4 involves overhead line, pylons and DNO undergrounding only. It is therefore considered that substantial dewatering would not be required during the construction phase, but that limited temporary groundwater control/pumping during pylon foundation excavations or open trenching for undergrounding of existing DNO assets may be needed. Any such temporary groundwater control/pumping would be undertaken in accordance with EA guidance (control measure GH05, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice).</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>

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
		Low – Claxby Ironstone Formation, Tealby Formation and Roach Formation bedrock	Negligible	Negligible – not significant	<p>The low sensitivity bedrock aquifers are recorded to be overlain by approximately 10 m of typically cohesive superficial deposits.</p> <p>Excavations for pylon construction and open trenching for undergrounding of existing DNO assets would be expected to be within the superficial deposits and not within the bedrock strata.</p> <p>In areas of piling for piled foundations or undergrounding through HDD for existing DNO assets (if required), the implementation of control measures (GH02 and GH09, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) would mean that the effects on the low sensitivity bedrock aquifers are not significant.</p>
Groundwater Abstractions	Physical effects on abstractions, such as depletion of the aquifer and increased solids/turbidity through dewatering activities (e.g. during excavations for foundations for new structures) an	High – Abstractions used for public drinking water supply	Negligible	Negligible – not significant	<p>There is one high sensitivity groundwater abstraction within the Section 4 Study Area, located outside the draft Order Limits in the area to the east of Bilsby. The SPZ I, SPZ II and SPZ III areas for this abstraction extend into the draft Order Limits.</p> <p>As Section 4 includes overhead line, pylons and DNO undergrounding only, it is not considered that substantial dewatering would be required during the construction phase in proximity to this abstraction. Temporary groundwater control/pumping during pylon foundation excavations and open trenching for undergrounding of existing DNO assets would be undertaken in accordance with EA guidance (control measure GH05, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) to ensure physical effects are appropriately minimised and controlled. Furthermore,</p>

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	d changes to groundwater flows caused by construction activities and generation of solids through ground disturbance				<p>any temporary pumping of groundwater during construction would be expected to be from the superficial deposits rather than the abstracted bedrock aquifer.</p> <p>The construction activities in Section 4 may generate solids, creating a risk of a negative impact on groundwater via increased turbidity. Again, the majority of construction activities would be expected to be within the superficial deposits rather than intersecting the abstracted aquifer, with those that may intersect the aquifer (for example, piling for pylon foundations) subject to suitable control measures (GH02). The implementation of the control measures (GH02, GH09 and GG21) within the Preliminary CoCP would sufficiently mitigate any physical effects on abstracted groundwater from ground disturbance during construction activities.</p>
Groundwater Aquifers	Physical and chemical effects on groundwater, increased solids/turbidity and reduction in chemical quality as a result of the discharge of groundwater arising from dewatering or	High – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation), Sandstone bedrock (Carstone Formation and Spilsby Sandstone Formation)	Negligible	Negligible – not significant	Any discharge of water during construction (e.g. from pylon foundation excavations) to land would be of unpolluted water only and undertaken in accordance with control measure W05 (compliance with discharge conditions, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice). Discharges directly to groundwater are not anticipated. Therefore, there is not considered to be a significant effect.
Groundwater Abstractions		and Abstractions used for public drinking water supply			

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	surface water control	Medium – Glacial Till and Glaciofluvial deposits Low – Claxby Ironstone Formation, Tealby Formation and Roach Formation bedrock			
Soil/land quality	Deterioration in chemical quality of the land through release of contamination by construction activities	Medium	Negligible	Negligible – not significant	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. 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 PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), the effects on soil/land quality are not significant.
Groundwater Aquifers	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g.	High – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation), Sandstone bedrock (Carstone Formation and Spilsby Sandstone Formation)	Negligible	Negligible – not significant	Published borehole records within Section 4 indicate that the high and low sensitivity bedrock strata are overlain by approximately 10 m of primarily low permeability superficial deposits, which are anticipated to be acting as a protective cover from surface releases of contamination. The medium sensitivity superficial deposits are localised within the north and centre of Section 4 and are more susceptible to releases of contamination from ground level than deeper aquifers.

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	loss of fuels to an aquifer)	Medium – Glacial Till and Glaciofluvial deposits Low – Claxby Ironstone Formation, Tealby Formation and Roach Formation bedrock			<p>There are multiple recorded areas where undergrounding of existing lower voltage assets may be required within the Section 4 Study Area. Undergrounding of existing assets by HDD would generally only be used in cases where engineering design indicated trenching to be unfeasible. If HDD is needed, then a Hydrogeological Risk Assessment (part of 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, GH06, GH08, GH09 and GH10), provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), 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>
Groundwater Abstractions	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g.	High – Abstractions used for public drinking water supply	Negligible	Negligible – not significant	<p>There is one high sensitivity abstraction within the Section 4 Study Area, located outside the draft Order Limits in the area to the east of Bilsby. Control measures GH08 and GH10, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) include specific construction control measures for works within SPZ I 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>

Receptor ^{1,2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	loss of fuels to an aquifer)				<p>With the implementation of these control measures and additional measures (GH03, GH04, GH06 and GH09) within the Preliminary CoCP, releases of contamination from construction activities should be adequately prevented and the exposure pathways would be reduced/prevented such that the effects on the high sensitivity 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 their requirements.</p>
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>Several potential contamination features have been identified within the Section 4 Study Area (within PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification). Features identified as potential ground gas sources include areas of recorded ground workings, brickworks and a landfill. Where Made Ground deposits are expected associated with these features, there is potential for ground gas to be generated. There is also potential for ground gas associated with peat deposits, recorded across the centre of Section 4 and a localised area within the north, and within peat horizons in the Tidal Flat deposits across the Section 4 Study Area.</p> <p>As Section 4 includes overhead line, pylons and DNO undergrounding only, it is not considered that there would be any enclosed structures required for the construction phase, but adjacent existing structures (e.g. farms, residential properties) are present in proximity to the draft Order Limits.</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>With the use of appropriate PPE and the implementation of control measures (GH01 and GH02, provided in PEI Report Volume 3 Part B Appendix 5A Preliminary Code of Construction Practice) as well as suitable construction of temporary structures (i.e. construction compounds) to prevent accumulation of ground gas, the exposure pathways would be identified and mitigated such that the effect on construction workers and adjacent land users is not considered to be significant.</p> <p>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.</p>
Structures	Explosion as a result of ingress and accumulation of ground gas within buildings or other confined spaces	Medium	Negligible	Negligible – not significant	<p>Limited areas of possible ground gas-generating material were identified within the assessment of baseline conditions, including Made Ground associated with historical features (including a landfill), and organic material within peat and Tidal Flat deposits.</p> <p>As Section 4 involves overhead line, pylons and DNO undergrounding only, it is not considered that there would be any enclosed structures required for the construction phase, but adjacent existing structures (e.g. farms, residential properties) are present in proximity to the draft Order Limits.</p> <p>With the implementation of control measure GH01 and GH02, provided in PEI Report Volume 3 Part B Appendix 5A Preliminary Code of Construction Practice) and suitable construction of any temporary structures to prevent ground gas accumulation and migration to adjacent structures, any exposure</p>

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>pathways would be identified and mitigated such that effects on structures are not significant.</p> <p>The FWRA (within control measure GH02) would consider migration of ground gas if disturbed during construction, to ensure that there are no risks to occupants/users of nearby buildings.</p>
Adjacent land users, construction workers (Human health) Structures	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.
Soil/land quality Adjacent land users, construction workers (Human health) Structures	Deterioration in chemical quality of the land causing stability issues through dissolution of soluble rocks due to changed patterns of groundwater flow/discharge s caused by	Medium	Negligible	Negligible – not significant	<p>The bedrock beneath the northern third of the Section 4 Study Area comprises chalk strata, which can be susceptible to dissolution through changes in the groundwater regime, which could affect structures, the soil/land quality and potentially human health through instability issues.</p> <p>The thickness of the superficial deposits within the area of chalk bedrock is anticipated to be approximately 10 m or greater. As such, it is not considered likely that construction activities associated with pylon construction would affect the deeper bedrock strata and it is not considered that discharges to the bedrock would be undertaken within the Project.</p>

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	construction activities				Piling work would not be expected to affect groundwater flow patterns and induce dissolution, with this activity subject to control measure GH02, provided in PEI Report Volume 3 Part B Appendix 5A Preliminary Code of Construction Practice). With the implementation of control measures GH01, 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/discharge s caused by construction activities	High – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation) High – Abstractions for public drinking water supply	Negligible	Negligible – not significant	<p>The aquifer under consideration for this effect is the chalk bedrock within the north of the Section 4 Study Area, which is of high sensitivity, and the associated groundwater abstraction. It is not considered that discharges to or disturbance of this bedrock aquifer would be undertaken within Section 4, due to the anticipated thickness of superficial cover within the north of the Section 4 Study Area.</p> <p>Piling activities and horizontal directional drilling associated with undergrounding of existing lower voltage assets would be subject to control measures GH02 and GH09, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), which would include suitable risk assessment and engineering design such that these works would not affect groundwater flow patterns.</p> <p>Therefore, it is not considered that the construction could induce chalk dissolution that could affect the quality of groundwater in the chalk aquifer, and therefore there are no non-significant effects to assess. It is also noted that, even if shallow rock was to be locally present (not anticipated based on the available geological information), the scale of ground</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
					disturbance associated with pylon construction activities can, qualitatively, be considered such that this assessment would still apply.
Operation and Maintenance					
Groundwater Aquifers	Changes to infiltration and corresponding effects on groundwater levels as a result of the presence of new structures and surfaces	High – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation), Sandstone bedrock (Carstone Formation and Spilsby Sandstone Formation)	Negligible	Negligible – not significant	The Project within Section 4 comprises overhead line with pylons, as well as the undergrounding of existing lower voltage (DNO) assets. It does not include widespread areas of impermeable surfacing, such as new substation infrastructure.
Groundwater Abstractions		And Abstractions used for public drinking water supply			The bedrock is anticipated to have a superficial cover of approximately 10 m of primarily cohesive strata, which is likely to be of low permeability/infiltration capacity.
		Medium – Glacial Till deposits			The Project does not have the potential to change the existing infiltration regime in Section 4 to the extent that it would affect groundwater recharge, as any new impermeable surfacing for pylons will be minimal spatially. Therefore, the land within the draft Order Limits would generally retain its existing infiltration characteristics.
		Low – Claxby Ironstone Formation, Tealby Formation and Roach Formation bedrock			As such, the effects on the groundwater receptors (aquifers and abstractions) are not significant.
Future land users, adjacent land users	Harm to human health through exposure to contamination,	Medium	Negligible	Negligible – not significant	A number of previous land uses classified as having a moderate or higher risk of contamination have been identified within, and immediately adjacent to, the draft Order Limits in the initial contamination screening classification (as presented within PEI Report Volume

Receptor ^{1,2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	including dust and vapours, through disturbance of pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent maintenance or repair activities requiring excavations for inspections/access to utilities, below ground infrastructure or foundations)				<p>3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification), which could affect human health if disturbed during maintenance activities.</p> <p>Any ground disturbance associated with maintenance activities would be no greater than that associated with construction, which were determined not to be predicted to cause significant effects for Section 4. Additionally, there is minimal risk of encountering unexpected contamination during the maintenance phase, given that any such contamination would already be known from construction.</p> <p>It is considered that, with suitable health and safety measures, any risks to human health would be suitably mitigated. Therefore, the effects to human health (future land users and adjacent land users) are not significant.</p>
Groundwater Aquifers	Deterioration in chemical quality of the aquifers, through disturbance of	High – Chalk bedrock (Welton Chalk Formation and Ferriby Chalk Formation), Sandstone bedrock (Carstone Formation	Negligible	Negligible – not significant	There are a number of potential sources of contamination within the draft Order Limits or Section 4 Study Area, as detailed within the initial contamination risk classification (as presented within PEI Report Volume 3 Part B Section 4 Appendix 7A Initial Contamination Risk Classification) which

Receptor ^{1, 2}	Impact	Sensitivity/Importance /Value of Receptor	Magnitude of Change	Significance	Rationale
	pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent maintenance or repair activities requiring excavations for inspections/access to utilities, below ground infrastructure or foundations)	and Spilsby Sandstone Formation) And Abstractions for public drinking water supply Medium – Glacial Till and Glaciofluvial deposits Low – Claxby Ironstone Formation, Tealby Formation and Roach Formation bedrock			could affect the groundwater aquifers if disturbed during maintenance activities. Any contamination associated with these features would be known and understood from the construction phase and any work involving ground disturbance would be planned and undertaken accordingly, in compliance with suitable environmental controls, to prevent the release of contaminants to the sensitive aquifers. Maintenance activities are also typically much less intrusive than 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 the groundwater aquifers are not significant.

7.8 Monitoring

- 7.8.1 Although no significant effects have been identified within this assessment, given the hydrogeological sensitivity within the north of Section 4, 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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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 of the New Lincolnshire Connection Substation B to the Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 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 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 4 (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 4 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 4, 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 8.1 National Soil Map</p> <p>Figure 8.2 Provisional Agricultural Land Classification</p> <p>Figure 8.3 Detailed Agricultural Land Classification</p> <p>Figure 8.4 Woodland and Forestry Schemes</p> <p>Figure 8.5 Agri-Environment Schemes</p>
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Environmental 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.
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

Supporting Information	Description
	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 also interrelationships between the potential effects on Agriculture and Soils and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- PEI Report Volume 2 Part B Section 4 Chapter 2 Landscape** should be consulted in relation to the landscape setting (for example topography) which can influence land use in any given location;
 - PEI Report Volume 2 Part B Section 4 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);
 - PEI Report Volume 2 Part B Section 4 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;
 - PEI Report Volume 2 Part B Section 4 Chapter 7 Geology and Hydrogeology** should be consulted in relation to geology present within the Section and how the underlaying geology influences soil characteristics and how soil characteristics may influence groundwater recharge;
 - PEI Report Volume 2 Part B Section 4 Chapter 13 Summary** which provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment;
 - PEI Report Volume 2 Part C Route-wide Chapter 6 Agriculture and Soils** 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
 - 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

Legislation and National Policy

- 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

- 8.2.1 Regional and local plans or policies relevant to this assessment are as follows:
- i. East Lindsey District Council (2018). East Lindsey Local Plan Core Strategy (Ref 1):
 - Strategic Policy 10 (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.
 - ii. South East Lincolnshire Council (2019). South East Lincolnshire Local Plan 2011 – 2036 (Ref 2):
 - Policy 3: Design of New Development: this requires projects to minimise land take and to protect best and most versatile soils; and
 - Policy 31: Climate Change and Renewable and Low Carbon Energy: this requires projects to not create significant harm in relation to agricultural land take and the wider natural environment (which includes soils).

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 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**.
- 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 BMV land;
 - ii. Soil function; and
 - iii. Agricultural Landholdings.

8.4 Assessment Methodology

- 8.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Agriculture 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 presented 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 is being undertaken from January to October 2025 to determine the sensitivities of soils and the grades 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 a 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, construction compounds, would be reinstated following completion of construction activities. Land taken permanently during construction, for example, 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 It should be noted that provisional mapping of Section 4 identifies land belonging to a range of ALC Grades, however these classifications will be confirmed by detailed surveys before the final magnitude of effects can be calculated. 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.
- 8.4.10 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.

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 4, 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 and Appendices as found within **PEI Report Volume 2**:

- i. **PEI Report Volume 2 Part B Section 4 Figure 8.1 National Soil Map;**
- ii. **PEI Report Volume 2 Part B Section 4 Figure 8.2 Provisional Agricultural Land Classification;**
- iii. **PEI Report Volume 2 Part B Section 4 Figure 8.3 Detailed Agricultural Land Classification;**
- iv. **PEI Report Volume 2 Part B Section 4 Figure 8.4 Woodland and Forestry Schemes;** and
- v. **PEI Report Volume 2 Part B Section 4 Figure 8.5 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 the underlying bedrock geology present across Section 4 to be characterised as 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 mapped as being Devensian Till (Diamicton), a sedimentary superficial deposit formed between 11.6 and 11.8 thousand years ago during the Quaternary period.

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 4 (as shown in **PEI Report Volume 2 Part B Section 4 Figure 8.1 National Soil Map**) are described as follows:

- i. Holderness - consists mainly of slowly permeable fine loamy and moderately permeable coarse loamy soils on chalky till and glaciofluvial drift. It also includes 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. The soils are seasonally waterlogged slowly permeable soils, formed above 3 m Above Ordnance Datum (AOD) and prominently mottled above 40 cm depth. They have no relatively permeable material starting within and extending below 1 m of the surface. Holderness is found within the northern and central part of Section 4;

- ii. Wallasea 2 – deep, clayey soils that are calcareous in places, extensive on reclaimed marine alluvium. The soils are usually pump-drained but can still become waterlogged. These soils are present throughout Section 4, though dominating in the northern areas;
- iii. Downholland 1 – deep stoneless humose clayey soils which can be calcareous in places and can also comprise peat soils and deep humose calcareous silty soils. These soils are found in flat land with a humose or peaty topsoil in loamy or clayey recent alluvium more than 30 cm thick. Groundwater is usually controlled by ditches and pumps and there can be a risk of wind erosion. They are seasonally waterlogged soils affected by a shallow fluctuating groundwater-table and 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. Downholland 1 is found within the central part of Section 4;
- iv. Downholland 2 - consists of deep, stoneless soils developed in marine alluvium, often with humose or thin peaty topsoils. The alluvium is generally silty clay but ranges from silt loam to clay. Water regime can vary widely depending on the type and extent of artificial drainage, with pumping schemes mitigating the potential for persistent waterlogging. These soils are present to the west of Wainfleet and Friskney.
- v. Wisbech – deep stoneless calcareous coarse silty soils. Groundwater is usually controlled by ditches or pumps as the land is flat with low ridges. There is a risk of wind erosion locally associated with these soils. They are seasonally waterlogged and affected by a shallow fluctuating groundwater-table. These soils are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth. Wisbech is found within the southern part of Section 4; and
- vi. Agney - deep stoneless calcareous fine and coarse silty soils. Groundwater is usually controlled by ditches and pumps and they are seasonally waterlogged soils affected by a shallow fluctuating groundwater-table. They are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth and most occupy low-lying or depressional sites. Agney is found within Section 4 in the area west of Boston.
- vii. Tanvats - consists of stoneless, silty, silty over clayey and clayey soils developed in marine alluvium. These soils tend to be waterlogged for long periods, especially in winter, though this can be mitigated where effective drainage is in place. These soils are present in patches to the south west of Boston.

8.5.7 The soils in Section 4 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 4 comprises Grade 1 (excellent quality agricultural land), Grade 2 (very good quality agricultural land), Grade 3 (good to moderate quality agricultural land) and Grade 4 (poor quality agricultural land) land. This is shown in **PEI Report Volume 2 Part B Section 4 Figure 8.2 Provisional Agricultural Land**

Classification. Since provisional mapping indicates the likely presence of BMV land, this would be considered a receptor of High to Very High sensitivity.

- 8.5.9 Please note limitations associated with using provisional ALC mapping, with particular reference to Grade 3 including Grades 3a and 3b, as described in paragraph 8.4.9.
- 8.5.10 The following land grades are provisionally mapped as being present:
- i. Grade 1 land is located just south of Langbridge Bridge and Brothroft, west of Wyberton until the end of Section 4;
 - ii. Grade 2 land is located in a number of areas within Section 4 as follows:
 - From the New Lincolnshire Connection Substation B (LCS B) until the A1449;
 - West of Cumberworth
 - North of Thorpe St Peter;
 - Thorpe Dales to Langrick Bridge;
 - From Great Fen to west of Wyberton; and
 - A small area around Kirton Meeres.
 - iii. Grade 3 land is located south of the A1449 until east of Farlesthorne, south west of Cumberworth until north of Thorpe St Peter; and
 - iv. Grade 4 land comprises a small area north of Thorpe Fendykes.
- 8.5.11 There is no pre-existing detailed ALC survey data available within the draft Order Limits for Section 4, as shown in **PEI Report Volume 2 Part B Section 4 Figure 8.3 Detailed Agricultural Land Classification**. 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 is a Woodland Grant Scheme within the draft Order Limits at Kirton Meeres and schemes within the draft Order Limits north east of Burgh le Marsh and north of Thorpe Culvert. There are also a number of felling licences in place immediately adjacent to, or in close proximity to, Section 4 (as shown on **PEI Report Volume 2 Part B Section 4 Figure 8.4 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 and therefore if present will form part of how the land is managed and how it is assessed. There are different levels of Agri-Environmental Schemes which have increasing complexity and land management requirements but also therefore have greater environmental benefits. The Agri-Environment Schemes within the draft Order Limits are listed below as shown on **PEI Report Volume 2 Part B Section 4 Figure 8.5 Agri Environment Schemes**):
- i. Countryside Stewardship (Higher Tier): south of Burgh le Marsh;

- ii. Countryside Stewardship (Middle Tier): east of Farlesthorne; east of Sloothby; east and south of Burgh le Marsh; south of Little Steeping; east and south of Stickney; south of Medlam; east of Langrick; west of Wyberton; east of Bicker; west of Burtoft and east of Gosberton; and
- iii. Entry Level plus Higher Level Stewardship: east and south of Burgh le Marsh; east of Stickford and south of Medlam.

