

The Great Grid Upgrade

Grimsby to Walpole

Preliminary Environmental Information Report

Volume 2 Part B Section Specific Assessments

Section 2 New Grimsby West Substation to New Lincolnshire
Connection Substation A

Chapters 1 to 13

June 2025



Contents

Preface

- 1. Overview of the Section and Description of the Project**
 - 2. Landscape**
 - 3. Visual**
 - 4. Ecology and Biodiversity**
 - 5. Historic Environment**
 - 6. Water Environment and Flood Risk**
 - 7. Geology and Hydrogeology**
 - 8. Agriculture and Soils**
 - 9. Traffic and Movement**
 - 10. Noise and Vibration**
 - 11. Socio-economics, Recreation and Tourism**
 - 12. Air Quality**
 - 13. Summary**
-

Grimsby to Walpole

Document control

Document Properties			
Organisation		Arup AECOM	
Approved by		National Grid	
Title		Preliminary Environmental Information Report Volume 2 Part B Section Specific Assessments Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A Chapters 1 to 13	
Document Register ID		GWNC-ARUP(AEC)-ENV-REP-0002	
Data Classification		Public	
Version History			
Date	Version	Status	Description / Changes
June 2025	1.0	Final	First Issue

Preface

Contents

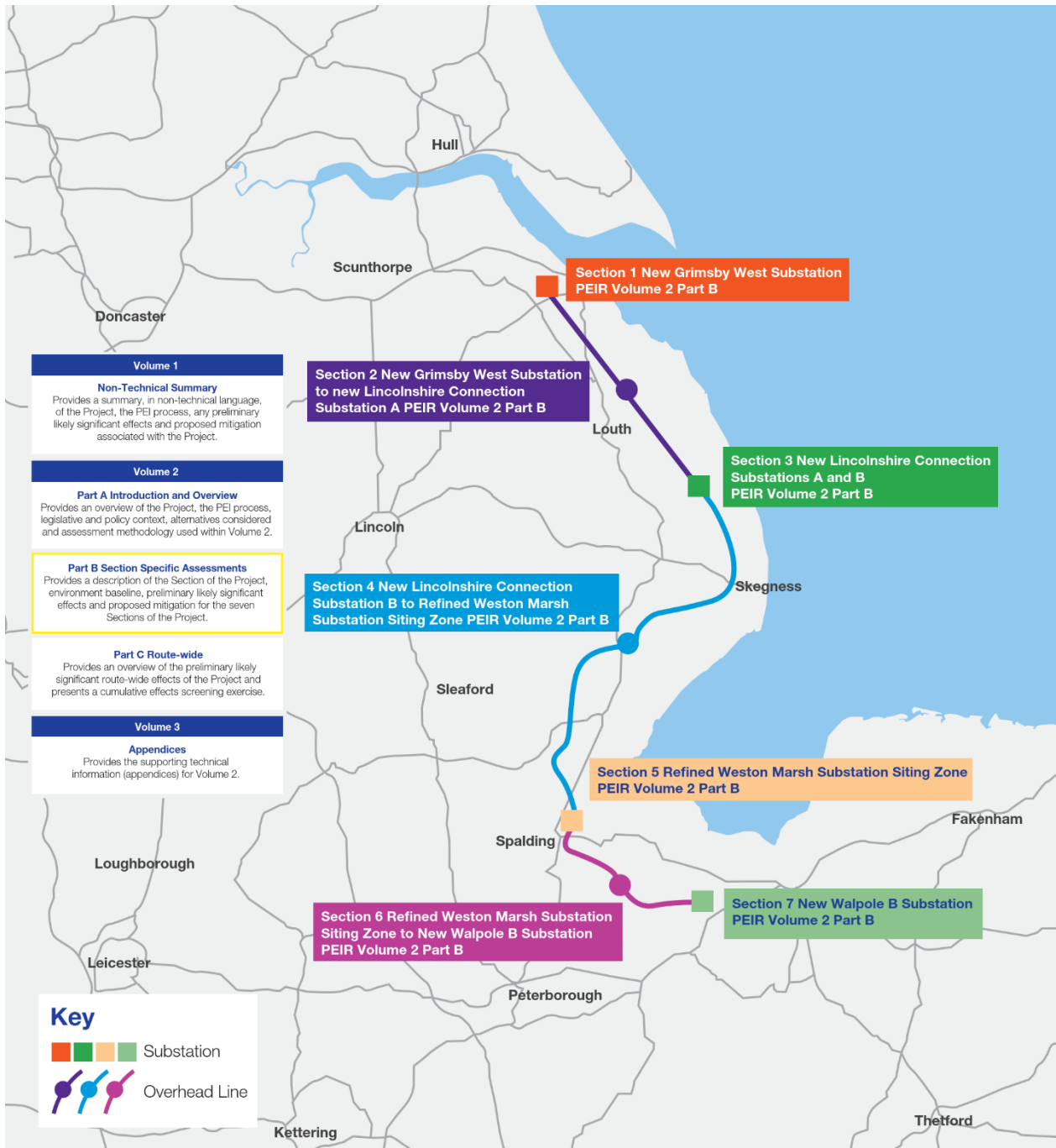
1.	Part B Preface	1
1.1	Structure and Context of the Preliminary Environmental Information Report	1