Land Use

- 8.5.14 Aerial imagery and OS mapping indicate that the agricultural land use within Section 4 is predominantly arable, with some grassland and woodland areas. Field boundaries are generally lined with hedges and trees or bordered by roads.

Agricultural Landholdings

- 8.5.15 There are 85 landholdings affected within Section 4, with land use being predominantly arable land with some woodland and grassland. Given the predominant land use this receptor is considered to have a Low sensitivity.

Future Baseline

- 8.5.16 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.
- 8.5.17 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.
- 8.5.18 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.
- 8.5.19 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 third parties.
- 8.5.20 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 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.
- 8.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 4. 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

Construction

- 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 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 Soil Management Plan (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, operational and/or maintenance activities within Section 4.
- 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 4 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 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
- 8.7.5 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

Agricultural Land Classification

- 8.7.6 To undertake this assessment, publicly available Provisional ALC data has been used to determine the likely presence of BMV land. 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.
- 8.7.7 During construction there would be a potential loss of BMV land (defined as ALC Grades 1, 2 and 3a) from agricultural productivity.
- 8.7.8 For Section 4 it is assumed that all land within the draft Order Limits may be temporarily impacted and temporarily removed from agricultural production during the construction phase.
- 8.7.9 The agricultural land required in Section 4 is provisionally mapped predominantly as Grades 1, 2 and 3, with only a small area of Grade 4 land, and as such is considered likely to comprise BMV land. Grades 1 and 2 land is considered to have a very high sensitivity and Grade 3 land would be considered to be of high sensitivity.
- 8.7.10 The total extent of land required during construction would be 1104.4 ha. Of this, 957.2 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.
- 8.7.11 Of the land required during construction, 147.2 ha would be required for permanent infrastructure (pylon footings and foundations). The permanent loss of this land (assumed to be BMV land) would result in an impact of large magnitude and would result in a major adverse effect, which is considered significant.

Soil Function

- 8.7.12 There would be disturbance to soils, from the soil stripping required for the pylons, construction, access routes, and areas required temporarily (such as construction compounds and haul roads).
- 8.7.13 The soils in Section 4 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 an Outline SMP (submitted as part of the DCO application), would therefore be critical in ensuring minimisation of effects on these functions and the successful restoration.

- 8.7.14 For Section 4, 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 4, this would result in a range of major, moderate or minor adverse effects. Major and Moderate effects are considered significant.
- 8.7.15 The permanent loss of 147.2 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, which is considered significant.
- 8.7.16 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

- 8.7.17 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 4. Further discussion is provided in the following sections in relation to the predicted non-significant effects of the Project.
- 8.7.18 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 available for agricultural use and any likely significant effects accounted for during the construction phase assessment.

Likely Non-Significant Effects

- 8.7.19 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 Soils effects.

Table 8.2 Preliminary summary of likely non-significant Agriculture and Soils effects – Section 4

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Construction Phase						
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).
Operational and Maintenance Phases						
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 handling methods which would be set out in a SMP 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.

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Impacts on soil function during operation	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 4 are assigned a sensitivity of 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 SMP 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.
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	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 would 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

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
						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 Substation B to Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 4 (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 4 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 4, based upon the assessment completed to date (section 9.7); and
- viii. An outline of the likely 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 9.1 Overall Context Plan</p> <p>Figure 9.2 Primary Access Routes (PAR)</p> <p>Figure 9.3 Existing Public Rights of Way (PRoW)</p> <p>Figure 9.4 Route Sensitivity</p> <p>Figure 9.5 Preliminary Impact Analysis</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.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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.

Supporting Information	Description
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.
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 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 4 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 4 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 4 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 4 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.
 - 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. Lincolnshire County Council's Local Transport Plan 5 (Adopted 2022) (Ref 1):
 - 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.
 - ii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2):
 - 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, and this includes large scale development being accompanied by a transport assessment and travel plan.
 - iii. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 3)¹:
 - 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.
 - Policy S48 Walking and Cycling Infrastructure: requires existing and new active travel infrastructure to be protected, maintained and improved.
 - iv. South East Lincolnshire Local Plan 2011-2036 (Adopted Mar 2019) (Ref 4):
 - 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 PRow from development; and

¹ Construction traffic routes anticipated to be utilised by construction traffic associated with works in Section 4 include highway links across the wider region, therefore policies set out within wider area policy documents are also considered relevant to the assessment

- Policy 34 Delivering the Boston Distributor Road: Priority strategic infrastructure – development that compromises identified priority strategic infrastructure will not be permitted.
- v. Lincoln Transport Strategy 2020-2036 (Ref 5):
 - 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.
- vi. Boston Transport Strategy 2016-2036 (Ref 6):
 - 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.
- vii. Spalding Transport Strategy 2018-2036 (Ref 7):
 - The Strategy provides an approach to the improvement and provision of transport and access for the town and surrounding area. The Strategy addresses existing issues and supports proposals for significant growth in the town in the short, medium and long-term. The Strategy covers provision of improved and sustainable transport policy, services and infrastructure.

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 2014 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 to date 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 the Institute of Environmental Management and Assessment (IEMA) Guidance (Ref 10), which is based on consideration of impacts upon the following transport infrastructure: highways (including footpaths and cycleways), railways, waterways, PRoW and promoted/recreational routes. 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
Highway Network (including footways/cycleways)	
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 ² and additional fear and intimidation.
Railways	
Railway users	Effects upon users of the rail network due to potential impacts upon railway infrastructure.
Navigable Waterways	
Waterway users	Effects upon users of navigable waterways due to temporary closures leading to reduced access/increased journey time.
Public Rights of Way and Promoted /Recreational Routes	
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 the Scoping Opinion received requested further information relating to operational traffic to support this position. This PEI Report 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.

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**

² 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.

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 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, 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) ³ and the bellmouths, suitable for access by large construction vehicles, that are planned to be used by HGVs. Identification of these routes is based on existing conditions, potential for improvements and professional judgement.
Worker Access Routes	Identified as a series of roads and junctions which are not promoted as construction HGV routes, but which could be used by workers to travel to site. These are identified

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

as likely routes between residential areas, key employment/skills centres and the bellmouths.

- 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 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 overhead line within Section 4. 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 increase in traffic flows during construction, and potential to impact 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 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 4 have been identified and qualitative assessment of impacts to pedestrians, cyclists and equestrians undertaken where routes 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.

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 4A 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 4.

- 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 4 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 network as well as railways and waterways that are crossed by the Section 4 draft Order Limits.
- 9.5.3 **PEI Report Volume 2 Part B Section 4 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 4 Study Area are shown in **PEI Report Volume 2 Part B Section 4 Figure 9.2 Primary Access Routes**.

Construction Traffic Routes - HGVs

- 9.5.4 Initial construction information (including construction traffic, compound locations, bellmouth accesses and haul routes) has been used to determine the Primary Access Routes and 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 via 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/or 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 within Section 4 will be temporary in nature and will be reinstated upon completion of the construction phase. Haul roads and permanent access roads are illustrated on **PEI Report Volume 2 Part B Section 4 Figure 1.2 Temporary and Construction Features** and **Figure 1.3 Permanent and Operational Features** respectively.
 - Shorter available routes between the SRN and classified road network and bellmouths have been selected where possible, balancing distance and suitability of links to accommodate construction traffic.

- iv. Existing 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 the Section 4 draft Order Limits and their strategic connections for delivery of materials/equipment.

Table 9.4 Construction Traffic Route – SRN Connections

Strategic/classified road network	SRN Connections
A180	West to SRN at M180, M18, M62 and A1(M) and Immingham Docks
A158	West to SRN at A46 at Lincoln to A1(M) and M1
A17	West to SRN at A46 at Lincoln to A1(M) and M1
A47	West to SRN at 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 4 Figure 9.2 Primary Access Routes**. Further details of the roads forming the Primary Access Routes are presented in **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline**.

Table 9.5 Primary Access Routes

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
LW-B001	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 or CR25 A158 /CR8 A16	LK7 A1104 /LK8 A1104 /LK10 A1111 /LK27 B1449
LW-B002		
LW-B007	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16	LK11 A158 /LK29 Gunby Road /LK30 Marsh Road /LK31 Marsh Lane
LW-B008		
LW-B009	CR25 A158 or	LK11 A158 /LK81 A158 /LK35 Ingoldmells Road
LW-B010		

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
LW-B011	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16	
LW-B012	CR25 A158 or	LK11 A158 /LK81 A158
LW-B013	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16	
LW-B014 (compound)		
LW-B017	CR25 A158 or	LK11 A158 /LK81 A158 /LK 36 A158 /LK37 Middlemarsh Road /LK38 Low Road
LW-B018	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16	
LW-B021	CR25 A158 or	LK11 A158 /LK32 Gunby Lane /LK33 Mill Lane /LK34 B1195 Wainfleet Road
LW-B022	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16	
LW-B023	CR25 A158 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16	LK11 A158 /LK32 Gunby Lane /LK33 Mill Lane /LK34 B1195 Wainfleet Road /LK39 Lymn Bank
LW-B030	CR25 A158 /CR9 A19 or	LK47 Midville Road /LK44 Fodder Dike Bank /LK43 Spilsby Road /LK42 Spilsby Road /LK41 Thorpe Bank /LK40 Station Road
LW-B031	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	
LW-B032	CR25 A158 /CR9 A19 or	LK47 Midville Road /LK44 Fodder Dike Bank /LK43 Spilsby Road
LW-B033	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	
LW-B034	CR25 A158 /CR9 A19 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	LK47 Midville Road /LK45 Midville Road /LK 46 Unamed Road
LW-B035	CR25 A158 /CR9 A19 or	LK47 Midville Road
LW-B036	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	
LW-B039 (compound)	CR25 A158 /CR9 A19 or	-
LW-B040	CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
LW-B041 LW-B042	CR25 A158 /CR9 A19 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	LK48 B1184 Hale Lane /LK96 Staunt Road
LW-B043 LW-B044	CR25 A158 /CR9 A19 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	LK48 B1184 Hale Lane /LK49 B1183 Carrington Road
LW-B045 LW-B046	CR25 A158 /CR9 A19 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	LK48 B1184 Hale Lane /LK49 B1183 Carrington Road /LK92 Unnamed Road
LW-B047	CR25 A158 /CR9 A19 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16	LK48 B1184 Hale Lane /LK50 Westville Road
LW-B048 LW-B049	CR25 A158 /CR9 A19 or CR1 A180 /CR21 A1173 /CR20 A18 /CR18 A18 /CR6 A16 /CR7 A16 /CR8 A16 /CR9 A16 or CR15 A17 /CR16 A1121	LK48 B1184 Hale Lane /LK51 B1184 Canister Lane or LK56 B1192 Langrick Road /LK83 B1192 Langrick Road /LK55 B1192 Main Road /LK52 Armtree Road /LK53 B1184 Leagate Road /LK82 Canister Lane
LW-B050 LW-B051	CR15 A17 /CR16 A1121	LK56 Langrick Road /LK83 B1192 Langrick Road /LK55 B1192 Main Road /LK52 B1184 Armtree Road /LK54 Mere Booth Road
LW-B052 LW-B053	CR15 A17 /CR16 A1121	LK56 Langrick Road /LK57 Punchbowl Lane
LW-B054	CR15 A17 /CR16 A1121	LK56 B1192 Langrick Road
LW-B055 LW-B056	CR15 A17 /CR16 A1121 or CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17 /CR26 A52	LK58 Hubberts Bridge Road /LK59 Frampton Fen Lane
LW-B057	CR15 A17 /CR16 A1121 or CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17 /CR26 A52	LK58 Hubberts Bridge Road /LK59 Frampton Fen Lane /LK84 Fen Drove
LW-B058	CR15 A17 /CR16 A1121 or	LK58 Hubberts Bridge Road /LK59 Frampton Fen Lane /LK84 Fen Drove /LK85 Holmes Road

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
	CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17 /CR26 A52	
LW-B059	CR15 A17 /CR14 A17 /CR26 A52 or	LK60 B1391
LW-B060	CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17 /CR26 A52	
LW-B063	CR15 A17 /CR14 A17 or	LK62 Main Road /LK61 Asperton Road
LW-B064	CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17	
LW-B071	CR15 A17 /CR14 A17 or	-
LW-B072	CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17	
LW-B073	CR15 A17 /CR14 A17 or	LK63 Hipper Lane
LW-B074	CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17	
LW-B077	CR15 A17 /CR14 A17 or	LK64 B1397
LW-B078	CR27 A47 /CR 12 A16 /CR11 A16 /CR14 A17	
LW-B083	CR15 A17 /CR14 A17 /CR11 A16 or	-
LW-B084 (compound)	CR27 A47 /CR 12 A16 /CR11 A16	
LW-B085		

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 used by HGVs to access the site. However, at this stage of the assessment, Construction Worker traffic has been assigned to substation sites only and has therefore not been assigned to the highway network providing access to the individual bellmouths along the Section 4 overhead line route. Therefore, Construction Worker Routes are not considered separately for the Section 4 assessment. An uplift of 100 per cent has however been applied to the HGV trips generated by bellmouths within Section 4, to provide a margin at this stage to consider the potential impact from construction worker trips. Where required following further engagement with Local Highway Authorities (LHA), Construction Worker trips will be assigned to individual bellmouths within the Section 4 Study Area.

Data Collection

- 9.5.9 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);

- ii. 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 the 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 the Trip End Model Presentation Program (TEMPro)/National Trip End Model; and
- xii. identification of pedestrian, cycle and horse-riding infrastructure provision along access routes, obtained from Google Maps imagery of the highway network

9.5.10 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 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

9.5.11 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 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline;**

- ii. **PEI Report Volume 2 Part B Section 4 Figure 9.1 Overall Context Plan;**
- iii. **PEI Report Volume 2 Part B Section 4 Figure 9.2 Primary Access Routes;**
- iv. **PEI Report Volume 2 Part B Section 4 Figure 9.3 Existing Public Rights of Way (PRoW); and**
- v. **PEI Report Volume 2 Part B Section 4 Figure 9.4 Route Sensitivity.**

Highway Network

- 9.5.12 Links forming Primary Access Routes and the description of the road network along each route can be found within **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline.**
- 9.5.13 Table 9.6 provides a description of each link which forms part of the Primary Access Routes within the Section 4 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 4 Figure 9.2 Primary Access Routes.**

Table 9.6 Highway network – links

Route Ref	Highway Link	Description
CR1	A180	Dual carriageway through rural area, national speed limit = 70 mph, no footways or street lighting
CR6	A16	Wide single carriageway, generally national (60 mph) and 50 mph speed limits reducing to 40 mph near residential properties, no street lighting or footways except where some residential properties front, bus stops on A16 to north of Utterby
CR7	A16	Wide single carriageway, national speed limit (60mph), no street lighting, some narrow footways
CR8	A16	Wide single carriageway, national speed limit (60mph), no street lighting or footways
CR9	A16	Generally wide single carriageway, predominantly rural, 50mph /60mph speed limit, no street lighting or footways. Some small residential areas (Sibsey, Littlemoor, Stickney, East Keal, Spilsby), with 30/40mph, street lighting and footways in these areas. Crosses rail line at level crossing in High Ferry
CR11	A16	Wide single carriageway, rural area, national speed limit applies (60mph), no footways or street lighting
CR12	A16	Wide single carriageway, generally national speed limit (60mph), generally no street lighting except at junctions, no footways
CR13	A47	Wide single carriageway /dual carriageway road, national speed limit (60/70mph), generally no street lighting except at junctions, no footways

Route Ref	Highway Link	Description
CR14	A17	Wide single carriageway with localised widening at junctions and some sections of dual carriageway, predominantly rural, national speed limit, no street lighting, except at junctions, no footways
CR15	A17	Dual carriageway, generally rural route, national speed limit (70mph), no footways or street lighting to the north and east of Sleaford. Narrows to wide single carriageway 3 km east of Sleaford, national speed limit (60mph), no footways or street lighting, localised widening and lighting at some junctions. Speed limit reduces to 50mph with narrow footway, refuge crossings at East Heckington and Swineshead Bridge
CR16	A1121	Wide single carriageway, generally national speed limit applies (60mph) and no footways or street lighting, except in Hubbert's Bridge where narrow footway, street lighting and 40mph speed limit applies
CR18	A18	Single carriageway, rural route, generally 50 mph speed limit reducing to 40 mph 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
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
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
CR25	A158	Single carriageway, national speed limit (60mph), no footways or street lighting. Footways and street lighting in Horncastle, 30mph speed limit
CR26	A52	Wide single carriageway, 50mph and 60mph speed limits, no footways or street lighting except street lighting at some junctions
CR27	A47	Dual carriageway road, national speed limit (70mph), street lighting, no footways
LK7	A1104	Single carriageway, national speed limit (60mph), no street lighting, no footways
LK8	A1104	Built up, urban route through Alford, single carriageway narrow in places, 30mph speed limit, street lighting, footways on both sides of carriageway. Residential, retail and commercial accesses and frontages, on street parking on carriageway, bus route.
LK10	A1111 Bilsby Road	Single carriageway, 30mph /40mph speed limit, footways and street lighting

Route Ref	Highway Link	Description
LK11	A158	Single carriageway with widening at some junctions, generally national speed limit (60mph) with some sections of 50mph limit, no street lighting or footways except in residential areas of Candlesby and Burgh le Marsh
LK27	B1449 Thurlby Road	Single carriageway, 30mph with narrow footway and street lighting in Bilsby, 60mph no footways or street lighting outside of residential area
LK29	Gunby Road	Single carriageway, generally national speed limit (60mph) although reduces to 30mph near residential properties, no footways or street lighting except in Orby
LK30	Marsh Road	Single carriageway, generally national speed limit (60mph) although reduces to 30mph near residential properties, no footways or street lighting except in Orby
LK31	Marsh Lane	Single carriageway, national speed limit (60mph), no footways or street lighting
LK32	Gunby Lane	Narrow single carriageway, national speed limit (60mph), no footways or street lighting
LK34	B1195 Wainfleet Road	Single carriageway, national speed limit (60mph) reduces to 40mph in residential areas, no footways or street lighting except narrow footway in Irby in the Marsh
LK35	Ingoldmells Road	Narrow single carriageway, national speed limit (60mph), no footways or street lighting
LK36	A158	Single carriageway, localised widening at junctions, generally national speed limit (60mph) reduces to 30/40mph in Candlesby, no footways or street lighting except in Candlesby.
LK37	Middlemarsh Road	Narrow single carriageway, national speed limit (60mph), no footways or street lighting, 7.5T Except for Access restriction
LK38	Low Road	Narrow single carriageway, national speed limit (60mph), no footways or street lighting, 7.5T Except for Access restriction
LK39	Lymn Bank	Narrow single carriageway, national speed limit (60mph), no footways or street lighting
LK40	Station Road	Narrow single carriageway, national speed limit (60mph), no footways or street lighting
LK41	Thorpe Bank	Narrow single carriageway, no footways or street lighting, passes over level crossing, signed as uneven road surface with 30mph max speed
LK42	Spilsby Road	Narrow single carriageway, no footways or street lighting, signed as uneven road surface with 40mph max speed
LK43	Spilsby Road	Narrow single carriageway, no footways or street lighting except for narrow footway in New Leake, bridge crossing over Bell Water Drain

Route Ref	Highway Link	Description
		Bank, signed as uneven road surface, no speed limit signed therefore 60mph applies, except 30mph in New Leake
LK44	Fodder Dike Bank	Narrow single carriageway, national speed limit (60mph) applies except for 30mph signed near primary school, narrow footway, no street lighting
LK45	Midville Road (NS)	Narrow single carriageway, national speed limit (60mph), no footways or street lighting
LK46	Unnamed Road running alongside Bell Water Drain	Narrow single carriageway, national speed limit (60mph). no footways or street lighting
LK47	Midville Road	Narrow single carriageway, 60mph applies, no footways or street lighting except in Stickney where there are narrow footways, lighting and 30mph speed limit applies
LK48	B1184 Hale Lane	Single carriageway, no footways or street lighting and national speed limit applies (60mph), in Sibsey footways and street lighting are provided and 30mph speed limit applies
LK49	B1183 Carrington Road	Single carriageway, no footways or street lighting and national speed limit applies (60mph), in Frithville footways and street lighting are provided and 40mph speed limit applies
LK50	Westville Road	Narrow single carriageway, no footways or street lighting, signed as uneven road surface with 40mph max speed
LK51	B1183 Canister Lane	Single carriageway, no footways or street lighting, 50mph/60mph speed limit applies
LK52	B1184 Leagate Road	Single carriageway, 30/40mph speed limit, no footways or street lighting, some footways in Langrick, but stops on carriageway in Langrick
LK53	Armtree Road	Single carriageway, 30/40mph speed limit, no footways or street lighting, some footways in Langrick
LK54	Mere Booth Road	Narrow single carriageway, national speed limit applies (60mph), no footways or street lighting
LK55	B1192 Main Road	Single carriageway, national speed limit, no footways or street lighting
LK56	B1192 Langrick Road	Single carriageway, generally national speed limit except in Hubberts Bridge and Langrick Bridge where speed limit is 30/40mph, no footways or street lighting and narrow footways and street lighting are provided, narrow signal controlled bridge over River Witham

Route Ref	Highway Link	Description
LK57	Punchbowl Lane	Narrow single carriageway, national speed limit applies (60mph), no footways or street lighting
LK58	Hubberts Bridge Road	Single carriageway, 40/50mph speed limit signed, footways and some lighting along its length
LK59	Frampton Fen Lane	Single carriageway, national speed limit (60mph) applies, no footways or street lighting
LK60	B1391	Single carriageway, national speed limit (60mph) applies, no footways or street lighting
LK61	Asperton Road	Narrow single carriageway, 30mph speed limit narrow footway and street lighting in Wigtoft, 60mph limit and no footways or street lighting to the north of the village
LK62	Main Road	Single carriageway, 40mph speed limit, footway and street lighting
LK63	Hipper Lane	Narrow single carriageway, 60mph speed limit, no footways or street lighting, 7.5T weigh limit Except for Access
LK64	B1397	Single carriageway, national speed limit (60mph) applies, no footways or street lighting
LK82	Canister Lane	Single carriageway, no footways or street lighting, 50mph speed limit applies
LK83	B1192 Langrick Road	Single carriageway, generally national speed limit, no footways or street lighting
LK84	Fen Drove	Single carriageway, generally national speed limit (60mph) except at western end, no footways or street lighting
LK85	Holmes Road	Single carriageway, national speed limit (60mph), no footways or street lighting
LK92	Unnamed Road running west from B1183(LK49)	Narrow single carriageway, national speed limit (60mph) applies, no footways or street lighting
LK96	Staunt Road	Narrow single carriageway, national speed limit (60mph) applies, no footways or street lighting

- 9.5.14 For the PEI Report no assessment of junction impacts along the Primary 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.

- 9.5.15 In addition to the Primary 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

- 9.5.16 Where available, baseline traffic flows are taken from the DfT's traffic counters for road links forming the Primary Access Routes and Workers Access Routes. The DfT traffic counter sites are shown on **PEI Report Volume 2 Part B Section 4 Figure 9.2 Primary Access Routes**.
- 9.5.17 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 is also shown on **PEI Report Volume 2 Part B Section 4 Figure 9.2 Primary Access Routes**.
- 9.5.18 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.
- 9.5.19 Baseline traffic flows on road links forming the Primary Access Routes and links where surveys have been undertaken are presented in **PEI Report Volume 3 Part B Section 4 Appendix 9A Traffic and Movement Baseline**. All traffic data is presented as AADT flows for total vehicles and for HGVs.
- 9.5.20 In addition, a congestion rating is set out within **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline** and presented on **PEI Report Volume 2 Part B Section 4 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

- 9.5.21 Personal injury collision (PIC) data has been obtained from DfT Road Safety Data for the roads along the Primary Access Routes. The latest five-year PIC data (2019-2023) is presented on **PEI Report Volume 2 Part B Section 4 Figure 9.4 Route Sensitivity**.
- 9.5.22 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.
- 9.5.23 From the collision data analysis, collision clusters have been identified at the following locations:

- i. on the A16 between A16/Cordeaux Corner and A16/Bolingbroke Road to the north of Louth;
- ii. at the junctions of A16/South Square/South End, A16/High Street and A16/A52 roundabout in the centre of Boston;
- iii. at the A16/A17 roundabout (Sutterton Roundabout); and
- iv. at the A1121/Station Rd/Langrick Road junction to the west of Boston.

Highway Link Sensitivity

- 9.5.24 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.
- 9.5.25 Receptor/area sensitivity has been assigned to all assessed highway links which constitute the Primary Access Routes for Section 4. 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 4B Environmental Impact Assessment Assessment Methodologies and Scope**.
- 9.5.26 A description, location, and the sensitivity level within the Section 4 Study Area are summarised in Table 9.7 below and **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline** and presented on **PEI Report Volume 2 Part B Section 4 Figure 9.4 Route Sensitivity**.

Table 9.7 Highway Link Sensitivity

Route Ref	Highway Link	Description	Sensitivity Level
CR1	A180	No receptors identified along the link	Negligible
CR6	A16	A few residential and commercial properties, occasional footways near properties, bus route, one collision cluster identified along a short section	Medium
CR7	A16	A few residential properties along this link	Low
CR8	A16	A few 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

Route Ref	Highway Link	Description	Sensitivity Level
CR11	A16	A few commercial properties along this link	Low
CR12	A16	Very occasional properties along this link	Low
CR13	A47	A few residential and commercial properties along this link	Low
CR14	A17	A few commercial and residential properties along this link	Low
CR15	A17	A few commercial and residential properties	Low
CR16	A1121	A few residential and commercial properties, narrow footway and access to Station at Hubbert's Bridge	Medium
CR18	A18	A few residential properties at southern end of link	Low
CR20	A18	A few residential and commercial properties at southern end of link	Low
CR21	A1173	Very few residential properties and pedestrian infrastructure. Rail level crossing	Low
CR25	A158	A few adjacent residential and commercial properties in rural area along this link. 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
CR27	A47	No receptors identified along this link	Negligible
LK7	A1104 Miles Cross Hill	A few residential properties along this link	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 and part of the Lindsey Loop recreational walking route, on road cycling, bus route, on street parking. Multiple sensitive receptors including residential/care homes, school, church	Very high
LK10	A1111 Bilsby Rd /Alford Rd	Many residential properties with frontages /direct accesses, narrow footways along this link	Medium
LK11	A158	A few residential and commercial properties along this link and narrow footway at Candlesby, bus route	Low
LK27	B1449 Thurlby Road	Residential properties with frontages /direct accesses, narrow footways in Bilsby, few properties outside of village	Medium

Route Ref	Highway Link	Description	Sensitivity Level
LK29	Gunby Road	Residential properties with frontages /direct accesses, narrow footways in Orby	Medium
LK30	Marsh Road	Residential properties with frontages /direct accesses, narrow footways in Orby	Medium
LK31	Marsh Lane	A few residential properties along this link	Low
LK32	Gunby Lane	A few residential properties along this link	Low
LK34	B1195 Wainfleet Road	A few residential properties along this link	Low
LK35	Ingoldmells Road	A few residential properties along this link	Low
LK36	A158	Some residential properties, frontages/accesses in Candlesby, bus stops in laybys	Low
LK37	Middlemarsh Road	A few residential and commercial properties along this link	Low
LK38	Low Road	A few residential properties along this link	Low
LK39	Lymn Bank	Occasional residential properties along this link	Low
LK40	Station Road	Occasional residential properties along this link	Low
LK41	Thorpe Bank	Occasional residential properties along this link	Low
LK42	Spilsby Road	A few residential properties along this link	Low
LK43	Spilsby Road	A number of residential driveways/accesses, some on street parking along this link	Low
LK44	Fodder Dike Bank	A few residential properties and primary school	Medium
LK45	Midville Road (NS)	A residential properties and pub/caravan park	Low
LK46	Unnamed Road	No receptors identified on this link	Negligible
LK47	Midville Road (EW)	A few residential and commercial properties along this link	Low
LK48	B1184 Hale Lane	Residential properties, some on street parking and village hall in Sibsey	Medium

Route Ref	Highway Link	Description	Sensitivity Level
LK49	B1183 Carrington Road	A few residential properties, driveways and accesses in Frithville	Low
LK50	Westville Road	A few residential properties along this link	Low
LK51	B1183 Canister Lane	A few residential properties along this link	Low
LK52	Armtree Road	Residential properties, primary school in Gipsev Bridge, bus route through Langrick	High
LK53	B1184 Leagate Road	A few residential properties, bus route	Low
LK54	Mere Booth Road	Residential properties along this route, 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
LK57	Punchbowl Lane	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
LK59	B1192 Frampton Fen Lane	A few residential and commercial properties along this link	Low
LK60	B1391	A few residential properties along this link	Low
LK61	Asperton Road	Residential and commercial properties along this link and local playground	Medium
LK62	Main Road	A few residential properties along this link	Low
LK63	Hipper Lane	A few residential properties along this link	Low
LK64	B1397	A few residential properties along this link	Low
LK82	Canister Lane	Occasional residential properties	Low

Route Ref	Highway Link	Description	Sensitivity Level
LK83	B1192 Langrick Road	A few residential properties along this link	Low
LK84	Fen Drove	A few residential properties along this link	Low
LK85	Holmes Road	A few residential properties along this link	Low
LK96	Staunt Road	A few residential properties along this link	Low

Bus Routes

- 9.5.27 A number of bus services run along roads forming the Primary Access Routes for Section 4. Service 55 provides services approximately every two hours between Boston and Lincoln with bus stops in Antons Gowt, and Langrick. Service 56 provides approximate hourly services in each direction between Lincoln, Horncastle and Skegness, with bus stops on the A158 in Candlesby and Gunby. Bus stops are located on the A1121 and A52 to the west of Boston providing access to less frequent services between Boston, Spalding and local villages. Bus stops are located in Swineshead and Hubberts Bridge.

Railway Infrastructure

- 9.5.28 The Section 4 draft Order Limits cross the main rail line running between Sleaford, Boston and Skegness at three locations. Services running between Nottingham and Skegness operate at an approximate hourly frequency in each direction stopping nearby at Wainfleet, Boston, Heckington and Sleaford. Occasional services stop at smaller local stations along the route. The nearest main rail stations to the Section 4 draft Order Limits are at Skegness and Boston.

Waterways

- 9.5.29 The Section 4 draft Order Limits cross the Steeping River, River Witham, Black Sluice Navigation /South Forty Foot Drain and River Welland, as well as a number of Drains forming part of the Witham Navigable Drains (Castle Dyke, Newham Drain, West Fen Drain, and Stonebridge Drain). These are all navigable waterways.
- 9.5.30 A number of becks, dykes, and land drains are crossed by the proposed haul roads providing temporary access during construction of the Project. However, these watercourses are not navigable waterways and are therefore not considered further within the Traffic and Movement assessment.

Public Rights of Way and Promoted/Recreational Routes

- 9.5.31 PRowS and promoted/recreational routes potentially affected by the proposed works within the Section 4 draft Order Limits are summarised in Table 9.8 below and presented on **PEI Report Volume 2 Part B Section 4 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.

- 9.5.32 The sensitivity of the PRowS and promoted/recreational routes has been considered and is summarised in Table 9.8. This identifies 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 Report, 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 9.7
- 9.5.33 The Section 4 draft Order Limits cross the Greenwich Meridian, the Cross Britain Way/The Macmillan Way, the Water Rail Way and the Lindsey Loop long distance walking routes.
- 9.5.34 National Cycle Route 1 is crossed by the Section 4 draft Order Limits.
- 9.5.35 Further details of promoted/recreational routes are included within **PEI Report Volume 2 Part B Section 4 Chapter 11 Socio-economics, Recreation and Tourism** and discussions with PRow officers from all relevant Local Authorities will continue to be undertaken to confirm these key routes.

Table 9.8 Public Rights of Way and promoted/recreational routes

Ref	Type	Location	Sensitivity
P062 and P064	Footpath	Connects small villages/settlements including Cumberworth, Sloothby and Willoughby to the south east of Alford	Local routes, limited connectivity – low sensitivity
P150	Footpath	Runs alongside small becks/drains connecting Skegness with Burgh le Marsh	Local route, limited connectivity – low sensitivity
SWS	South Wolds & Skegness – local cycle network	On local roads around Thorpe St Peter	Local leisure route – low sensitivity
P046 P045/P048 P061/P049	Footpaths	Network of paths to south east of Burgh le Marsh	Local routes, limited connectivity – low sensitivity
GMT	Greenwich Meridian long distance walking route	Runs alongside the Stone Bridge Drain running between Stickney and Sibsey to the north of Boston	National route, connecting rural and urban areas – medium sensitivity
P139	Bridleway	Short route to the south east of Coningsby and to the north of Boston	Local route, limited connectivity to tracks/roads – low sensitivity

WRW	The Water Rail Way long distance walking route	Runs between Boston and Lincoln following alongside the River Witham to the north west of Boston	Regional route – medium sensitivity
NCN1	National Cycle Route 1	Runs adjacent to the River Witham to the northwest of Boston	National route, leisure route connecting urban areas – medium sensitivity
P043	Footpath	Runs along the southern bank of River Witham to the north of Boston	Local leisure route connecting Boston with destinations to the north and west- medium sensitivity
P070/P071	Footpath	Run on both sides of the South Forty Foot Drain to the west of Boston	Local route, limited connectivity – low sensitivity
CBW	The Cross Britain Way long distance walking route	Runs along Hipper Lane	National route – medium 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 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 4. 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 a 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. PRowWs will only be closed or diverted on safety grounds to protect PRowW users or workers. Haul roads crossing PRowWs will be designed such that the PRowW remains open by default and passing construction traffic affords priority of movement to PRowW users. In the locality of PRowW crossing points, the haul road will be fenced and gated to prevent PRowW users and animals from straying into a construction site.
- vii. Where more than one PRowW crosses the haul road in close proximity to another, local diversions will be required to merge PRowWs routes across a single passing point to reduce the likelihood of pedestrian-vehicular conflict (including equestrians and horses).
- viii. PRowWs 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 PRowW 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

Construction

- 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 2 include:
- i. 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 (PRowWMP), 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.'
 - ii. 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.

- iii. 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.
- iv. 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.
- v. TT01: The contractor(s) will implement a monitoring and reporting system to check compliance with the measures set out within the CTMP.
- vi. TT02: All affected 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 PRowMPP. 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.
- vii. 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.
- viii. 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).
- ix. 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.

- 9.6.4 The CTMP referred to in measures GG06, TT01 and TT03 above will include, but not be limited to:
- x. 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;
 - xi. measures for the maintenance and upkeep of the public highway;
 - xii. identification of access routes for emergency vehicles;
 - xiii. measures to reduce safety risks through construction vehicle and driver quality standards; and
 - xiv. 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 Section 4 Study Area, as a result of construction, maintenance and/or operation activities.
- 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 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in Table 9.10 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 TA and 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 worst-case increase in traffic on the local road network for each Primary Access Route 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 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 4 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 9.9. 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 9.9 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 9.9 Preliminary assessment of Effects upon Users of Highway Links – Section 4

Receptor	Potential Significant Effects	Link Reference
Drivers (all vehicles including HGVs and Emergency Services)	Severance, changes in journey time, driver delay and highway safety effects due to increased traffic	CR6 (A16), CR7 (A16), CR8 (A16), CR9 (A16), CR18 (A18), CR20 (A18), CR21 (A1173), CR25 (A158), LK7 (A1104), LK8 (A1104), LK10 (A1111), LK11 (A158), LK29 (Gunby Road), LK30 (Marsh Road), LK32 (Gunby Lane), LK34 (B1195), LK40 (Station Road), LK41 (Thorpe Bank), LK42 (Spilsby Road), LK43 (Spilsby Road), LK44 (Fodder Dike Bank), LK47 (Midville Road), LK48 (B1184 Hale Lane), LK52 (Armtree Road Road), LK55 B1192 Main Road, LK56 (B1192 Langrick Road), LK83 (B1192 Langrick Road)
Bus passengers	Potential for delay to bus services due to congestion as a result of increased traffic	CR9 (A16), LK8 (A1104), LK11 (A158)
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 (A16), CR9 (A16), CR25 (A158), LK8 (A1104), LK10 (A1111), LK29 (Gunby Road), LK30 Marsh Road), LK44 (Fodder Dike Bank), LK48 (B1184 Hale Lane), LK52 (Armtree Road)

Operation and maintenance

- 9.7.11 Based upon the preliminary assessment, no significant effects upon Transport and Movement receptors within the Section 4 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 9.10 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 9.10 identifies the highway links that form part of the Primary 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

projections and discussions with the Local Highway Authority. **PEI Report Volume 3 Part B Section 4 Figure 9.5 Preliminary Impact Analysis** shows the location of highway links that are below the IEMA thresholds.

Public Rights of Way and Promoted/Recreational Routes

- 9.7.14 From an accessibility and connectivity perspective, PRoW and promoted/recreational route users are unlikely to be significantly affected during the delivery of the Project. Routes will remain open by default during the construction phase, both during and outside of working hours. Where feasible, there will be a break in the haul road so that the route is not impacted. Haul road crossings are designed such that pedestrian/cycle/equestrian users are afforded priority of movement.
- 9.7.15 Where more than one route 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.
- 9.7.16 PRoWs are anticipated to be closed/diverted temporarily 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.
- 9.7.17 Therefore, the PRoW and promoted/recreational routes within the Section 4 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 9.10:
- i. P062/P064 – short diversion and managed crossing of low sensitivity routes
 - ii. SWS – routes along local roads not impacted
 - iii. P150 – managed crossing on low sensitivity route
 - iv. P046 – managed crossing on low sensitivity route
 - v. P045/P048 – closure and local diversion onto road of low sensitivity route
 - vi. P061/P049 – managed crossing of low sensitivity route
 - vii. GMT – Greenwich Meridian Trail, break in the haul route⁴, GMT route not affected
 - viii. P139 – break in the haul route, P139 route not affected
 - ix. WRW – Water Rail Way, break in the haul route at River Witham, WRW route not affected
 - x. NCN1 – Route alongside River not impacted
 - xi. P043 – break in the haul route , P043 route not affected
 - xii. P070/P071 – break in the haul route stops, P070/P071 route not affected
 - xiii. CBW – Cross Britain Way, managed crossing of medium sensitivity route

⁴ There are a number of breaks in haul road routes to avoid direct conflicts within existing routes. In these instances, the haul road routes are not continuous.

Operation and Maintenance

- 9.7.18 The Scoping Report Traffic and Movement chapter sought to scope out effects associated with the operation of the Project. The Scoping Opinion 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.
- 9.7.19 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 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. There could also be a drone or helicopter survey taken from the air, taking off from a nearby vantage point. 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.
- 9.7.20 For Section 4, there are approximately 200 pylons therefore there would be approximately 400 vehicle trips per year (arrivals and departures). This equates to an average of approx. 8 trips per week, spread across multiple access routes. This level of trips is considered negligible and will not impact operation of the highway network. On the basis of the projected operational vehicle trips, no likely significant effects to users of highway links are expected.
- 9.7.21 Operational traffic flows will be very occasional therefore no impact to users of bus services is expected. The Section 4 overhead line will cross the Sleaford to Skegness rail line, however it would not affect rail services, therefore impact to users of railways is not expected. No likely significant effects on public transport users are expected.
- 9.7.22 No navigable waterways are impacted by operation of the Project within Section 4, therefore no likely significant effects are expected.
- 9.7.23 PRoW and promoted/recreational routes crossed and/or diverted during construction will be reinstated, therefore no routes are permanently affected by the Section 4 draft Order Limits, therefore no significant effects are expected.

Table 9.10 Preliminary summary of non-significant Traffic and Movement effects – Section 4

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
Construction					
Highway Network					
Road users of highway links CR1, CR11, CR12, CR13, CR14, CR15, CR16, CR26, CR27, LK35, LK36, LK37, LK38, LK39, LK49, LK50, LK51, LK57, LK59, LK60, LK64,	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 Project does not meet IEMA thresholds for significant effects.
Road users of highway links LK45, LK46, LK53, LK54, LK58, LK61, LK62, LK63, LK82, LK84, LK85, LK96		Low/medium/high	No. of construction HGVs <20 daily	Low – Not significant	The volume of projected HGV movements is low across the day and unlikely to result in significant effects.
Bus passengers in services on highway links LK36 (A158) in Candlesby, LK53 (B1184 Leagate Road) and LK54 (Mere Booth Road)	Increased traffic due to construction of the Project, potentially resulting in delay due to congestion on bus routes.	Medium/high	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 CR16, LK27	Potential for severance, delay, increased journey time, decline in amenity, additional fear and	Low/medium	<30 per cent	Low – Not significant	The volume of construction traffic does not meet IEMA thresholds such that it is

	intimidation and safety effects as a result of increased traffic				unlikely to impact pedestrian and cycle movements
All road users	Movement of Abnormal Indivisible Loads during construction potentially resulting in severance, changes in journey time, delay and safety effects upon road users.	Low to high	No change	Negligible – Not significant	It is not anticipated that there will be any Abnormal Indivisible Loads required for construction of the Section 4 overhead line, therefore no significant effects are expected.
All road users	Movement of Hazardous Loads during construction potentially resulting in safety effects upon road users.	Low to high	No change	Negligible – Not significant	It is not anticipated that there will be any Hazardous Loads required for construction of the Section 4 overhead line therefore no significant effects are expected.
Railway Infrastructure					
Railway users	Potential for disruption of the railway network and/or operational safety	High	-	Low – Not significant	Haul roads will not traverse railways. It is assumed temporary overnight closures of the railways required for stringing works will be agreed with Network Rail. The planned works are unlikely to affect railway users as the work will be undertaken outside operational times to avoid impact on timetabling

Waterways

Waterway users	Temporary closure of waterways to facilitate overhead line stringing works, resulting in potential delay, amenity effects upon users.	Low	-	Low – Not significant	Haul roads will not traverse navigable waterways. Temporary overnight closures will be implemented to facilitate stringing of overhead line. National Grid will seek agreement with the relevant stakeholders prior to temporary closures. The planned works are unlikely to result in significant effects upon waterway users as the work will be undertaken outside of peak operational times to minimise impact.
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Public Rights of Way and Promoted/Recreational Routes

Pedestrians, cyclists and equestrians on links P116, GMT, WRW, NCN1, P138 P070/P071,	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects as a result of temporary route closures/diversions to enable construction	Low/medium	No change	Negligible – Not significant	There is a break in the haul route and the pedestrian/cycle/equestrian route is not affected
Pedestrians, cyclists and equestrians on links P062/P064, P046/P048, P047, P061	Temporary route closures/diversions to enable construction and the movement of construction traffic, resulting in potential for severance, delay,	Low/medium	Potential slight delay through short diversion (<100m) or managed crossing	Low – Not significant	A short diversion and managed crossing/interactions will limit the magnitude of impacts, such that significant effects are unlikely.

	increased journey time, decline in amenity, additional fear and intimidation and safety effects.				
Operation					
Users of highway links including drivers, public transport users, pedestrians, cyclists and equestrians	Operational traffic resulting in potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.	Negligible – High	1 visit per year for each pylon for maintenance	Negligible – Not significant	The volume of traffic associated with operation and maintenance is very low and will not result in significant effects upon users of highway links
Railway users	Potential to delay due closure of rail lines	Medium/high	No impact	Negligible – Not significant	Rail lines will not be closed during operation
Waterway users	Potential to delay due closure of waterways	Medium/high	No impact	Negligible – Not significant	Waterways will not be closed during operation
Pedestrians, cyclists and equestrians on PRow and promoted/recreational routes	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects	Low/medium	No impact	Negligible – Not significant	Routes will be reinstated and not impacted by operation of the overhead line.