	References	3
--	------------	---

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

Contents

1.	Overview of the Section and Description of the Project	1-1
1.1	Overview of the Section	1-1
1.2	Proposed Project	1-2
	Proposed Overhead Line Route	1-2

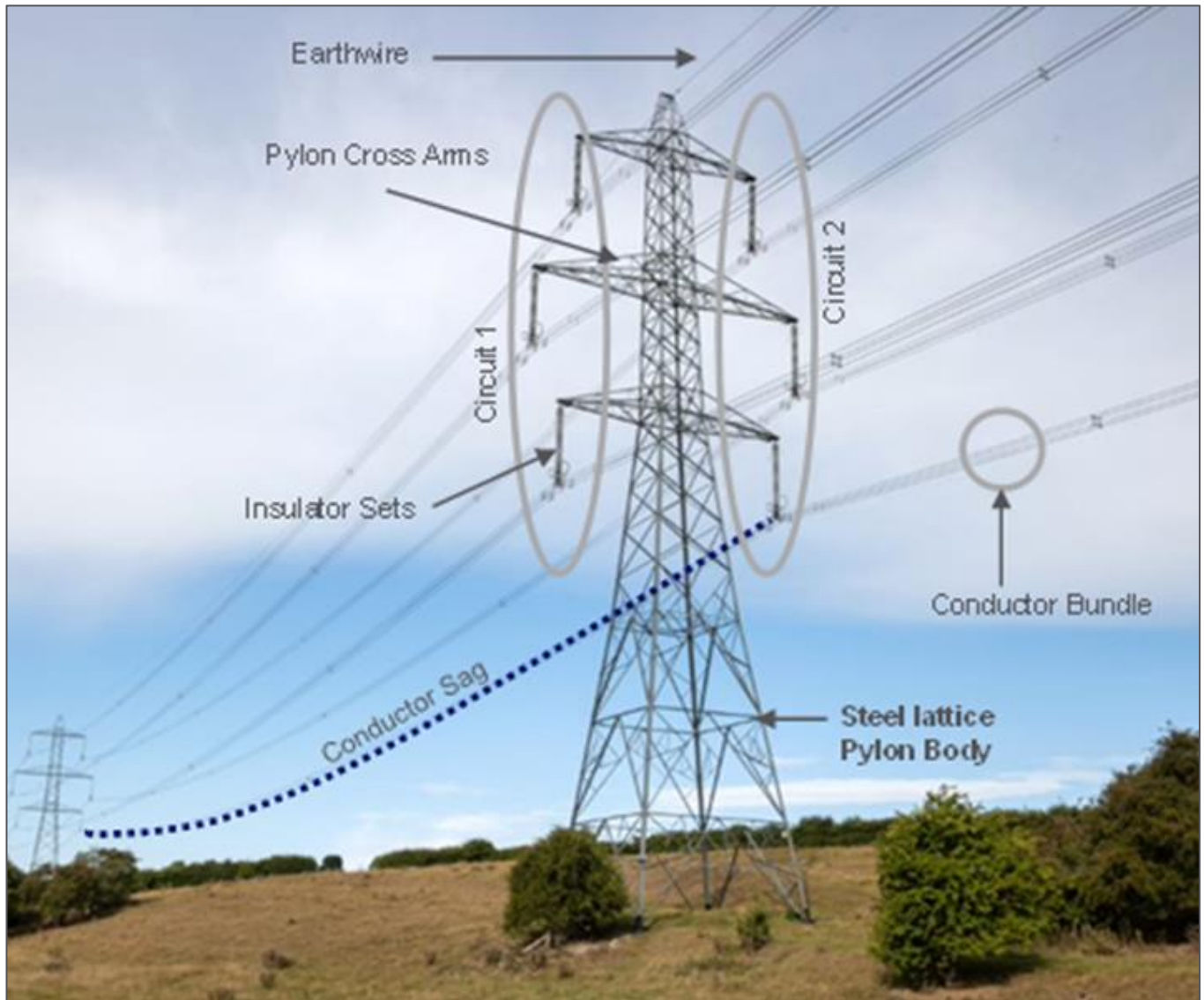
Image 1.1	Components of a Typical Transmission Connection	1-2
-----------	---	-----