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 Otherwise, 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 4 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 Substation (LCS) B to Refined Weston Marsh Substation Siting Zone Section (Section 4) 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 within **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 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 Scoping Opinion Responses**.
 - iv. A high-level summary of the methodology of the Noise and Vibration assessment within Section 4 (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 Study Area relevant to the Noise and Vibration assessment (section 10.5).
 - vi. A description of mitigation measures included for the purposes of the Noise and Vibration assessment reported within the PEI Report (section 10.6). 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 Noise and Vibration effects arising during construction and operation of the Project within Section 4, based upon the assessment completed to date (section 10.7).
 - viii. An outline of the proposed 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	Figure 10.1 Noise and Vibration Study Area Figure 10.2 Noise and Vibration Baseline Figure 10.3 Initial Construction Noise Assessment Outputs Figure 10.4 Initial Construction Vibration Assessment Outputs
PEI Report Volume 3 Part B Section 4 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 4 Appendix 10B Initial Construction Traffic Noise Assessment	Includes the assessment of construction traffic noise on construction traffic routes within Section 4.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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.

Supporting Information	Description
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.

- 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**:
- **PEI Report Volume 2 Part B Section 4 Chapter 4 Ecology and Biodiversity** assesses the effects of the Project upon ecological receptors, including those resulting from Noise and Vibration.
 - **PEI Report Volume 2 Part B Section 4 Chapter 5 Historic Environment** assesses the impacts of the Project upon heritage assets, including the potential effects of Noise and Vibration.
 - **PEI Report Volume 2 Part B Section 4 Chapter 9 Traffic and Movement** 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.
 - **PEI Report Volume 2 Part B Section 4 Chapter 11 Socio-economics, Recreation and Tourism** assesses potential effects upon local businesses and recreational areas that could be affected by Noise and Vibration acting in combination with other environmental impacts to result in effects on amenity.
 - **PEI Report Volume 2 Part B Section 4 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary.
 - **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** assesses the potential effects of Noise and Vibration generated by the Project upon health and wellbeing.
 - **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

Legislation and National Policy

- 10.2.1 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** and supporting appendices, detail of which is 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 2018 (Ref 1):
 - Strategic Policy 10 (SP10) – Design: in relation to well-designed sustainable development, which maintains and enhances the character of the District’s towns, villages and countryside; and
 - Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy: in relation to the development of the transmission and interconnection of electricity.
 - ii. South East Lincolnshire (Combined Boston Borough Council, South Holland District Council Local Plan) 2013 (Ref 2):
 - Policy 2: Development Management: which sets out sustainable development considerations against which planning applications are determined by the local planning authority, including impacts upon neighbouring land uses by reason of noise;
 - Policy 30: Pollution: stipulates that development will not be permitted where it would lead to unacceptable adverse impacts due to noise, including vibration; and
 - Policy 31: Climate Change and Renewable and Low Carbon Energy: in relation to the development of renewable energy facilities and associated infrastructure, development will be permitted provided that there would be no significant harm to residential amenity in respect to noise, vibration and other factors.

10.3 Scope of Assessment

- 10.3.1 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). 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 for Section 4 includes the following:
- i. construction noise;

- ii. construction vibration on people within buildings;
- iii. construction vibration on buildings and structures;
- iv. construction traffic noise; and
- v. operational Noise and Vibration from substantial maintenance activities.

- 10.3.4 There are no new substation locations within Section 4, with infrastructure associated with overhead line elements of the Project only. There are, however, proposed new substations located in Section 3 New LCS A and B and Section 5 Refined Weston Marsh Substation Siting Zone, which may include NSRs in Section 4 in their respective operational noise studies areas. However, these proposed new substations do not include plant and equipment that would operate during normal operation (e.g. transformers). Operational noise due to the operation of new substations is therefore scoped out of the assessment in this Section.
- 10.3.5 As set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**, assessment of operational noise effects due to overhead line and typical maintenance activities are also scoped out, based upon the low noise conductor system proposed, and the infrequent and localised nature of typical maintenance activities, respectively. Further information regarding the scoping out of overhead line noise is provided in paragraph 10.6.3.

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 5), and Part 2: Vibration (BS 5228-2) (Ref 6), 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 7) 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 8).
- 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. The following limitations and assumptions have been identified for the assessment of Section 4:

- i. The construction Noise and Vibration assessment is based on assumed proposed construction activities and associated indicative plant Noise and Vibration data. Further detailed assessments will be conducted by the contractor prior to commencing works, based on their specific construction methodologies, to inform their specific mitigation proposals.
- ii. The assessment of construction traffic noise is based on information provided within the Traffic and Transport assessment presented in **PEI Report Volume 2 Part B Section 4 Chapter 9 Traffic and Movement**.

- 10.4.6 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.

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 4 Figure 10.1 Noise and Vibration Study Area**. The baseline Study Area includes an additional 1 km buffer from the 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 4 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 4 Figure 10.2 Noise and Vibration Baseline**. This mapping represents the daytime ambient noise levels from road and rail sources and Noise Important Areas (NIAs); and
 - iii. current OS mapping information.

Existing Baseline

- 10.5.3 The following section outlines the Noise and Vibration baseline for Section 4. 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 4 Figure 10.1 Noise and Vibration Study Area**; and
 - ii. **PEI Report Volume 2 Part B Section 4 Figure 10.2 Noise and Vibration Baseline**.

- 10.5.4 The overhead line route within Section 4 passes predominantly through rural areas. Many of the NSRs assessed within the Study Area are therefore isolated dwellings and farms. Assessed NSRs also include those located within several built-up areas and villages, at varying distances from the draft Order Limits, as follows:
- Cumberworth, approximately 300 m east of the draft Order Limits;
 - Sloothby, approximately 600 m west of the draft Order Limits;
 - Burgh le Marsh, approximately 700 m west of the draft Order Limits;
 - Gipsey Bridge, approximately 500 m northwest of the draft Order Limits;
 - Hubbert's Bridge, approximately 600 m west of the draft Order Limits;
 - Kirton End, approximately 1 km east of the draft Order Limits; and
 - Wigtoft, approximately 600 m east of the draft Order Limits.
- 10.5.5 **PEI Report Volume 2 Part B Section 4 Figure 10.1 Noise and Vibration Study Area** also shows NSR locations, including residential and non-residential receptors.
- 10.5.6 The noise environment is expected to vary across the Study Area depending on the nature of the area. For example, close to noise sources, such as roads and railways and in built up areas, ambient noise levels are expected to be higher. Further away from road and rail sources and in rural areas, 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 4 Figure 10.2 Noise and Vibration Baseline**, showing how existing noise levels vary in the Study Area. Those 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.
- 10.5.7 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 4 Figure 10.2 Noise and Vibration Baseline**. There are no NIAs close to the draft Order Limits.
- 10.5.8 Acceptable levels of vibration during construction are higher than those that would be acceptable during normal conditions, because it is accepted that temporary vibration impacts may be an unavoidable by-product of development. It is assumed that existing vibration levels at NSRs within the Study Area 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.
- 10.5.9 The main sources of environmental noise within the Section 4 Study Area include the A158 Skegness Road, the A16, the A1121, the A52, the A17, and the Poacher Railway Line, as well as traffic on local roads. In terms of industrial sources, the main source of noise is likely to be agricultural activity given the rural nature of the Study Area.

Future Baseline

- 10.5.10 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.

- 10.5.11 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 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.
- 10.5.12 With regards to construction, no significant changes to the future Noise and Vibration baseline that would affect the assessment are anticipated owing to the largely rural and agricultural nature of the Study Area. Should there be any changes, these would be assessed within 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 9) applicable to routing of new overhead line and the 'Horlock Rules' (Ref 10) 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 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.
- 10.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 4. 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 on standard lattice pylons. 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 meteorological 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 line 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 NSRs, 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

Construction

- 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 Noise and Vibration assessment of Section 4 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 but not be limited to:
 - 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) 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), 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 daily 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 NSR and therefore whether additional measures, including site-specific BPM, may be required.

10.6.6 The final CoCP will be secured by a DCO Requirement.

Control of Pollution Act 1974

10.6.7 The Control of Pollution Act 1974 (CoPA) (Ref 12) 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 13). 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.

10.6.8 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

- 10.6.9 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.
- 10.6.10 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 4 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 mitigation measures previously described.
- 10.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 4 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.

Operation

- 10.7.7 No significant effects have been identified due to Noise and Vibration during operation and maintenance of the Project in Section 4.

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 4 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which in Section 4 include:
- vegetation clearance and site preparation;
 - establishment of temporary access/egress to the Site and haul routes;
 - establishment and operation of construction compounds and laydown areas;
 - construction of pylon foundations and erection of pylons;
 - stringing of overhead line;
 - ancillary works, such as drainage; and
 - 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 Design, Control and Additional Mitigation Measures.
- 10.7.10 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 4 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	1175	876	294	5	0
High sensitivity non-residential	18	18	0	0	0
Medium sensitivity non-residential	30	16	13	1	0
Low sensitivity non-residential	30	22	8	0	0

- 10.7.11 The assessment indicates that the magnitude of impact from construction noise is:

- i. negligible or small at most residential NSR;
 - ii. negligible at all high sensitivity non-residential NSR;
 - iii. negligible or small at most medium sensitivity non-residential NSR; and
 - iv. negligible or small at all low sensitivity non-residential NSR in the Study Area.
- 10.7.12 These would likely not be significant adverse effects, even without specific BPM mitigation measures in place.
- 10.7.13 However, there are five residential NSR and one medium sensitivity non-residential NSR potentially experiencing a medium magnitude impact, which may be significant without specific mitigation. These include:
- i. proposed pylon construction:
 - pylon LW81 affecting one residential NSR: The Dwelling House, West Royalty Farm, Spilsby Road, Eastville, Boston, PE22 8LD;
 - pylon LW129 affecting one residential NSR: Riggalls Farm, Thackers Road, Frithville, Boston, PE22 7HN;
 - pylon LW65 affecting one residential NSR: Dale Cottage, Thorpe Dales, Thorpe St Peter, Skegness, PE24 4QF;
 - pylon LW7 affecting one residential NSR: Thurlby Road Farm, Thurlby Road, Bilsby, LN13 9JJ; and
 - pylon LW67 affecting one non-residential medium sensitivity NSR: Willow Farm Holidays And Riding School, Willow Farm, Fendyke Bank, Thorpe Fendykes, PE24 4QH.
 - ii. overhead line stringing:
 - between pylons LW171 and LW172: Asperton Small Holdings, Asperton Road, Wigtoft, Boston, PE20 2PT.
- 10.7.14 In all cases, construction noise impacts may be reduced to non-significant levels which would not result in significant Noise and Vibration effects through the application of BPM as set out in the draft CoCP. As such, significant adverse effects are not expected in Section 4.

Construction vibration

- 10.7.15 The construction vibration assessment is based on the construction vibration data presented in in **PEI Report Volume 3 Part B Section 4 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); and
 - iii. construction of pylon foundations (piling).

Construction vibration on people in buildings

- 10.7.16 Although BPM to reduce construction vibration impacts would be employed by the contractor for all work areas, the assessment assumes no vibration mitigation, such

as the use of alternative methods, is included. Additionally, on a precautionary basis, the assessment assumes typical worst-case methodologies, such as percussive piling for pylon foundations. 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.

- 10.7.17 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 4 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	530	494	36	0	0
High sensitivity non-residential	10	10	0	0	0
Medium sensitivity non-residential	17	16	1	0	0
Low sensitivity non-residential	15	15	0	0	0

- 10.7.18 The assessment indicates that the magnitude of impact from construction vibration is:
- negligible or small at all residential and medium sensitivity non-residential NSR; and
 - negligible at all high sensitivity and low sensitivity non-residential NSR.
- 10.7.19 These would likely not be significant adverse effects, even without specific BPM mitigation measures in place. As such, based upon the application of control mitigation measures, significant adverse effects due to construction vibration are not expected in Section 4.

Construction vibration on buildings and structures

- 10.7.20 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. This will be reviewed further at ES stage and by the contractor prior to starting works.

Construction traffic noise

- 10.7.21 The initial construction noise assessment outputs are presented in **PEI Report Volume 3 Part B Section 4 Appendix 10B Construction Traffic Noise Assessment**.

- 10.7.22 Construction traffic noise impacts have been assessed on 41 construction traffic road links in Section 4 where data is available. The assessment indicates that construction traffic would lead to the following impacts:
- i. no change in noise level on 14 road links;
 - ii. a negligible increase in noise level on 25 road links; and
 - iii. a small increase in noise level on two road links (none of which include NIAs).
- 10.7.23 No medium or large magnitude construction traffic noise impacts are expected in Section 4. 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 4.

Operation and Maintenance

Operational maintenance Noise and Vibration

- 10.7.24 As noted in section 10.3, noise impacts from standard operational 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. Such activities would be expected to be similar to or less significant than 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 4 where suitable BPM are employed.

Summary

- 10.7.25 For completeness, Table 10.4 summarises the findings of the preliminary assessment of Noise and Vibration effects 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 4

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Construction					
All residential, and medium sensitivity non-residential noise sensitive receptors (NSR) within the 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 with specific noise mitigation measures.
High sensitivity non-residential NSR within Study Area	Construction noise	High	Negligible	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.
Low sensitivity non-residential NSR within Study Area	Construction noise	Low	Negligible to medium	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 with specific noise mitigation measures.

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
All NSR within Study Area	Construction vibration	Residential, and high medium and low sensitivity non-residential NSR	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, with specific vibration mitigation measures.
Buildings and structures within Study Area	Construction vibration	Buildings and structures	Below threshold for potential damage	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 buildings and structures, even without specific vibration mitigation measures.
All NSR within Study Area	Construction traffic noise	Residential	Negligible to small	Negligible to Minor adverse. Not significant	No medium or large magnitude construction traffic noise impacts are expected in Section 4. 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 4.

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Operation					
All NSR within 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 BPM 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 will be undertaken in the management of Noise and Vibration:
- 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.
 - iii. If appropriate, through consultation with the local authority, the contractor may apply for prior approval under Section 61 of the CoPA (Ref 12) for certain construction activities.

References

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- Ref 2 South East Lincolnshire Joint Strategic Planning Committee (2013). South East Lincolnshire Local Plan. Strategy and Policies DPD. Preferred Options Summary. Available at: <https://democracy.sholland.gov.uk/documents/s3502/Item%20%20Appendix%201.pdf> [Accessed 14 February 2025].
- 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].
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- Ref 5 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 6 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 7 Department for Transport (1988). Calculation of Road Traffic Noise.
- Ref 8 Highways England et al. (2020). Design Manual for Roads and Bridges LA 111 Noise and vibration.
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- Ref 12 Control of Pollution Act 1974 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40/contents> [Accessed 18 September 2024].

- Ref 13 The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 [online]. Available at: <https://www.legislation.gov.uk/uksi/2015/227> [Accessed 21 January 2025].

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 New Lincolnshire Connection Substation (LCS) B to Refined Weston Marsh Substation Siting Zone (Section 4) 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 Legislative, 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 Planning Inspectorate Scoping Opinion Responses**;
 - iv. A high level summary of the methodology of the Socio-economics, recreation and tourism assessment within Section 4 (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 4 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-economic, 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 the Section 4, 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 appendices.

Table 11.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	<p>Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area</p> <p>Figure 11.2 Development Land Allocations and Open Space Within the Study Area</p> <p>Figure 11.3 PRoW and Promoted/Recreational Routes Within the Study Area</p> <p>Figure 11.4 Airfields and Airstrips Within the Study Area</p>
Project Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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
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.

- 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 4 Chapter 3 Visual**, should be consulted in relation to amenity effects on users of promoted/recreational routes and Public Rights of Way (PRoWs).
 - ii. **PEI Report Volume 2 Part B Section 4 Chapter 8 Agriculture and Soils**, in regard to effects on agricultural landholdings.
 - iii. **PEI Report Volume 2 Part B Section 4 Chapter 9 Traffic and Movement**, should be consulted in relation to impacts on access, promoted/recreational routes and PRoWs.
 - iv. **PEI Report Volume 2 Part B Section 4 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 promoted/recreational routes and PRoWs.
 - v. **PEI Report Volume 2 Part B Section 4 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 4 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 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 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.
 - 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.

11.2 Legislation and Policy Framework

- 11.2.1 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 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; and
 - 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 13 – Inland Employment – the policy intends to ensure a growing, diverse rural economy that contributes to sustaining new and traditional industries across the District;
 - Strategic Policy 14 – Town/Village Centres and Shopping – aims to ensure a healthy, vibrant and viable town centre which is accessible and safe, with a high quality and attractive built environment and public realm;
 - Strategic Policy 21 – Coastal Employment – identifies the need for additional employment land in its coastal regionals, particularly in and around Skegness;
 - Strategic Policy 26 – Open Space, Sport and Recreation – aims to ensure that all communities will have access to quality open spaces for outdoor recreation, and contain a range of sports facilities appropriate to the needs of the community; and
 - Strategic Policy 27 – Renewable and Low Carbon Energy – aims to ensure that renewable energy development is located in the most appropriate locations dependent on the needs of the technology, and character and sensitivities of the area.
- iii. South East Lincolnshire Local Plan (Ref 3):
 - Policy 33 Delivering a More Sustainable Transport Network - the policy encourages the protection of existing footpaths, cycle routes and PRoW from development.

11.3 Scope of Assessment

- 11.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 11) 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 Socio-economics, recreation and tourism 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**.

- 11.3.2 Non statutory consultation feedback has been 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 Chapter 7 Socio-economics, recreation and tourism**.
- 11.3.5 As outlined in the Scoping Report (Ref 5), the effects of the Projects operation and maintenance phases on the receptor groups outlined above are not likely to give rise to significant effect and are therefore scoped out of the assessment. However, acknowledging the Scoping Opinion (Ref 4), 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-economics, 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 is outlined below.
- 11.4.2 There is limited technical guidance available for Socio-economics, 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 4.
- 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 4).
- 11.5.2 The proposed Study Area for Section 4 is shown on:
- PEI Report Volume 2 Part B Section 4 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area;**
 - PEI Report Volume 2 Part B Section 4 Figure 11.2 Development Land Allocations and Open Space Within the Study Area;**
 - PEI Report Volume 2 Part B Section 4 Figure 11.3 PRoW and Promoted/Recreational Routes Within the Study Area;** and
 - PEI Report Volume 2 Part B Section 4 Figure 11.4 Airfields and Airstrips 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

Receptor Type	Study Area
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
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 visitor attractions will be considered as part of the **PEI Report Volume 2 Part C Route-wide Assessment for Socio-economics, tourism and recreation**, 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 Plan (Ref 1);
 - East Lindsey District Council Local Plan (Ref 2);
 - South East Lincolnshire Council Local Plan (Ref 3);
 - Ordnance Survey (OS) Open Greenspace (Ref 6);
 - OS Local Important Buildings (Ref 7);
 - OS AddressBase (Ref 8);
 - traffic count data from surveys undertaken by Traffic and Movement, which include pedestrians, cyclists and equestrians; and
 - designated non-motorised user (NMU) routes and PRoWs from Sustrans (Ref 9 and Ref 10) and Local Authority Definitive Maps where applicable.

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 as found within **PEI Report Volume 2**:

- i. **PEI Report Volume 2 Part B Section 4 Figure 11.1 – Local Business Receptors and Community Facilities Within the Study Area;**
- ii. **PEI Report Volume 2 Part B Section 4 Figure 11.2 – Development Land Allocations and Open Space Within the Study Area;**
- iii. **PEI Report Volume 2 Part B Section 4 Figure 11.3 - PRoW and Promoted/Recreational Routes Within the Study Area;** and
- iv. **PEI Report Volume 2 Part B Section 4 Figure 11.4 – Airfields and Airstrips Within the Study Area.**

Local Businesses

- 11.5.10 The local businesses in this area generally possess some economic value, with potential for substitution, and as such are assigned a medium sensitivity. However, some assets are considered to have a low sensitivity as they are not likely to incur any loss or gain from changes in the environment.
- 11.5.11 Herons Mead Caravan Park and Fishing Lakes is considered to have a high sensitivity resulting from its limited potential for substitution owing to its multi-faceted operations.
- 11.5.12 **Table 11.3** identifies the local businesses, including farms, local tourist attractions and tourist accommodation which fall within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 4 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area.**

Table 11.3 Local businesses within the Study Area

Receptor	Description of location	Sensitivity
Cottage Waters Caravan Park	At its closest point, this receptor is located approximately 150 m from the draft Order Limits. This receptor is situated on Willoughby Road.	Medium
Herons Mead Caravan Park and Fishing Lakes	At its closest point, this receptor is located approximately 200 m from the draft Order Limits. This receptor is situated on Marsh Lane.	High
Sycamore Farm Park	At its closest point, this receptor is located approximately 70 m from the draft Order Limits. This receptor is situated on Chalk Lane.	Medium
Lyndhurst Garden Centre	At its closest point, this receptor is located approximately 100 m from the draft Order Limits. This receptor is situated on Skegness Road.	Medium

Receptor	Description of location	Sensitivity
The Lakes Restaurant	At its closest point, this receptor is located approximately 400 m from the draft Order Limits. This receptor is situated on Skegness Road.	Medium
Sycamore Lakes Park Camping	At its closest point, this receptor is located approximately 400 m from the draft Order Limits. This receptor is situated on Skegness Road.	Medium
Windfarm Park Touring and Camping	At its closest point, this receptor is located approximately 490 m from the draft Order Limits. This receptor is situated on High Lane.	Medium
Midville Caravan Park	At its closest point, this receptor is located approximately 300 m from the draft Order Limits. This receptor is situated on Station Road.	Medium
Lymn Bank Farm Cheese Co and Smoke House	At its closest point, this receptor is located approximately 495 m from the draft Order Limits. This receptor is situated on Lymn Bank Road.	Medium
Castledyke Farm and Equestrian Centre	At its closest point, this receptor is located approximately 280 m from the draft Order Limits. This receptor is situated on Leagate Road.	High
Appletree Holiday Park and Golf Course	At its closest point, this receptor is located approximately 250 m from the draft Order Limits. This receptor is situated on Langrick Road.	High
Boston West Hotel	At its closest point, this receptor is located approximately 250 m from the draft Order Limits. This receptor is situated on Langrick Road.	High
Orchard Holiday Park	At its closest point, this receptor is located approximately 200 m from the draft Order Limits. This receptor is situated on Frampton Lane.	Medium
Waites Farm Glamping	At its closest point, this receptor is located approximately 50 m from the draft Order Limits. This receptor is situated along Hobhole Bank.	Medium

Development Land

- 11.5.13 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.
- 11.5.14 **Table 11.4** identifies key development land allocations and above-ground renewable energy generating infrastructure (solar and onshore wind farms) within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 4 Figure 11.2 Development Land Allocations and Open Space Within the Study Area**.

- 11.5.15 Generally, the allocations are strategic in nature and are therefore considered to have limited potential for substitution. As such they are considered to have a high sensitivity.
- 11.5.16 Further to this, it is considered that the solar farms within the Study Area are of a greater generating capacity and thus economic value than the identified wind turbines. As such the identified solar farms are considered to have a high sensitivity, whereas the identified wind turbines have been assigned a medium sensitivity
- 11.5.17 It should be noted that the East Lindsey District Council Adapted Local Zone Coastal Development Order sits within the Section 3 New LCS A and B and 4 Study Area. However, the impact on this receptor is included within **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** and so has not been included here, to avoid duplication.

Table 11.4 Development land allocations, solar and onshore wind farms within the Study Area

Local authority area	Receptor	Description and location	Sensitivity
East Lindsey Local Planning Authority	Sports and Recreation Allocation, Wigtoft	Sports and recreation allocation located approximately 210 m from the draft Order Limits. The land is located on Main Road.	High
South East Lincolnshire Local Planning Authority	Recreational Open Space Allocation, Wigtoft	Recreational and open space allocation located approximately 450 m from the draft Order Limits. The land is located on Main Road.	High
South East Lincolnshire Local Planning Authority	Green Infrastructure Allocation, Wigtoft	Green infrastructure allocation located approximately 250 m from the draft Order Limits. The land is located on Main Road.	High
South East Lincolnshire Local Planning Authority	Sand and Gravel Minerals Safeguarding Area	At its closest point, this receptor is located approximately 80 m from the draft Order Limits. The allocation is located west of Westville Road.	High
East Lindsey Local Planning Authority	The Hollies Solar photo-voltaic (PV) Park	The solar farm is located approximately 5 m from the draft Order Limits and is situated on High Lane.	High
East Lindsey Local Planning Authority	Lincoln Farm Solar PV	The solar farm is located approximately 200 m from the draft Order Limits and is situated on Burgh Lane.	High
South East Lincolnshire Local Planning Authority	Kirton Solar PV Farm	The solar farm is located approximately 290 m from the draft Order Limits and is situated on Meeres Lane.	High
South East Lincolnshire Local Planning Authority	Nowhere Farm Solar PV	The solar farm is located immediately adjacent to the draft Order Limits and is situated off Pyewipe Lane.	High

Local authority area	Receptor	Description and location	Sensitivity
East Lindsey Local Planning Authority	The Hollies Wind Farm	At its closest point, this receptor is located approximately 470 m from the draft Order Limits. This receptor is situated along High Lane.	Medium
East Lindsey Local Planning Authority	Bicker Fen Solar PV	At its closest point, this receptor is located approximately 100 m from the draft Order Limits. This receptor is situated along Wainfleet Road.	High

Community Facilities

- 11.5.18 **Table 11.5** identifies the community facilities within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 4 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area**.
- 11.5.19 Generally, the community facilities have some social and/or community value and would likely have limited potential for substitution, and as such should be considered to have a high sensitivity.

Table 11.5 Community facilities within the Study Area

Receptor	Description of location	Sensitivity
St Andrew's Church, Farlesthorne	At its closest point, this receptor is located approximately 150 m from the draft Order Limits. This receptor is situated on Farlesthorne Road.	High
St Peter and Paul's Church, Wigtoft	At its closest point, this receptor is located approximately 225 m from the draft Order Limits. This receptor is situated on Main Road.	High
Wigtoft Bowling Green	At its closest point, this receptor is located approximately 250 m from the draft Order Limits. This receptor is situated on Main Road.	High
Kirton Holme Golf Club	At its closest point, this receptor is located approximately 350 m from the draft Order Limits. This receptor is situated on Kirton Holme Road.	High
Burgh Angling Society and Community Nature Reserve	At its closest point, this receptor is located approximately 5 m from the draft Order Limits. This receptor is situated on Farlesthorne Road.	High
Skegness Stadium	At its closest point, this receptor is located approximately 120 m from the draft Order Limits. This receptor is situated on Marsh Lane.	High

Open Space

- 11.5.20 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).
- 11.5.21 Generally, the open spaces have some social and/or community value with potential for substitution, and as such should be considered to have a medium sensitivity.
- 11.5.22 **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. These are also shown on **PEI Report Volume 2 Part B Section 4 Figure 11.2 Development Land Allocations and Open Space Within the Study Area**.
- 11.5.23 It is noted that certain receptors within the Study Area, including Kirton Holme Golf Club, Appletree Holiday Park and Golf Course, Burgh Angling Society Fishing Club and Skegness Stadium also provide areas of open space. However, they been considered as part of the assessment of impacts on community facilities and as such are not considered again here so to avoid double counting.

Table 11.6 Open space within the Study Area

Receptor	Description of location	Sensitivity
Willoughby Branch Line Nature Reserve	The receptor is immediately adjacent to the draft Order Limits at the closest point. This receptor is situated on Farlethorpe Road.	Medium
Playing Field on Asperton Road, Wigtoft	The receptor is located approximately 400 m from the draft Order Limits at the closest point. This receptor is situated on Asperton Road.	Medium
Virley House Country Park	At its closest point, this receptor is located approximately 25 m from the draft Order Limits. This receptor is situated on High Lane.	Medium

Users of Public Rights of Way (PRoW) and promoted/recreational routes

- 11.5.24 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. The PRoWs within the Study Area are shown on **PEI Report Volume 2 Part B Section 4 Figure 11.3 PRoW and Promoted/Recreational Routes Within the Study Area**.
- 11.5.25 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 Lincolnshire County Council definitive maps (Ref 11), and desk-top research. Such routes, paths and trails generally follow alignments utilising combinations of PRoW.
- 11.5.26 PRoW are typically considered as:
- public footpaths, open to walkers only;

- ii. public bridleways, open to walkers, cyclists and horse-riders;
 - iii. restricted byways, open to walkers, cyclists, horse-riders, and drivers and riders of non-mechanically propelled vehicles (such as horse-drawn carriages); and
 - iv. byways open to all traffic (BOATs), open to all including motor vehicles.
- 11.5.27 People using wheelchairs or mobility scooters can use all of the above designations.
- 11.5.28 Considering the potential sensitivity of these receptors, generally:
- i. 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.
 - ii. 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.
 - iii. 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.
- 11.5.29 Relevant transport surveys are ongoing, which are considered in **PEI Report Volume 2 Part B Section 4 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.
- 11.5.30 **Table 11.7** identifies the PRow and promoted/recreational routes 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 PRowS during construction of the Project are assessed within **PEI Report Volume 2 Part B Section 4 Chapter 9 Traffic and Movement**.

Table 11.7 PRow and promoted/recreational routes within the Study Area

Parish area	Receptor	Description	Sensitivity
Promoted/recreational routes			
N/A	Cross Britain Way	This receptor is a long distance walk which begins in Boston and finishes on the Welsh coast. At its closest point, the route is within the draft Order Limits. The route is 279 miles in total length.	High
N/A	Greenwich Meridian Trail	This receptor is a long distance walk that follows the line of the Prime Meridian. At its closest point, the route is within the draft Order	High

Parish area	Receptor	Description	Sensitivity
		Limits. The route is 269 miles in total length.	
N/A	MacMillan Way	This receptor is a long-distance footpath that links Boston to Abbotsbury in Dorset. At its closest point, the route is within the draft Order Limits. The route is 290 miles in total length.	High
N/A	National Cycle Route 1	At its closest point, the route is within the draft Order Limits. The route is 1,264 miles in total length.	High
N/A	Water Rail Way	This receptor is a footpath and cycleway connecting Boston and Lincoln. At its closest point, the route is within the draft Order Limits. The route is 33 miles in total length.	High

Lincolnshire County Council

Bilsby	2 Footpaths; Bils/75/1 and Bils/13/1	There are 2 footpaths located within the Bilsby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Bratoft	1 Footpath; Btft/247/1	There is 1 footpath located within the Bratoft parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Bratoft	1 Bridleway; Btft/244/1	There is 1 bridleway located within the Bratoft parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Burgh Le Marsh	5 Footpaths; BurM/265/2, BurM/261/3, BurM/263/1, BurM/263/2, and BurM/264/2	There are 5 footpaths located within the Burgh Le Marsh parish which interact with the draft Order Limits.	Medium
Burgh Le Marsh	10 footpaths; BurM/260/1, BurM/261/2, BurM/264/1, BurM/266/2,	There are 10 footpaths located within the Burgh Le Marsh parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

Parish area	Receptor	Description	Sensitivity
	BurM/267/1, BurM/266/3, BurM/265/1, BurM/918/1, BurM/260/2 and BurM/1121/1		
Candlesby with Gunby	8 footpaths; Gunb/379/1, Cand/230/1, Gunb/231/2, Cand/230/2, Gunb/230/3, Gunb/231/1, Gunb/230/2 and Gunb/230/1	There are 8 footpaths located within the Candlesby with Gunby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Croft	1 footpath; Crof/264/5	There is 1 footpath located within the Croft parish which interact with the draft Order Limits.	Medium
Croft	3 footpaths; Crof/274/1, Crof/264/4 and Crof/275/1	There are 3 footpaths located within the Croft parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Cumberworth	2 footpaths; Cumb/365/1 and Cumb/93/1	There are 2 footpaths located within the Cumberworth parish which interact with the draft Order Limits.	Medium
Cumberworth	1 footpath; Cumb/365/2	There is 1 footpath located within the Cumberworth parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Farlesthorne	1 footpath; Farl/365/1	There is 1 footpath located within the Farlesthorne parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Firsby	2 footpaths; Firs/253/2 and Irby/253/1	There are 2 footpaths located within the Firsby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

Parish area	Receptor	Description	Sensitivity
Frampton	2 footpaths; Fram/5/1 Fram/6/1	There are 2 footpaths located within the Frampton parish which interact with the draft Order Limits.	Medium
Frampton	1 footpath; Fram/3/1	There is 1 footpath located within the Frampton parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Frithville and Westville	1 bridleway; Wvil/352/2	There is 1 bridleway located within the Frithville and Westville parish which interacts with the draft Order Limits.	Medium
Frithville and Westville	1 bridleway; Wvil/352/1	There is 1 bridleway located within the Frithville and Westville parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Halton Hologate	2 footpaths; HalH/209/1 and LSte/209/1	There are 2 footpaths located within the Halton Hologate parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Hogsthorpe	2 footpaths; Hogs/55/1 and Hogs/50/1	There are 2 footpaths located within the Hogsthorpe parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Holland Fen with Brothertoft	1 footpath; Brot/5/3	There is 1 footpath located within the Holland Fen with Brothertoft parish which interacts with the draft Order Limits.	Medium
Holland Fen with Brothertoft	3 footpaths; Brot/3/1, Brot/5/2 and Brot/2/1	There are 3 footpaths located within the Holland Fen with Brothertoft parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Irby in the Marsh	3 footpaths; Btft/247/2, Irby/247/1 and Irby/320/1	There are 3 footpaths located within the Irby in the Marsh parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Mumby	1 footpath; Mumb/55/1	There is 1 footpath located within the Mumby parish which is located	Medium

Parish area	Receptor	Description	Sensitivity
		within the Study Area and do not interact with the draft Order Limits.	
Orby	1 footpath; Orby/237/1	There is 1 footpath located within the Orby parish which interacts with the draft Order Limits.	Medium
Sibsey	3 footpaths; Sibs/346/2, Sibs/347/1 and Sibs/346/1	There are 3 footpaths located within the Sibsey parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Sutterton	1 footpath; Sutt/8/1	There is 1 footpath located within the Sutterton parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Thorpe St. Peter	1 footpath; ThSp/249/2	There is 1 footpath located within the Thorpe St. Peter parish which interacts with the draft Order Limits.	Medium
Thorpe St. Peter	2 footpaths; LSte/249/1 and ThSP/249/1	There are 2 footpaths located within the Thorpe St. Peter parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Welton Le Marsh	1 footpath; WeLM/228/1	There is 1 footpath located within the Welton Le Marsh parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Wigtoft	2 footpaths; Wigt/1/1 and Wigt/783/1	There are 2 footpaths located within the Wigtoft parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Willoughby with Sloothby	1 footpath; WiWS/365/1	There is 1 footpath located within the Willoughby with Sloothby parish which interacts with the draft Order Limits.	Medium
Willoughby with Sloothby	4 footpaths; WiWS/874/2, WiWS/93/1, WiWS/91/3 and WiWS/94/1	There are 4 footpaths located within the Willoughby with Sloothby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

Aviation

- 11.5.31 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. As such, the baseline information presented in **Table 11.8** below identifies airfields and airstrips, operational or otherwise, which are located within 5 km of the proposed overhead line infrastructure. This is also shown on **PEI Report Volume 2 Part B Section 4 Figure 11.4 Airfields and Airstrips Within the Study Area**.
- 11.5.32 A specialist aviation consultant has been engaged by National Grid Electricity Transmission plc (National Grid) to support ongoing discussions and analysis relating to the operational safety of airfields in the vicinity of the Project. The findings of this initial analysis have been used to inform routing and siting decisions as part of the development of the Project. Further engagement will be undertaken with airfield owners and operators as the Project progresses. A more detailed analysis of potential impacts on aviation receptors will be used to inform the Socio-economic, recreation and tourism assessment at ES stage, including information that will inform the determination of the sensitivity and magnitude of change in connection with users of airfields as socio-economic receptors.

Table 11.8 Airfields and Airstrips within the Study Area

Receptor	Description
Ashley's Field Airstrip	This receptor is an unlicensed airstrip located approximately 1 km from the proposed overhead line alignment. The airstrip is situated approximately 11 km northwest of Skegness.
Skegness Airfield	This receptor is an unlicensed airfield located approximately 3.2 km from the proposed overhead line alignment. The airfield is situated approximately 3 km north of Skegness.
East Kirkby Airfield	This receptor is an unlicensed airfield located approximately 5 km from the proposed overhead line alignment. The airfield is situated approximately 9 km southwest of Mablethorpe.
Loxley Airfield	This receptor is an unlicensed airfield located approximately 2.7 km from the proposed overhead line alignment. The airfield is situated approximately 1.2 km northeast of Stickford. It is not currently known if Loxley Airfield remains operational.
Croft Airstrip	This receptor is an unlicensed airfield located approximately 1.8 km from the proposed overhead line alignment. The airstrip is situated approximately 5 km southwest of Skegness.
Boston Airfield	This receptor is an unlicensed airfield located approximately 1.5 km from the proposed overhead line alignment. The receptor is situated approximately 1.5 km to west of Boston.

Future Baseline

- 11.5.33 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.
- 11.5.34 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 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.
- 11.5.35 Population projections relevant to the local labour market and affected communities are considered as part of **Volume 2 Part C Route-wide Chapter 9 Socio-economics, recreation and tourism**, owing to the nature of the impacts which will be felt at a route-wide level.
- 11.5.36 The Spalding PV and Battery Energy Storage System (BESS) is a proposed development situated partly within the Study Area of Section 4, with a high sensitivity. However, it is omitted from this assessment, as it is located primarily within the Study Area and partially within the Refined Siting Zone boundary of Section 5 Refined Weston Marsh Siting Zone and so has been included within the future baseline of **PEI Report Volume 2 Part B Section 5 Chapter 11 Socio-economics, recreation and tourism**.

11.6 Design, Control and 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 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.
- 11.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 4. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project.

Control Mitigation Measures

Construction

- 11.6.3 A Preliminary 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 Socio-economic, recreation and tourism assessment of Section 4 include:
- iv. TT02 – All affected PRowWs will be identified, and any potential permanent or temporary closures detailed in the DCO. All designated PRowWs 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 Public Rights of Way Management Plan (PRowWMP). PRowWs 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.
 - v. 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).
 - vi. GG08 - Land used temporarily will be reinstated where practicable to its pre-construction condition (including Agricultural Land Classification 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.
 - 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.

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 4.

- 11.7.2 The preliminary assessment of effects reported below take into account the Design and Control mitigation measures as previously described.
- 11.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 11.9**, 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-economic, 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 detailed assessment will be included within the ES submitted with the DCO application.

Likely Significant Effects

Construction, operation and maintenance

- 11.7.6 An assessment of the direct effects of the Project on above ground renewable energy generation infrastructure (solar and onshore wind farms) as Socio-economics, recreation and tourism receptors will be presented in the ES.
- 11.7.7 For this PEI Report, a reasonable worst-case scenario approach has been applied in relation to solar farms that intercept with the draft Order Limits. Within Section 4, there is only one receptor which is the proposed Spalding PV and BESS development considered in the Future Baseline. The assumption is that these receptors will be directly impacted and would therefore have potential for likely significant adverse effects by virtue of both potential temporary or permanent loss of land during construction.
- 11.7.8 The likely level of effect and magnitude of change will be determined within the ES following completion of the relevant interrelated assessments and landowner consultation.
- 11.7.9 Based upon the preliminary assessment, no other likely significant effects are predicted for Socio-economic, recreation and tourism receptors within Section 4, as a result of the construction or operation and maintenance phases of the Project.

Likely Non-Significant Effects

- 11.7.10 For completeness, **Table 11.9** 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.
- 11.7.11 As outlined in the Scoping Report (Ref 5), 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 4) 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.

- 11.7.12 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 4. 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.
- 11.7.13 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 4 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 11.9 Preliminary summary of non-significant Socio-economics, recreation and tourism effects – Section 4

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Local businesses					
Cottage Waters Caravan Park, Willoughby Road	The receptor is located approximately 150 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.</p>
Hérons Mead Caravan Park and Fishing Lakes, Marsh Lane	The receptor is located approximately 200 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and	High	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has limited potential for substitution. It has therefore been assigned a high sensitivity.</p> <p>It is anticipated that there would be a minor change</p>

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	visual impacts during construction.				likely given construction activities in the surrounding areas, including the potential use of an access track nearby. It is assumed that access would be maintained at all times
Sycamore Farm Park, Chalk Lane	The receptor is located approximately 70 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including stringing, and it is assumed that access would be maintained at all times.</p>
Lyndhurst Garden Centre, Skegness Road	At its closest point, this receptor is located approximately 100 m from the draft Order Limits and may be affected by disruption to access	High	Small, adverse	Minor adverse; Not significant	It is considered that this receptor possesses some economic value and has limited potential for substitution. It has therefore been assigned a high sensitivity.