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 2 New Grimsby West Substation to New Lincolnshire Connection Substation A (Section 2) and has informed the preliminary environmental assessments reported in subsequent Chapters 2 to 13 within Preliminary Environmental Information (PEI) Report Volume 2 Part B Section 2.
- 1.1.2 Section 2 is located in the northern extent of the Project and principally comprises the new 400 kV overhead line, as well as associated temporary works required for construction.
- 1.1.3 The draft Order Limits are presented in **PEI Report Volume 2 Part B Section 2 Figure 1.1 Draft Order Limits**. They extend predominantly in a south east direction between the proposed New Grimsby West Substation and the proposed New Lincolnshire Connection Substation (LCS) A, commencing at the Route Section break between Section 1 New Grimsby West Substation (Section 1) and Section 2 at pylon no. GL4 and concluding at the Route Section break between Section 2 and Section 3 New Lincolnshire Connection Substations A and B (Section 3) at pylon no. GL119.
- 1.1.4 There are a number of water bodies in this Section including the Louth Canal and the Great Eau River. Principal highways in this Section include the A46, the A16 and the A157 and other roads include the B1203, the B1201 and the B1200. Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages. Section 2 is located within the local authority areas of North East Lincolnshire and East Lindsey.
- 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.
- 1.1.6 A more detailed description of the design of Section 2 is provided in section 1.2 below. For the purpose of reporting within this PEI Report, pylons located within Section 2 have been assigned a nominal code with the prefix 'GL', followed by a number. These can be seen on **PEI Report Volume 2 Part B Section 2 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 400 kV overhead line route measuring approximately 40 km is included within Section 2. The proposed route is illustrated in **PEI Report Volume 2 Part B Section 2 Figure 1.1 Draft Order Limits**.
- 1.2.2 The proposed route commences at the Route Section break between Section 1 and Section 2 at pylon no. GL4 and heads south for approximately 700 m until it reaches Aylesby Road. Here the route changes direction slightly, heading broadly southeast for 3.4 km crossing Laceby Beck and the A46 between Laceby and Grimsby. At pylon no. GL17 the route once again heads south for approximately 700 m, crossing Team Gate Drain, until it reaches pylon no. GL19. Here, the route continues in a south east direction until pylon no. GL22, where the route heads in an eastern direction until pylon no. GL23. The route then continues in a southern direction,

crossing Waltham Road, until pylon no. GL26. At this point, the route continues in a broadly eastern direction, crossing the B1203 until pylon no. GL30. Here, the route once again continues in a south east direction until pylon no. GL46. Some of the notable features that the route crosses along this stretch includes roads such as Waithe Lane, Waithe Beck, Church Lane, the A16 and Grainsby Lane, and watercourses such as Old Fleet Drain.

- 1.2.3 At pylon no. 46, the route continues in a southern direction until pylon no. GL61. Along this stretch, the route crosses the B1201, Black Leg Drain, New Dike, Station Road, and Pear Tree Lane. When the route reaches pylon no. GL61, it continues in a south east direction, crossing Ings Lane, Lincoln Lane, Yarburgh Beck, Westfield Road, Alvingham Road, and Louth Canal, before reaching pylon no. GL79. At this point, the route takes a broadly southern direction until pylon no. GL92. Along this part of Section 2, the route crosses Louth Road and the B1200. From pylon no. GL92, the route continues in a south east direction, crossing the Beck, before reaching pylon no. GL99. Here, the route continues in a southern direction across the Old Eau, before continuing in a south east direction again, crossing the A157, until pylon no GL107. At this point, the route continues in a broadly southern direction, crossing Great Eau, before reaching pylon no. GL118. The route then continues in a south east direction once more, crossing Rye Lane, before reaching the Route Section break between Section 2 and Section 3 at pylon no. GL119, where Section 2 concludes. The route also crosses several unnamed ordinary watercourses throughout Section 2.
- 1.2.4 Along the approximately 40 km long stretch of the new 400 kV overhead line in Section 2 there are 115 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 would depend upon the ground conditions encountered. A typical pylon operating at 400 kV is approximately 50 m in height, however, this varies across the proposed route. Within Section 2 pylons range from a height of approximately 40 m to 66 m (including LoD), including low height pylons which have been included in the design of the section as a mitigation measure in respect of the Lincolnshire Wolds National Landscape (Area of Outstanding Natural Beauty). Low height pylons are proposed from pylon no. GL18 to GL36 inclusive. A typical span distance between pylons is approximately 350 m, however, this varies from a distance of approximately 270 m to 430 m within Section 2.
- 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 route 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 approximately 6 m to allow for the pylon height to be increased in order to increase ground clearances.
- 1.2.8 Further detail on the evolution of the design of the Project, and the design of Section 2, 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 Environmental Impact Assessment (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) 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 2 include the following:
- i. Woodland planting north-east of pylon no. GL9 to compensate for local wildlife sites and priority habitat;
 - ii. Grassland compensation which lies within pylon no. GL9 and a section of the new 400 kV overhead line;
 - iii. Scattered trees and grassland located west of pylon no. GL9;
 - iv. Creation of space for water vole mitigation, located north-east of pylon no. GL19, within pylon no. GL32, GL34, and the associated overhead line, and north-east of pylon no. GL82;
 - v. Creation of space for great crested newt mitigation lies south of pylon no. GL27, south-west of pylon no. GL44 and east of pylon no. GL116;
 - vi. Grassland compensation, with planted boundaries if cabling allows, is located north-east of pylon no. GL27;
 - vii. Grassland and pond improvement, located within a section of the new 400 kV overhead line west of pylon no. GL28;
 - viii. Mitigation in an area of coastal floodplain grazing marsh, located within pylon no. GL110 and a section of the new 400 kV overhead line;
 - ix. Creation of space for badger sett mitigation lies south-east of pylon no. GL81;