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	and adverse noise/vibration, air quality/dust, and visual impacts during construction.				It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.
The Lakes Restaurant, Skegness Road	The receptor is located approximately 400 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Sycamore Lakes Park Camping, Skegness Road	The receptor is located approximately 100 m from the draft	Medium	Small, adverse	Minor adverse; Not significant	It is considered that this receptor possesses some economic value and has

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.				<p>potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.</p>
Windfarm Park Touring and Camping, High Lane	The receptor is located approximately 490 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Midville Caravan Park, Station Road	The receptor is located approximately 300 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Lymn Bank Farm Cheese Co and Smoke House	The receptor is located approximately 495 m from the draft Order Limits and may be affected from disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Castledyke Farm and Equestrian Centre, Leagate Road	The receptor is located approximately 280 m from the draft Order Limits and may be affected from disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has limited potential for substitution. It has therefore been assigned a high sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.</p>
Appletree Holiday Park and Golf Course, Langrick Road	The receptor is located approximately 250 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse; Not significant	<p>This receptor is considered to have limited potential for substitution due the scale and nature of its operations and has therefore been assigned a high sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the</p>

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					surrounding areas, and it is assumed that access would be maintained at all times.
Boston West Hotel, Langrick Road	The receptor is located approximately 250 m from the draft Order Limits and may be affected from disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse; Not significant	<p>This receptor is considered to have limited potential for substitution due the scale and nature of its operations and has therefore been assigned a high sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Orchard Holiday Park, Frampton Lane	The receptor is located approximately 200 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and	High	Small, adverse	Minor adverse; Not significant	This receptor is considered to have limited potential for substitution due the scale and nature of its operations and has therefore been assigned a high sensitivity.

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	visual impacts during construction.				It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
Waites Farm Glamping	The receptor is located approximately 50 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Development land allocations					
East Lindsey Local Plan Sports and Recreation Allocation, Main Road	Sports and recreation allocation located approximately 210 m from the draft Order Limits.	High	Small, adverse	Minor adverse; Not significant	Development land allocations are strategic in nature and therefore considered to have limited potential for substitution, and as such,

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					are considered to have a high sensitivity. It is anticipated that a minor change will be felt, given likely construction activities in the surrounding areas.
South East Lincolnshire Local Planning Authority Recreational Open Space Allocation	Recreational and open space allocation located approximately 450 m from the draft Order Limits. The land is located on Main Road.	High	Small, adverse	Minor adverse; Not significant	Development land allocations are strategic in nature and therefore considered to have limited potential for substitution, and as such, are considered to have a high sensitivity. It is anticipated that a minor change will be felt, given likely construction activities in the surrounding areas.
South East Lincolnshire Local Planning Authority Green Infrastructure Allocation	Green infrastructure allocation located approximately 250 m from the draft Order Limits. The land is located on Main Road.	High	Small, adverse	Minor adverse; Not significant	Development land allocations are strategic in nature and therefore considered to have limited potential for substitution, and as such, are considered to have a high sensitivity. It is anticipated that a minor change will be felt, given likely construction

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					activities in the surrounding areas.
South East Lincolnshire Local Planning Authority Sand and Gravel Minerals Safeguarding Area	Sand and Gravel Minerals Safeguarding Area located approximately 80 m from the draft Order Limits. The allocation is located west of Westville Road.	High	Small, adverse	Minor adverse; Not significant	Development land allocations are strategic in nature and therefore considered to have limited potential for substitution, and as such, are considered to have a high sensitivity. It is anticipated that a minor change will be felt, given likely construction activities in the surrounding areas.
Above ground renewable energy generating infrastructure (solar farms) not located within the draft Order Limits	The receptors may be indirectly affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Likely not significant	It is considered that this receptor group possesses some economic value and has potential for substitution. It has therefore been assigned a high sensitivity. It is anticipated that there would be a Small change likely given construction activities in the surrounding areas which would have a limited impact on the receptor's amenity and usability. It is assumed that access

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					would be maintained at all times.
Above ground renewable energy generating infrastructure (onshore wind farms) not located within the draft Order Limits	The receptors may be indirectly impacted by changes to access during operation as a result of operation and maintenance activities.	Medium	Negligible, adverse	Likely not significant	It is considered that this receptor group 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 negligible change likely given that any potential impacts to access would be agreed with the landowner in advance to minimise any potential effects.
Above ground renewable energy generating infrastructure (solar farms) not located within the draft Order Limits	The receptors may be indirectly impacted by changes to access during operation as a result of operation and maintenance activities.	High	Negligible, adverse	Likely not significant	It is considered that this receptor group has a limited potential for substitution. It has therefore been assigned a high sensitivity. It is anticipated that there would be a negligible change likely given that any potential impacts to access would be agreed with the landowner in advance to minimise any potential effects.

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Community facilities					
St Andrew's Church, Farlesthorpe, Alford	The receptor is located approximately 150 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse; Not significant	<p>Community facilities have some social and/or community value and would likely have limited potential for substitution in the immediate surrounding area and are therefore assigned a high sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.</p>
St Peter and Paul's Church, Main Road	The receptor is located approximately 225 m from the draft Order by and may be affected from disruption to access and adverse noise/vibration, air quality/dust, and	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 the immediate surrounding area and are therefore assigned a high sensitivity.

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	visual impacts during construction.				It is therefore anticipated that a minor change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Wigtoft Bowling Green, Main Road	The bowling green is located approximately 400 m from the draft Order Limits. Amenity for users of the bowling green may be affected by adverse noise/vibration, air quality, and visual impacts during construction.	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 the immediate surrounding area and are therefore assigned a high sensitivity. It is therefore anticipated that a minor change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Kirton Holme Golf Club, Kirton Holme Road	The receptor is located approximately 350 m from the draft Order Limits and may	High	Small, adverse	Minor adverse; Not significant	This receptor has some social and community value associated with the provision of open space

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.				and would likely have limited potential for substitution in the immediate surrounding area and is therefore assigned a high sensitivity. It is anticipated that there would be a minor change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Burgh Angling Society and Community Nature Reserve, Farlesthorne Road	The receptor is located approximately 5 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse; Not significant	This receptor has some social and community value associated with the provision of open space and would likely have limited potential for substitution in the immediate surrounding area and is therefore assigned a high sensitivity. It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					use of a construction access track nearby. It is assumed that access would be maintained at all times.
Skegness Stadium, Marsh Lane	The receptor is located approximately 120 m from the draft Order Limits and may be affected from disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse; Not significant	<p>This receptor is considered to have limited potential for substitution due to its scale and the nature of its operations and has therefore been assigned a high sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.</p>
Open space					
Willoughby Branch Line Nature Reserve, Farlesthorpe Road	The receptor is immediately adjacent to the draft Order Limits. Recreational amenity for users of	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

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	the nature reserve may be adversely affected by noise/vibration, air quality, and visual impacts during construction.				therefore considered to have a medium sensitivity. It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track adjacent to this receptor. It is assumed that access would be maintained at all times.
Playing Field on Asperton Road, Wigtoft	The playing field is located approximately 400 m from the draft Order Limits. Recreational amenity for users of the playing field may be affected by adverse noise/vibration, air quality, 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 minor change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Virley House Country Park, High Lane	The receptor is located approximately 25 m from the draft Order Limits and may be affected by disruption to access and adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse; Not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity.</p> <p>It is anticipated that there would be a minor change likely given construction activities in the surrounding areas, including the potential use of a construction access track nearby. It is assumed that access would be maintained at all times.</p>

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 Socio-economic, recreation and tourism assessment. This will be reviewed and updated accordingly as part of the ES.

References

- Ref 1 Lincolnshire County Council, 2016. *Minerals and Waste Local Plan* [online]. Available at: <https://www.lincolnshire.gov.uk/downloads/file/2361/core-strategy-and-development-management-policies>
- 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 [Accessed 25 September 2024].
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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 Substation (LCS) B to the Refined Weston Marsh Substation Siting Zone (Section 4) 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 4 (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 4 Study Area relevant to the Air Quality 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 4 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
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Figures	Figure 12.1 Construction Dust Study Area Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 4, 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.
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 4 Chapter 4 Ecology and Biodiversity** assesses the potential for Air Quality to effect ecological receptors, such as increases in pollutant concentrations or dust deposition.
 - ii. **PEI Report Volume 2 Part B Section 4 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 4 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 Section 4 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

- 12.2.1 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, 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 recognises that protected ecological sites may be highly susceptible to changes in air pollution from increased traffic movements.
 - ii. South East Lincolnshire Local Plan 2011-2036 (Adopted 2019) (Ref 2) which covers the administrative areas of both Boston Borough and South Holland District Councils:

- Policy 28 – the Natural Environment: development proposals which cause direct or indirect adverse effects on nationally or locally-designated sites and protected or priority habitats and species will not be permitted unless, amongst other tests, suitable prevention, mitigation and compensation measures are provided.
- Policy 30 – Pollution: development proposals will not be permitted should they lead to unacceptable adverse impacts upon Air Quality; and
- Policy 31 – Climate Change and Renewable and Low Carbon Energy: developments must demonstrate consequences of current climate change has been addressed, minimised and mitigated through the protection of Air Quality.

12.3 Scope of Assessment

- 12.3.1 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). 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 (PM₁₀ and PM_{2.5})).
 - 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_x) (comprising Nitrogen Monoxide, NO, and Nitrogen Dioxide, NO₂), Ammonia (NH₃) and Particulate Matter (PM₁₀ and PM_{2.5}). 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) are yet to be determined and are therefore not detailed within the PEI Report. An assessment of any likely significant effects due to use of NRMM will be included in the ES, in accordance with the Scoping Opinion (Ref 3).
- 12.3.5 As proposed within the Scoping Report and subsequently agreed in principle in the Scoping Opinion, the assessment of emissions from diverted traffic and road closures has been provisionally scoped out. However, further details of any potential changes in traffic flows due to the diversion of traffic will be presented in the ES.

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 are provided below.
- 12.4.2 This PEI Report chapter presents a baseline appraisal of Air Quality within Section 4. It assesses the impact of dust and PM₁₀ 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 Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (Ref 5). 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 in 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 6).
- 12.4.6 Where changes in traffic flows resulting from the construction of the Project meet the assessment criteria within the Environmental Protection UK (EPUK)/IAQM Land Use Planning & Development Control guidance (Ref 7), and set out below, then detailed dispersion modelling will be undertaken to determine the impact on existing human sensitive receptors:
- a change in Light Duty Vehicle (LDV)¹ flows of more than 100 Annual Average Daily Traffic (AADT, vehicles/day) within or adjacent to an Air Quality Management Area (AQMA) or more than 500 AADT elsewhere; and
 - a change in Heavy Duty Vehicle (HDV) (>3.5 tonnes)² 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

¹ Light Duty Vehicles = cars and Light Goods Vehicles (LGVs).

² Heavy Duty Vehicles = Heavy Goods Vehicles (HGVs) plus public service vehicles, e.g., buses and coaches.

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 8). 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 7) for human sensitive receptors and the IAQM criteria (Ref 8) 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-scanned 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 Methodologies and Scope**. There are no additional limitations and assumptions that have been identified within this Section.
- 12.4.11 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.

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 5) and additional guidance given by Natural England during the Scoping Opinion (Ref 3). The construction dust Study Area is shown within **PEI Report Volume 2 Part B Section 4 Figure 12.1 Construction Dust Study Area** and is dictated by the screening criteria below:
 - i. 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
 - ii. 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 5),

and has been used following the advice given by Natural England within their Scoping Opinion consultation response (Ref 3).

- 12.5.2 Background NO_x, NO₂, PM₁₀ and PM_{2.5} concentrations presented in the baseline assessment for the existing and future years have been extracted from Defra's background maps³ (Ref 9) 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 NH₃ concentrations and nitrogen deposition rates, have been taken from Air Pollution Information System (APIS) (Ref 10), along with acid deposition rates and the relevant critical levels and loads for the designated sites.

Road traffic emissions

- 12.5.4 The Section 4 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 Methodology (Ref 7). The Section 4 Study Area comprises any roads where these criteria are exceeded, and any human receptors within 200 m of these roads. The Section 4 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 4 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 8).
- 12.5.6 Roadside concentrations from local authority monitoring sites within 200 m of the routes within the Section 4 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:
- iii. Defra's Background Maps (based on a 2021-base year) (Ref 9);
 - iv. Air Pollution Information System (APIS) (Ref 10);
 - v. Defra's AQMA dataset (Ref 11);
 - vi. Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref 12);
 - vii. Local authority Air Quality Management Reports (Ref 13, Ref 14, Ref 15);
 - viii. Ordnance Survey (OS) AddressBase Plus dataset;
 - ix. Google Earth Imagery; and

³ 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 500m buffer has been applied.

- x. Data on Part A1⁴ Permitted Installations held by the Environment Agency and Part A2 and B⁵ Installations held by the local authorities within the Section 4 Study Area (Ref 16, Ref 17, Ref 18, Ref 19).

12.5.8 As previously stated, preliminary projections of changes in traffic flow 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 4 Chapter 9 Traffic and Movement** and supporting appendices.

Existing Baseline

- 12.5.9 The following section outlines the Air Quality baseline for the Section 4 Study Area. There are two main potential sources of air pollution associated with this Project, construction dust emissions and construction road traffic emissions. The baseline presented is therefore based upon an assessment of likely background concentrations of NO_x, NO₂, PM₁₀ and PM_{2.5} taken from Defra's 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 4 Figure 12.1 Construction Dust Study Area**.
- 12.5.11 The Section 4 Study Area is rural in nature and land use largely consists of agricultural (arable) land. To the north of the Section 4 Study Area, the draft Order Limits are located to the east of the village of Billsby, and west of Thurlby, continuing in a southerly direction through largely arable land towards the town of Burgh Le Marsh. To the south of this town, the draft Order Limits run in a south westerly direction towards Boston, routing around the town to the west, before continuing in a southerly direction and crossing the River Welland. Given the rural nature of the Section 4 Study Area, the draft Order Limits pass a large number of small settlements, including Cumberworth, Sloothby, Croft, Northlands Langrick Bridge, and Wigtoft.
- 12.5.12 As **PEI Report Volume 2 Part B Section 4 Figure 12.1 Construction Dust Study Area** illustrates, the assessed sensitive receptor locations across the Section 4 Study Area are either at the extents of these and other small settlements, closest to the draft Order Limits, or represent individual scattered properties within the wider rural area, and include those located in several small hamlets and individual agricultural holdings.
- 12.5.13 There is a designated ecological site within the Section 4 Study Area, Willoughby Branch Line Local Nature Reserve and Local Wildlife Site, to the west of Section 4, to the north of the settlement of Willoughby.
- 12.5.14 There are 8 non-designated sites within the Section 4 Study Area that area sensitive to effects due to construction dust:
- i. Farlesthorne Pit (Local Wildlife Site) is located in the northern extent of Section 4 and is located to the west of the draft Order Limits;

⁴ Large-scale industrial processes emitting to land, air and/or water.

⁵ 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).

- ii. Hobhole Drain, Boston Corporation Farm to Station Cottages (Local Wildlife Site) is located in the centre of Section 4 near New Leake and crosses the draft Order Limits from the north to south;
- iii. Risegate Eau (Local Wildlife Site) is located in the southern extent of Section 4 and crosses the draft Order Limits from west to east;
- iv. Sloothby Low Lane (Local Wildlife Site) is located at the northern extent of Section 4 and crosses the draft Order Limits from west to east;
- v. Sloothby Meadows (Local Wildlife Site) is located at the northern extent of Section 4, to the west of the draft Order Limits;
- vi. South Forty Foot Drain (Local Wildlife Site) crosses Section 4 to the west of Boston;
- vii. Surfleet Bank (Local Wildlife Site) is situated to the south of Section 4; and
- viii. The Lymn (Local Wildlife Site) is situated to the south of the draft Order Limits and crosses Spilsby Road.

Local Authority Air Quality Monitoring Data

- 12.5.15 Section 4 is located across three local authorities: East Lindsey District Council (ELDC), Boston Borough Council (BBC) and South Holland District Council (SHDC).
- 12.5.16 There are no AQMAs within ELDC or SHDC. However, there is one AQMA in BBC's administrative area, named Haven Bridge, located approximately 4.4 km east of the draft Order Limits. The AQMA covers part of the A16 in the centre of Boston and was declared in 2001 for exceedances of the annual mean NO₂ Air Quality Objective AQO (Ref 14).
- 12.5.17 ELDC and BBC only monitor NO₂ concentrations, whilst SHDC measure NO₂, PM₁₀ and ozone (O₃) (Ref 13, Ref 14, Ref 15).
- 12.5.18 Monitoring of annual mean NO₂ levels is undertaken through a network of passive diffusion tubes and is reported in the local authorities respective 2024 Annual Status Reports (ASRs), which present the concentrations from the calendar years 2019 to 2023. The locations and annual mean NO₂ concentrations of roadside diffusion tubes in BBC's and SHDC's administrative areas that are within 200 m of construction traffic routes are presented in **Table 12.2** and shown in **PEI Report Volume 2 Part B Section 4 Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations**. There are no locations in ELDC that meet this criterion.

Table 12.2 Section 4 local authority NO₂ monitoring data

ID	Location	Local Authority	Distance to draft Order Limits (km)	Annual Mean NO ₂ Concentration (µg/m ³)				
				2019	2020	2021	2022	2023
1*	Adjacent to new Air Quality monitoring station, North side of Haven Bridge Road	BBC	3.8	49.2	42.1	44.6	42.1	40.3

3*	Adjacent to 68 Liquorpond Street		3.7	46.5	35.2	39.3	37.6	33.6
4*	Adjacent to 18 Queen Street		3.6	39.8	29.4	33.4	32.5	29.7
5*	John Adams Way intersection with Haven Bridge		4.1	34.8	27.6	27.4	28.3	27.3
8*	Bargate Roundabout		4.8	31.3	25.3	27.4	27.2	25.2
9*	Roadside adjacent to 30 Spilsby Road		4.7	37	29.9	31.9	29.8	29.0
12	Junction of New Asda Road and Sleaford Road, Boston		3.4	28.9	20.4	26.4	22.7	21.8
14*	Roadside adjacent to 20 Spilsby Road		4.6	35.8	27.2	28.9	27.7	26.7
16	Entrance to South Quay Car Park		4.9	30.1	24.8	26.4	25.0	24.0
17	Opposite 4-6 South End, Boston		4.9	30.5	24.2	26.4	22.5	21.8
18	ATS Roundabout, London Road, Boston		3.5	33.8	28.3	29	28.1	25.8
19	Opposite 55 London Road, Boston		4.5	27.5	22.9	22.6	22.5	21.5
20*	Kerbside, Haven Bridge		3.9	41.6	34	37.6	35.3	33.3
21	36 Sleaford Road, Boston		3.3	29	23.7	24.7	23	21.3
22*	Adjacent to 94 Liquorpond Street		3.7	35.9	26.6	28.2	28.7	25.2
SH5	Station Road	SHDC	5.2	27.9	20.9	23.8	27.6	24.3
SH6	Boston Rd A17		10.7	26.4	20.0	19.5	21.6	18.3
SH7	Gedney A17		9.5	15.5	12.7	14.3	14.4	13.6
SH19 (Former SH14)	Whaplode		4.3	17.0	12.1	13.4	13.6	12.3
SH16	Gosberton		4.0	20.3	18.7	19.0	22.2	19.6

*Monitoring location within Haven Bridge AQMA
Values in bold represent concentrations over the annual mean NO₂ AQO concentration

- 12.5.19
- There is one monitoring location (site ID1 in Boston) where exceedances of the AQO have occurred consistently across all five years (although NO₂ levels also exceeded the objective at sites ID3 and ID20 in 2019). This monitoring location is located within the Haven Bridge AQMA.
- 12.5.20
- The closest site monitoring PM₁₀ and PM_{2.5} is over 9 km away from the Section 4 Study Area and has therefore been deemed not representative of conditions within the section. Therefore, the current (2024) baseline concentrations have been derived from modelled estimates of background concentrations provided by Defra (**Table 12.3**). These are unlikely to be fully representative of roadside PM₁₀ and PM_{2.5} concentrations, but given prevailing levels are lower than the standards, it is unlikely that roadside concentrations would exceed the relevant objectives.
- 12.5.21
- A review of permitted industrial sources within 2 km of the draft Order Limits was completed (Ref 16, Ref 17, Ref 18, Ref 19). 79 industrial sources have been identified within the Section 4 Study Area, however, they are unlikely to substantially contribute to dust and PM₁₀ levels within the Section 4 Study Area as those present will have limits on emissions to air imposed by the relevant regulator. These sources represented within the background concentrations outlined within **Table 12.3**.

Background Air Quality Data

- 12.5.22
- Table 12.3** displays the arithmetic mean, minimum and maximum of modelled annual mean background pollutant concentrations of NO_x, NO₂, PM₁₀, and PM_{2.5} for 2024 within the Section 4 Study Area (Ref 9).

Table 12.3 2024 modelled Defra background concentrations within the Section 4 Study Area

Average (Minimum - Maximum) 2024 Annual Mean Concentration (µg/m³)			
NO _x	NO ₂	PM ₁₀	PM _{2.5}
7.1 (6.9 - 8.2)	5.7 (5.5 - 6.5)	12.9 (11.3 - 14.4)	5.7 (5.4 - 6.1)

- 12.5.23
- The background concentrations of NO₂ and PM₁₀ are generally low within the Section 4 Study Area, which is under half of the limit value of 40 µg/m³ for both pollutants.
- 12.5.24
- Background NO_x concentrations (relevant to ecological receptors) are also low within the Section 4 Study Area. There is one designated site of local, national or international importance within Section 4; this is Willoughby Branch Line Local Nature Reserve (LNR) which is located to the west of the draft Order Limits at Farlesthorpe. The average NO_x concentration across the Section 4 Study Area is 7.1 µg/m³ which falls below the critical level for the protection of vegetation of 30 µg/m³.

- 12.5.25 Concentrations of PM_{2.5} are below the relevant limit value (20 µg/m³), the average concentration within the Section 4 Study Area is 5.7 µg/m³. PM_{2.5} is the pollutant for which background concentrations are closest to the limit value in 2024.
- 12.5.26 **Table 12.4** shows the NH₃ critical level and concentration, nitrogen and acid deposition rates and critical loads for the designated sites identified within the Section 4 Study Area.

Table 12.4 Ammonia critical level and concentration, nitrogen and acid deposition rates and critical loads for the ecological sites within the Section 4 Study Area

Ecological Site (Grid Reference X, Y)	2020 – 2022 Average Concentration					
	Ammonia Critical Level (µg/m³)*	Ammonia Concentration (µg/m³)	Nitrogen Deposition Rate (kg N/ha/yr)	Nitrogen Critical Load Range (kg N/ ha/yr)	Acid Deposition Rate (keq/ha/yr)	Acid Critical Load (CLmaxS/CLminN /CLmaxN) (keq/ha/yr)
Willoughby Branch Line (Local Nature Reserve, Local Wildlife Site)¹						
546500, 372500	1 - 3	1.55	28.97	10 - 15	1.81 (N:2.07 S: 0.15)	2.271/0.357/2.628
546500, 373500	1 - 3	1.49	28.9	10 - 15	1.81 (N:2.06 S: 0.15)	2.271/0.357/2.628
547500, 373500	1 - 3	1.54	28.77	10 - 15	1.81 (N:2.05 S: 0.14)	2.267/0.357/2.624
547500, 374500	1 - 3	1.54	28.74	10 - 15	1.81 (N:2.05 S: 0.14)	2.267/0.357/2.624
Willoughby Branch Line (Local Nature Reserve, Local Wildlife Site)²						
546500, 372500	1 - 3	1.55	15.39	10 - 15	0.85 (N:1.1 S: 0.11)	4/1.071/5.071
546500, 373500	1 - 3	1.49	15.34	10 - 15	0.85 (N:1.1 S: 0.11)	4/1.071/5.071
547500, 373500	1 - 3	1.54	15.21	10 - 15	0.85 (N:1.09 S: 0.11)	4/1.071/5.071
547500, 374500	1 - 3	1.54	15.19	10 - 15	0.85 (N:1.09 S: 0.11)	4/1.071/5.071
Willoughby Branch Line (Local Nature Reserve, Local Wildlife Site)³						
546500, 372500	1 - 3	1.55	15.39	5 - 10	0.85 (N:1.1 S: 0.11)	4/1.071/5.071

546500, 373500	1 - 3	1.49	15.34	5 - 10	0.85 (N:1.1 S: 0.11)	4/1.071/5.071
547500, 373500	1 - 3	1.54	15.21	5 - 10	0.85 (N:1.09 S: 0.11)	4/1.071/5.071
547500, 374500	1 - 3	1.54	15.19	5 - 10	0.85 (N:1.09 S: 0.11)	4/1.071/5.071
Farlesthorne Pit (Local Wildlife Site)⁴						
547500, 373500	N/A	1.54	15.21	N/A	0.85 (N:1.09 S: 0.11)	N/A
548500, 373500	N/A	1.56	15.04	N/A	0.84 (N:1.07 S: 0.1)	N/A
Farlesthorne Pit (Local Wildlife Site)¹						
547500, 373500	1 - 3	1.54	28.77	10 - 15	1.81 (N:2.05 S: 0.14)	2.267/0.357/2.624
548500, 373500	1 - 3	1.56	28.48	10 - 15	1.80 (N:2.03 S: 0.14)	2.265/0.357/2.622
Hobhole Drain, Boston Corporation Farm to Station Cottages (Local Wildlife Site)⁵						
538500, 357500	N/A	2.04	17.23	N/A	1.04 (N:1.23 S: 0.1)	N/A
538500, 358500	N/A	2.17	17.37	N/A	1.05 (N:1.24 S: 0.1)	N/A
538500, 359500	N/A	2.26	17.52	N/A	1.06 (N:1.25 S: 0.1)	N/A
Risegate Eau (Local Wildlife Site)⁵						
519500, 329500	N/A	1.74	15.53	N/A	1.04 (N:1.11 S: 0.11)	N/A
520500, 329500	N/A	1.76	15.66	N/A	1.05 (N:1.12 S: 0.11)	N/A
521500, 329500	N/A	1.76	15.78	N/A	1.06 (N:1.13 S: 0.12)	N/A

521500, 330500	N/A	1.81	15.89	N/A	1.06 (N:1.13 S: 0.11)	N/A
522500, 330500	N/A	1.81	16.01	N/A	1.07 (N:1.14 S: 0.12)	N/A
523500, 330500	N/A	1.80	15.93	N/A	1.06 (N:1.14 S: 0.12)	N/A
524500, 330500	N/A	1.77	15.85	N/A	1.05 (N:1.13 S: 0.12)	N/A
524500, 331500	N/A	1.83	15.93	N/A	1.05 (N:1.14 S: 0.11)	N/A
525500, 331500	N/A	1.79	15.84	N/A	1.04 (N:1.13 S: 0.11)	N/A
526500, 331500	N/A	1.75	15.75	N/A	1.03 (N:1.12 S: 0.11)	N/A
527500, 331500	N/A	1.71	15.66	N/A	1.03 (N:1.12 S: 0.11)	N/A
528500, 331500	N/A	1.68	15.56	N/A	1.02 (N:1.11 S: 0.11)	N/A
Sloothby Low Lane (Local Wildlife Site)²						
550500, 370500	1 - 3	1.60	14.92	10 - 15	0.85 (N:1.07 S: 0.11)	4/1.071/5.071
550500, 371500	1 - 3	1.61	14.84	10 - 15	0.84 (N:1.06 S: 0.11)	4/1.071/5.071
551500, 370500	1 - 3	1.56	14.72	10 - 15	0.84 (N:1.05 S: 0.11)	4/1.071/5.071
552500, 370500	1 - 3	1.52	14.53	10 - 15	0.84 (N:1.04 S: 0.11)	4/1.071/5.071
552500, 371500	1 - 3	1.52	14.5	10 - 15	0.83 (N:1.04 S: 0.1)	4/1.071/5.071
Sloothby Meadows (Local Wildlife Site)²						
550500, 371500	1 - 3	1.61	14.84	10 - 15	0.84 (N:1.06 S: 0.11)	4/1.071/5.071

South Forty Foot Drain (Local Wildlife Site)⁵

516500, 323500	N/A	1.82	15.69	N/A	1.06 (N:1.12 S: 0.1)	N/A
516500, 324500	N/A	1.77	15.5	N/A	1.05 (N:1.11 S: 0.1)	N/A
516500, 325500	N/A	1.74	15.31	N/A	1.03 (N:1.09 S: 0.1)	N/A
516500, 326500	N/A	1.70	15.12	N/A	1.02 (N:1.08 S: 0.1)	N/A
516500, 327500	N/A	1.69	14.94	N/A	1.00 (N:1.07 S: 0.1)	N/A
516500, 328500	N/A	1.69	15.08	N/A	1.01 (N:1.08 S: 0.1)	N/A
516500, 329500	N/A	1.68	15.22	N/A	1.01 (N:1.09 S: 0.1)	N/A
516500, 330500	N/A	1.73	15.35	N/A	1.02 (N:1.1 S: 0.1)	N/A
516500, 331500	N/A	1.78	15.49	N/A	1.02 (N:1.11 S: 0.1)	N/A
516500, 332500	N/A	1.84	15.63	N/A	1.03 (N:1.12 S: 0.1)	N/A
516500, 333500	N/A	1.85	15.68	N/A	1.03 (N:1.12 S: 0.1)	N/A
516500, 334500	N/A	1.84	15.72	N/A	1.03 (N:1.12 S: 0.1)	N/A
517500, 322500	N/A	1.90	15.95	N/A	1.09 (N:1.14 S: 0.1)	N/A
517500, 323500	N/A	1.82	15.76	N/A	1.07 (N:1.13 S: 0.1)	N/A
517500, 334500	N/A	1.88	15.8	N/A	1.03 (N:1.13 S: 0.1)	N/A
517500, 335500	N/A	1.87	15.84	N/A	1.03 (N:1.13 S: 0.1)	N/A

517500, 336500	N/A	1.86	15.87	N/A	1.03 (N:1.13 S: 0.1)	N/A
517500, 337500	N/A	1.86	15.91	N/A	1.03 (N:1.14 S: 0.1)	N/A
517500, 338500	N/A	1.85	15.95	N/A	1.03 (N:1.14 S: 0.1)	N/A
518500, 338500	N/A	1.85	16.04	N/A	1.04 (N:1.15 S: 0.1)	N/A
518500, 339500	N/A	1.85	16.07	N/A	1.04 (N:1.15 S: 0.1)	N/A
518500, 340500	N/A	1.85	16.1	N/A	1.04 (N:1.15 S: 0.1)	N/A
519500, 340500	N/A	1.85	16.18	N/A	1.04 (N:1.16 S: 0.11)	N/A
519500, 341500	N/A	1.84	16.2	N/A	1.04 (N:1.16 S: 0.11)	N/A
520500, 341500	N/A	1.86	16.27	N/A	1.05 (N:1.16 S: 0.12)	N/A
520500, 342500	N/A	1.86	16.29	N/A	1.05 (N:1.16 S: 0.12)	N/A
521500, 342500	N/A	1.88	16.35	N/A	1.06 (N:1.17 S: 0.13)	N/A
522500, 342500	N/A	1.89	16.4	N/A	1.07 (N:1.17 S: 0.13)	N/A
522500, 343500	N/A	1.88	16.4	N/A	1.06 (N:1.17 S: 0.13)	N/A
523500, 343500	N/A	1.88	16.45	N/A	1.06 (N:1.17 S: 0.12)	N/A
524500, 343500	N/A	1.87	16.49	N/A	1.06 (N:1.18 S: 0.12)	N/A
525500, 343500	N/A	1.87	16.53	N/A	1.06 (N:1.18 S: 0.12)	N/A
526500, 343500	N/A	1.88	16.57	N/A	1.06 (N:1.18 S: 0.12)	N/A

527500, 343500	N/A	1.89	16.61	N/A	1.06 (N:1.19 S: 0.11)	N/A
528500, 343500	N/A	1.90	16.66	N/A	1.06 (N:1.19 S: 0.12)	N/A
529500, 343500	N/A	1.93	16.7	N/A	1.07 (N:1.19 S: 0.12)	N/A
530500, 343500	N/A	1.97	16.75	N/A	1.07 (N:1.2 S: 0.12)	N/A
531500, 343500	N/A	2.00	16.8	N/A	1.07 (N:1.2 S: 0.13)	N/A
532500, 342500	N/A	1.92	16.77	N/A	1.07 (N:1.2 S: 0.12)	N/A
532500, 343500	N/A	1.93	16.84	N/A	1.08 (N:1.2 S: 0.13)	N/A
Surfleet Bank (Local Wildlife Site)²						
528500, 330500	1 - 3	1.66	15.52	10 - 15	1.02 (N:1.11 S: 0.11)	4/1.071/5.071
529500, 330500	1 - 3	1.64	15.43	10 - 15	1.01 (N:1.1 S: 0.11)	4/1.071/5.071
528500, 330500	1 - 3	1.66	15.52	10 - 15	1.02 (N:1.11 S: 0.11)	4/1.071/5.071
529500, 330500	1 - 3	1.64	15.43	10 - 15	1.01 (N:1.1 S: 0.11)	4/1.071/5.071
Surfleet Bank (Local Wildlife Site)³						
528500, 330500	1 - 3	1.66	15.52	5 - 10	1.02 (N:1.11 S: 0.11)	4/1.071/5.071
529500, 330500	1 - 3	1.64	15.43	5 - 10	1.01 (N:1.1 S: 0.11)	4/1.071/5.071
528500, 330500	1 - 3	1.66	15.52	5 - 10	1.02 (N:1.11 S: 0.11)	4/1.071/5.071
529500, 330500	1 - 3	1.64	15.43	5 - 10	1.01 (N:1.1 S: 0.11)	4/1.071/5.071

The Lymn (Local Wildlife Site)⁵

546500, 361500	N/A	1.67	15.54	N/A	0.91 (N:1.11 S: 0.1)	N/A
547500, 361500	N/A	1.61	15.24	N/A	0.89 (N:1.09 S: 0.1)	N/A
548500, 361500	N/A	1.54	14.93	N/A	0.87 (N:1.07 S: 0.1)	N/A
549500, 361500	N/A	1.49	14.62	N/A	0.85 (N:1.04 S: 0.1)	N/A

The Lymn (Local Wildlife Site)⁶

546500, 361500	1 - 3	1.67	15.54	5 - 15	0.91 (N:1.11 S: 0.1)	N/A
547500, 361500	1 - 3	1.61	15.24	5 - 15	0.89 (N:1.09 S: 0.1)	N/A
548500, 361500	1 - 3	1.54	14.93	5 - 15	0.87 (N:1.07 S: 0.1)	N/A
549500, 361500	1 - 3	1.49	14.62	5 - 15	0.85 (N:1.04 S: 0.1)	N/A

Note:

*The NH₃ critical level is 3 µg/m³ unless lichens and bryophytes are known to be present in which case it reduces to 1 µg/m³.

¹ Habitat is defined as broadleaved, mixed and yew woodland.

² Habitat is defined as neutral grassland.

³ Habitat is defined as calcareous grassland.

⁴ Habitat is defined as standing water.

⁵ Habitat is defined as watercourse, no critical loads or levels are presented in APIS.

⁶ Habitat is defined as fen, marsh and swamp.

- 12.5.27 **Table 12.4** shows that the average NH₃ concentration is above the lower critical level. The upper critical load for nitrogen deposition is exceeded at all sites apart from Sloothby Low Lane and part of The Lymm where the lower critical load is exceeded. The acid deposition is below the acid critical load.

Summary

- 12.5.28 Overall, the Air Quality in the Section 4 Study Area is very good. There is only one exceedance of the annual mean NO₂ objective in the 2023 local monitoring data and the background concentrations within the Section 4 Study Area are low in comparison to the Air Quality objectives.
- 12.5.29 For habitats within the Section 4 Study Area, both the lower critical level for NH₃ and upper critical load for nitrogen deposition are exceeded whereas the average acid deposition is below the respective critical load.

Future Baseline

- 12.5.30 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 complete prior to construction of the Project.
- 12.5.31 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 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.
- 12.5.32 Projected background air pollutant concentrations available from a base year of 2021 (Ref 9); these have been used to determine future baseline conditions. Levels of NO_x, NO₂, PM₁₀ and PM_{2.5} 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 petroleum 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 20); and
 - improved emission standards for NRMM and static generators.
- 12.5.33 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 9).

- 12.5.34 The arithmetic mean, minimum and maximum of predicted pollutant concentrations for the future baseline Section 4 Study Area for 2029 are shown in **Table 12.5**. There are reductions in both NO_x and NO₂ levels within the Section 4 Study Area compared to the 2024 forecast as shown in **Table 12.3**. There is a steady reduction in both NO_x and NO₂ concentrations of about 0.8 – 1.0 µg/m³, and a reduction in PM₁₀ and PM_{2.5} of 0.3 – 0.4 µg/m³.

Table 12.5 2029 modelled Defra background concentrations within the Section 4 Study Area

Average (Minimum - Maximum) 2029 Annual Mean Concentration (µg/m ³)			
NO _x	NO ₂	PM ₁₀	PM _{2.5}
6.1 (5.9 - 7.2)	4.9 (4.7 - 5.7)	12.5 (10.9 - 14.0)	5.4 (5.1 - 5.8)

- 12.5.35 Future baseline background NH₃ concentrations, rates of nutrient nitrogen and acid deposition are currently unknown. For the ES, these will be calculated based on data from APIS projected growth factors taken from best practice guidance.

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 21) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 22) 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 23) 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 4. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- 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. Of relevance for Air Quality, the embedded measures include:
- 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

Construction

- 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 included within the Preliminary CoCP relevant to Air Quality assessment of Section 4 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 (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)) 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), 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. GG15: 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 Site Management Plan.
- 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 (including roads) 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 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 bowzers 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; and
 - 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_x and PM₁₀ 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; and

- 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 also 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 as follows:
- i. Screening vegetation which, while primarily included to limit visual intrusion (for landscaping purposes), may further reduce potential Air Quality impacts by filtering dust and air pollutants emitted by construction site activities; and,
 - ii. Woodland replacement and tree planting on the boundary of the draft Order Limits which, while primarily included to encourage nature conservation/biodiversity and landscape integration, may reduce potential Air Quality impacts by filtering dust and air pollutants emitted by construction and operation site activities

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 4 Study Area, as a result of construction, maintenance and/or operational activities.
- 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 2 Part B Section 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 12.11**, 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 effect are likely due to construction dust and PM₁₀. 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 construction traffic flows is given in **PEI Report Part B Volume 2 Section 2 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 for 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 the local authority areas of ELDC, BBC and SHDC are shown in **PEI Report Volume 2 Part B Section 4 Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations** and presented in **Table 12.6**.
- 12.7.8 Based on the initial screening, 36 road links are expected to exceed the EPUK/IAQM screening 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. change in HDV flows greater than or equal to 200 AADT.

Table 12.6 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
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
CR15	A17	19637	2806	21298	3044	396	33	362
CR10	A16	20202	1307	21912	1417	106	106	0
CR14-3	A17	12547	2253	13609	2443	340	30	309
CR11-1	A16	18830	3207	20293	3456	341	95	245
CR14-1	A17	15199	3133	16484	3398	369	48	320
CR14-2	A17	19632	3988	21293	4326	363	45	317
CR11-3	A16	20116	3088	21679	3327	369	139	229
CR12-2	A16	17435	1938	18790	2088	308	72	235
CR11-4	A16	23808	3164	25658	3410	367	137	229
CR11-1	A16	18830	3207	20293	3456	341	95	245
CR11-2	A16	16661	1765	17956	1902	353	123	229
CR12-1	A16	16125	2380	17378	2565	338	102	235
LK65	Marsh Road, Spalding	145	20	156	22	502	348	155
LK66	Stone Gate, Spalding	0	0	0	0	239	82	157

LK87	A151	0	0	0	0	164	7	157
LK79	A151	16435	1620	17712	1746	312	7	305
LK86	A151	12544	1593	13519	1717	298	7	291

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 changes 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 considered 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 this, at receptors within 200 m of those road links identified in **Table 12.6**, significant effects due to changes in Air Quality cannot be ruled out at this stage, in the absence of dispersion modelling results.

Operation

- 12.7.14 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

- 12.7.15 **PEI Report Volume 2 Part B Section 4 Figure 12.1 Construction Dust Study Area** shows the construction dust Study Area. The construction of the 400 kV overhead line would generally follow the sequence outlined in **PEI Report Volume 2 Part B Section 4 Chapter 1 Overview of the Section and Description of the Project**.
- 12.7.16 Construction activities (including the construction of the overhead line between New LCS B to the Refined Weston Marsh Substation Siting Zone) that have the potential to generate and/or re-suspend dust and PM₁₀ 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 (there are two main yards and one satellite yard);

- v. earthworks, including the groundworks (soil stripping and excavation for pylon foundations);
- vi. materials handling, storage, stockpiling and disposal;
- vii. movement of vehicles and construction traffic within the draft Order Limits;
- viii. exhaust emissions from site plant and NRMM, especially when used at the extremes of their capacity and during mechanical breakdown;
- ix. pylon assembly;
- x. establishment of scaffolding and crossing protection;
- xi. conductor stringing;
- xii. demobilisation of construction compounds and temporary accesses; and
- xiii. site reinstatement.

12.7.17 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 or 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 are reinstated.

12.7.18 The construction dust assessment methodology adopts a worst-case approach and treats all receptors within the Section 4 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.

12.7.19 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 4 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 a construction compound site. This is due to the greater scale and duration of construction activities associated with a construction compound, relative to the activities required for the erection of pylons. 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

12.7.20 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM₁₀ sources: demolition; earthworks; construction; and trackout. The findings of the assessment are presented below.

Demolition

12.7.21 Demolition works within the Section 4 Study Area will be limited to localised enabling works to existing electricity supply infrastructure crossed by the overhead line route. Specifically, this is anticipated to include the removal of existing wooden poles and

steel lattice pylons over short sections of existing lower voltage overhead lines to be replaced by underground cable, where required to provide a clear route for the new 400 kV overhead line.

- 12.7.22 Based upon precautionary assumptions, the total volume of assumed works is more than 75,000 m³ and is therefore defined as large.

Earthworks

- 12.7.23 The main earthworks that will be undertaken are localised preparation for haul roads, pylon foundation construction and landscaping. The soil types within the Section 4 Study Area vary between Holderness, Wallasea 2, Downholland 1, Downholland 2, Salop, Wisbech, Agney, and Tanvats. These are predominately clayey and silty soils which will be more prone to suspension when dry due to their small grain size. More information on each soil type is given within **PEI Volume 2 Section 4 Chapter 8 Agriculture and Soils**.

- 12.7.24 The total area of the draft Order Limits falls within the IAQM range for large sites (over 110,000 m²). 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

- 12.7.25 The total volume of buildings⁶ (pylons and construction compounds) to be constructed on the Site will be above 75,000 m³ with potentially dusty construction materials being used. Therefore, the potential dust emission magnitude is judged to be large for construction activities.

Trackout

- 12.7.26 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.

Dust emission magnitude summary

- 12.7.27 **Table 12.7** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 12.7 Potential dust emission magnitude

Activity	Dust Emission Magnitude
Demolition	Large
Earthworks	Large
Construction	Large
Trackout	Large

⁶ 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

- 12.7.28 The prevailing wind direction is from the southwest. Therefore, receptors located to the northeast of the draft Order Limits (specifically the Wigtoft urban area on the draft Order Limits border) are more likely to be affected by dust and PM₁₀ emitted and re-suspended during the construction phase.
- 12.7.29 Willoughby Branch Line Local Nature Reserve is situated less than 10 m west of the draft Order Limits as outlined in **Table 12.4**. As per the IAQM guidance (Ref 5), Local Nature Reserves and Local Wildlife Sites are deemed to be a low sensitivity receptor.
- 12.7.30 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, the receptor counts are outlined in **Table 12.8**. There are also sensitive receptors along public highways which could be used as construction routes within 250 m of the Site, including residential receptors on Winfleet Road, Canister Lane and within Gipsy Bridge. There are also a number of schools situated on public highways which will be used as construction routes including Frithville Primary School, Gipsy Bridge Academy and The New Leake Primary School that may be sensitive to trackout, earthworks and construction. Background PM₁₀ levels are predicted to be well below the annual mean objective (**Table 12.3**).

Table 12.8 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
4	56	166	253	423	537

- 12.7.31 Taking the above number and sensitivity of receptors into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust and PM₁₀ has been derived for each of the construction activities considered. The results are shown in **Table 12.9**.

Table 12.9 Sensitivity of the Section 4 Study Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological	Low	Low	Low	Low

Assessment of Dust Risk to Define Site-Specific Mitigation

- 12.7.32 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 12.10** below summarises 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 12.10 Summary dust risk table

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Low	Low	Low
Ecological	Medium	Low	Low	Low

- 12.7.33 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 draft Preliminary CoCP, it is not considered likely that there would be significant effects associated with dust generated during construction.

Construction Traffic Emissions

- 12.7.34 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 7) and IAQM guidance (Ref 8) and the outcomes reported within the ES.

Operation and Maintenance

- 12.7.35 Once operational, traffic movements associated with the permanent works within Section 4 will be limited to those associated with the inspection and maintenance of infrastructure. However, the numbers of vehicle movements are expected to be small in number and as such it is considered that there will be no likely significant effects. This will be confirmed within the ES once screening of the anticipated traffic volumes against the relevant criteria have been undertaken.
- 12.7.36 Therefore, no likely significant effects are expected upon Air Quality during operation of the Project.

Summary

- 12.7.37 For completeness, **Table 12.11** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Air Quality effects.

Table 12.11 Preliminary summary of non-significant Air Quality effects – Section 4

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Construction					
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 over 10 receptors within 20 m of the draft Order Limits, therefore according to the IAQM guidance, the receptor sensitivity is high.	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.
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 over 10 receptors within 20 m of the draft Order Limits, therefore according to the IAQM guidance, the receptor sensitivity is high.	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.
Ecological Receptors sensitive to construction dust impacts	Without mitigation, there may be adverse impacts to ecological sites through dust deposition.	There is a Local Nature Reserve and Local Wildlife Sites within 200 m of the draft Order Limits, therefore, according to the IAQM guidance, the	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
		receptor sensitivity is low.			
Operation and Maintenance					
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 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone

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 Substation (LCS) B to Refined Weston Marsh Substation Siting Zone Section (Section 4). 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 4 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 2-12. 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	<p>A high level of confidence in the prediction of significant effects can be justified through:</p> <ul style="list-style-type: none">• The consideration of, and routeing and/or siting of the Project away from, designated features and high sensitivity receptors;• Complete baseline data to inform the prediction;

Confidence Level	Definition
	<ul style="list-style-type: none"> • Mitigation measures are fully defined and/or the application of mitigation measures has proven to be effective in similar projects; and • A thorough understanding of Project activities.
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"> • Particular surveys or assessments are incomplete at this stage, but it is possible to extrapolate results; • Mitigation measures will continue to be developed up to the submission of the application for consent; and • 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.
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"> • Only limited baseline data is available at this stage; • Input assessments (e.g. modelling outputs) are unavailable or limited, to the extent it isn't possible to confidently identify the effect and its significance. • Exact project activities are unknown; • Mitigation measures remain in the early stages of development; and • Where this is the case, a precautionary, worst-case approach is taken.

Table 13.2 Summary of significant effects during the construction phase – Section 4

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Landscape				
No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.				
Visual				
The community of Bilsby Parish would be directly impacted by the construction of approximately 1.4 km of overhead line (including pylons LW5-LW8) and indirectly impacted by the construction of the New Lincolnshire Connection Substation (LCS) B (in Section 3), resulting in adverse impacts on the views from this area.	<p>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.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).</p>	Areas of woodland planting to replace those affected by the Project.	Adverse effect	High
Ecology and Biodiversity				
Designated Sites				
Bird species which are qualifying features of the following European Designated Sites may be impacted by construction activities within functionally linked land, potentially resulting in temporary displacement and/or habitat degradation:	<p>The positioning of pylons and haul roads (temporary access routes) to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction impacts would be managed through the control</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	Significant adverse effects cannot be excluded at this stage	Low – further assessment is required once bird surveys are completed and data assessed. The potential for Likely Significant Effect

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<ul style="list-style-type: none"> Gibraltar Point Special Protection Area (SPA) and Ramsar site; The Wash SPA and Ramsar site; Greater Wash SPA; The Humber Estuary SPA and Ramsar site; and The Nene Washes SPA and Ramsar site. 	measures outlined within the Preliminary CoCP.	informed by ongoing survey and assessment and are likely to include the creation of replacement habitats where required to avoid significant effects.		(LSE) upon these sites will be assessed within the Report to Inform the Habitat Regulations Assessment, informed by discussions with Natural England other statutory bodies.
The Wash and North Norfolk Coast Special Area of Conservation (SAC) may be indirectly impacted by construction activities resulting in changes in water quantity, level and flow, or impacts upon otter species, within watercourses which are hydrologically linked to the SAC.	<p>The positioning of the substation, pylons and access routes has sought to avoid or reduce direct and indirect impacts on high value aquatic habitats.</p> <p>Use of clear span bridges where crossings of sensitive water courses (e.g. main rivers) would be required. Where new culverts are unavoidable, these would 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.</p> <p>Construction impacts would be managed through the control measures outlined within the Preliminary CoCP.</p>		Significant adverse effects cannot be excluded at this stage	

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>Bird species which are features of the following Nationally Designated Sites may be impacted by construction activities within functionally linked land, potentially resulting in temporary displacement and/or habitat degradation:</p> <ul style="list-style-type: none"> • Gibraltar Point Site of Special Scientific Interest (SSSI); • Troy Wood SSSI; • The Wash SSSI; and • Gibraltar Point National Nature Reserve (NNR). 	<p>The positioning of pylons and haul roads (temporary access routes) to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction impacts would be managed through the control 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 - potential impacts upon the bird assemblages will be assessed once all baseline surveys are complete.</p>
<p>Willoughby Branch Line Local Nature Reserve (LNR) may be impacted by construction activities, including vehicle emissions, resulting in potential habitat degradation within this site and/or disturbance of associated fauna.</p>			<p>Significant adverse effects cannot be excluded at this stage</p>	
<p>The following Local Wildlife Sites (LWS) may be impacted by construction activities, resulting in potential habitat degradation and/or disturbance of habitats and any fauna associated with these sites.</p>			<p>Significant adverse effects cannot be excluded at this stage</p>	

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<ul style="list-style-type: none"> • Willoughby Branch Line LWS; • Hobhole Drain Boston Corporation Farm to Station Cottages LWS; • Risegate Eau LWS; • Farlesthorne Pit LWS; • Sloothby Low Lane LWS; • Sloothby Meadows LWS; • South Forty Foot Drain LWS; • Surfleet Bank LWS; and • The Lymn LWS. 				

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Habitats				
Areas of Habitat of Principal Importance (HPI), including the coastal and floodplain grazing marsh in the Burgh le Marsh area and near the River Welland, would be directly impacted directly and indirectly by construction activities, resulting in the habitat loss and degradation.	The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on HPI. Pylons have been located outside of HPI where possible, however coastal and floodplain grazing marsh in the Burgh le Marsh area and near the River Welland will be directly affected by the proposed ground works within Section 4 through habitat loss. Construction impacts would be managed through the control measures outlined within the Preliminary CoCP.	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.	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.
Terrestrial habitats including hedgerows, arable field margins, scrub and small woodland parcels would be directly impacted by construction activities associated with the overhead line, including the establishment and of the construction compound and haul roads, resulting in temporary loss and severance. Terrestrial habitats may also be indirectly impacted through the release of pollutants during construction.	The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees. Construction impacts would be managed through the control measures outlined within the Preliminary CoCP.		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.

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>Aquatic habitats would be directly impacted by construction activities associated with the new overhead line, including watercourse crossings and diversions required to facilitate temporary haul roads, resulting in temporary loss and/or damage to aquatic habitats.</p>	<p>The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on aquatic habitats, including the setting back of pylons from existing channels.</p> <p>Where new culverts are unavoidable, these would 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.</p> <p>Construction impacts would be managed through the control 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 may 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>
Protected or Notable Species				
<p>The following species may be impacted by construction activities resulting in: loss, damage or fragmentation of suitable habitats; disturbance and/or death/injury:</p> <ul style="list-style-type: none"> • Terrestrial Invertebrates; • Great Crested Newts; • Reptiles; • Breeding and wintering birds; • Badgers; 	<p>The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable habitats, including woodland, ponds and hedgerows.</p> <p>Construction impacts would be managed through the control 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</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>

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<ul style="list-style-type: none"> Bats; Otters; Fish; Aquatic macroinvertebrates and macrophytes; and Water Vole. 		replacement habitats where required to avoid significant effects.		

Historic Environment

Designated Assets

Butterbump round barrow cemetery (NHLE 1003615) scheduled monument would be temporarily impacted by construction activities associated with the overhead line, including the establishment and presence of haul roads, resulting in temporary changes to the setting of this scheduled monument.	<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 control measures outlined within the Preliminary CoCP.</p>	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
The following Scheduled Monuments would be permanently impacted by the construction and presence of pylons and overhead line within	<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</p>	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>the open agricultural landscape, resulting in permanent impacts upon their setting:</p> <ul style="list-style-type: none"> • Butterbump round barrow cemetery (NHLE 1003615); • Castle Hill: a motte castle 250 m east of Hanby Hall Farm (NHLE 1019173); and • Manwar Ings: remains of a motte and bailey castle (NHLE 1018684). 	<p>historic environment chapter of the ES submitted with the DCO application.</p>			
<p>Grade II Listed Bridge over Twenty Foot Drain (NHLE 1359723).would be temporarily impacted by construction activities associated with the overhead line, including the establishment and presence of haul roads, resulting in temporary changes to the setting of this listed building.</p>	<p>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.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Major adverse effect</p>	<p>High</p>
<p>Grade I Listed Parish Church of St Botolph, Boston (NHLE 1388844) would be permanently impacted by the construction and presence of pylons and overhead line within the open agricultural</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</p>		<p>Moderate adverse effect</p>	<p>High</p>

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
landscape, resulting in permanent changes to their setting.	ES submitted with the DCO application.			
Non-Designated Assets				
<p>The following non-designated historic environment assets would be temporarily impacted by construction activities associated with the overhead line, including the establishment and presence of haul roads, resulting in temporary changes to their setting:</p> <ul style="list-style-type: none"> • Bilsby Farm, Bilsby (MLI116616); • Moat House (MLI116615); • Barbridge House, Sibsey (MLI124595); and • Asperton Farm, Wigtoft (MLI122814). 	<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>	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
Water Environment and Flood Risk				
Third party flood risk receptors may be impacted by the presence of temporary works within defended floodplain, including construction	Impacts upon floodplain storage and flow conveyance during construction would be managed through the measures outlined within the Preliminary CoCP.	The assessment does not take into account Additional Mitigation Measures which are in the early stages of	Moderate to Major adverse effect	Low - several factors require further assessment to inform the final Flood Risk Assessment,

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
compounds, haul roads, stockpiles and watercourse crossings, resulting in the temporary loss of floodplain storage and/or change in floodplain flow conveyance (under conditions of flood defence overtopping or breach).		development and may include provision of compensatory storage, subject to ongoing discussions with the Environment Agency.		including review of existing flood models, informed by engagement with the Environment Agency.

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

957.2 ha of agricultural land (assumed to be BMV land) would be temporarily impacted by construction activities, including establishment and presence 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, maintain and operate 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
147.2 ha of agricultural land (assumed to be BMV land) would be permanently impacted by the construction of overhead line infrastructure (pylon footings and foundations), resulting in the	Construction impacts would be managed through the measures outlined within the Preliminary CoCP.		Major adverse effect	High

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
permanent loss of agricultural land.				
Soil Function				
Soils within the 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.	Where practicable, all surplus soil resources would be re-used within the Project where, depending on the proposed land use, some soil ecosystem services would be retained, restored or potentially enhanced.	No additional mitigation measures have been identified for this preliminary assessment.	Major, or Moderate adverse effect	High
147.2 ha of soils would be permanently impacted by the construction of overhead line infrastructure (pylon footings and foundations) resulting in loss of soil quality and ecosystem services.	Construction impacts would be managed through the measures outlined within the Preliminary CoCP.		Major adverse effect	Moderate – the magnitude of impacts may be reduced if it is practicable to beneficially re-use the soil resources.
Traffic and Movement				
Users of Highway Links				
Drivers (all vehicles including HGVs and Emergency Services) would be impacted by increases in construction traffic flows causing severance, changes in journey time, driver delay and highway safety effects.	Construction traffic would be routed along classified roads as far as possible and haul roads would be used where possible. Where road closures are required, the period of the closure would be kept to a minimum and diversions would be via	No additional mitigation measures have been identified for this preliminary assessment.	Significant adverse effects cannot be excluded at this stage	Moderate - baseline data for some of the identified construction traffic routes is not currently available. For these routes a qualitative

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Bus passengers would be impacted by increases in construction traffic flows causing delays due to congestion.	the most appropriate alternative route. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.		Significant adverse effects cannot be excluded at this stage	analysis has been undertaken.
Pedestrians and cyclists would be impacted by increases in construction traffic flows causing severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.			Significant adverse effects cannot be excluded at this stage	

Noise and Vibration

No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.

Socioeconomics, Recreation and Tourism

Spalding PV and BESS could be directly impacted by the construction of pylons and overhead line within Section 4, potentially resulting in both temporary and permanent loss of land during construction.	Impacts on the operation of this receptor may be lessened or avoided through consideration of the detailed design of individual pylons, haul roads and temporary structures. This will be assessed fully within 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.	Adverse effect	Moderate – National Grid will continue to engage with the operators of these sites in order to inform a full assessment of impacts and effects, which will be reported within the ES.
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Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Air Quality				
Human sensitive receptors (including residential properties, schools, care homes and hospitals) which are within 200m of road links projected to experience increases in traffic flow which are above the Environmental Protection UK/Institute of Air Quality Management and Assessment thresholds, could be exposed to increased pollutant concentrations during the construction phase.	Maximising separation between sensitive receptors and the proposed temporary haul roads as far as reasonably practicable. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.	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.
Ecological sensitive receptors which are within 200m of road links projected to experience increases in traffic flow which are above the Environmental Protection UK/Institute of Air Quality Management and Assessment thresholds, could be exposed to increased pollutant concentrations during the construction phase.			Significant adverse effects cannot be excluded at this stage	

Table 13.3 Summary of significant effects during the operation and maintenance phase – Section 4

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Landscape				
The Regional Landscape Character Type (RLCT) 2C Fen and Marsh Margin Farmlands would be directly impacted by the operation of approximately 6 km of overhead line, causing adverse impacts on the landscape character of the area.	Amendments to locations of access tracks and bellmouths and overhead line alignment to minimise loss of mature vegetation, which in turn would help to screen and filter views of the Project.	<ul style="list-style-type: none"> • Areas of woodland planting to replace those affected by the Project; and • Introduction of tree planting on field boundaries and roadsides to filter views of the Project. 	Adverse effect	High
Visual				
<p>Visual receptors within the following 41 community areas would be impacted by the presence of new pylons and overhead lines, with close proximity views and/or distant views of this new infrastructure:</p> <ul style="list-style-type: none"> • Amber Hill; • Bilsby; • Bratoft; • Bicker; • Burgh le Marsh; • Carrington; • Croft; 	Amendments to locations of access tracks and bellmouths and overhead line alignment to reduce loss of mature vegetation, which in turn would help to screen and filter views of the Project.	<ul style="list-style-type: none"> • Areas of woodland planting to replace those affected by the Project to provide visual screening. • Introduction of tree planting on field boundaries and roadsides to filter views of the Project. 	Adverse Effects	High

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<ul style="list-style-type: none"> • Cumberworth; • East Keal; • Eastville; • Farlesthorpe; • Firsby; • Frampton; • Firthville and Westville; • Great Steeping; • Halton Holegate; • Higsthorpe; • Holland Fen with Brothertoft; • Huttoft; • Irby in the Marsh; • Kirton; • Langrville; • Little Steeping; • Midville; • Mumby; • New Leake; • Orby; • Sibsey; • Stickford; • Stickney; • Sutterton; • Swineshead; 				

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<ul style="list-style-type: none"> • Thronton le Fen; • Thorpe St Peter; • Toynton All Saints; • Toynton St Peter; • West Fen; • West Keal; • Wigtoft; • Wildmore; and • Willoughby with Sloothby. <p>Although views are already affected by existing overhead line within these areas, the Project would spread the visual effects of overhead line infrastructure across a wider area and increase the numbers of pylons visible for people living and moving around these parishes.</p>				

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Ecology and Biodiversity				
Birds as qualifying features of The Humber Estuary SPA, Ramsar site and SSSI, The Wash SPA, Ramsar site and SSSI, Gibraltar Point SPA, Ramsar site, SSSI and NNR, Greater Wash SPA and Nene Washes SPA and Ramsar site and Troy Wood SSSI may be impacted by the presence of the overhead line, resulting in collision mortality.	The positioning of pylons to avoid or reduce direct and indirect impacts on notable species and 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. Additionally, discussions with Natural England other statutory bodies will inform completion of habitat regulations assessment and the full assessment to be reported in the ES.

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
The European designated sites within Section 4 may be impacted by operation of the Project causing changes to flow regimes, volumes of water supplied, water depth and flow rates, which could affect the qualifying habitats and associated species.	<p>The positioning of pylons and haul roads 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 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.</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.	Significant adverse effects cannot be excluded at this stage	<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>Additionally, discussions with Natural England other statutory bodies will inform completion of habitat regulations assessment.</p>
Wintering and breeding birds will be impacted by operation and maintenance activities causing increased risk of collision with the overhead line leading to killing/injury of bird species.	The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats as far as reasonable practicable.	<p>Additional Mitigation Measures are in the early stages of development and are yet to be confirmed.</p> <p>These measures will be informed by ongoing survey and assessment and are likely to include the use of bird diverters to reduce collision risk.</p>	Significant adverse effects cannot be excluded at this stage	<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>Additionally, discussions with Natural England other statutory bodies will inform</p>

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
				completion of habitat regulations assessment.
Historic Environment				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Water Environment and Flood Risk				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Geology and Hydrogeology				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Agriculture and Soils				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Traffic and Movement				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Noise and Vibration				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				

Description of potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Socioeconomics, Recreation and Tourism				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Air Quality				
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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