- x. Replacement woodland planting to aid landscape integration, located north-east and south-east of pylon no. GL9, east of pylon no. GL18, east and south of pylon no. GL26, north of pylon no. GL43, east of pylon no. GL45 and GL46, and east of pylon no. GL64;
- xi. Planting of native hedgerows with trees north of pylon no. GL15 to aid landscape integration;
- xii. Planting of individual trees to act as visual screening, located north of the construction compound adjacent to pylon no. GL12, and west of pylon no. GL22;
- xiii. Planting of native hedgerows with trees to act as visual screening, located throughout Section 2;
- xiv. Species rich grass planting to aid landscape integration, located within a section of the new 400 kV overhead line east of pylon no. GL26; and
- xv. Woodland planting to act as visual screening, located south-west of pylon no. GL28, south-west of pylon no. GL89, north-east of pylon no. GL92 and south-west of pylon no. GL102.

1.2.12 These mitigation areas can be seen on **PEI Report Volume 2 Part B Section 2 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 tower signage including safety notice plate and anti-climbing devices;
- xi. installation of crossing protection prior to stringing of conductors, including scaffolding;
- xii. installation of insulator assemblies on suspension pylons;

- xiii. establishment of machine sites for conductor stringing;
- xiv. conductor and earthwire stringing;
- xv. temporary earthing;
- xvi. installation of tension insulator assemblies on tension and terminal pylons;
- xvii. removal of construction equipment and reinstatement of ground and restoration of soils;
- xviii. removal of access tracks and bellmouths; and
- xix. removal of construction compounds and ground reinstatement.

- 1.2.15 In regard to temporary construction requirements, there are three construction compounds located within Section 2. This includes the following:
- i. a satellite construction compound located to the south of the A46, with an area of approximately 1.4 ha;
 - ii. a main yard construction compound located to the west of the A16, with an area of approximately 5 ha; and
 - iii. a satellite construction compound located to the south of the A157, with an area of approximately 1.4 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 will be a temporary construction corridor established along the route which comprises a temporary haul road (which is assumed to be stone, noting that trackway may be used in some localised areas), soil storage and temporary drainage. There is the potential to reduce carbon emissions/emodied carbon associated with construction and temporary works requirements through measures such as soil stabilisation¹. 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 2, there are 23 construction access points. Construction access points to the construction compounds are located to the south of the A46 (in proximity to pylon no. GL12), to the west of the A16 (in proximity to pylon no. GL37), and to the south of the A157 (in proximity to pylon no. GL105). Construction access points for the proposed 400 kV overhead line route stem from a number of roads. Construction access points stemming from principal highways includes from the A46 (in proximity to pylon no. GL12), the A16 (in proximity to pylon no. GL37) and the A157 (in proximity to pylon no. GL105). Other roads that construction access points link up to, in order from north to south, include Aylesby Road, Waltham Road, the B1203, the

¹ Soil stabilisation is the process of altering the physical or chemical properties of soil to enhance its engineering performance.

B1201, Pear Tree Lane, Westfield Road, Alvingham Road, Louth Road and the B1200.

- 1.2.21 Within Section 2, there are also 19 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.
- 1.2.22 **PEI Report Volume 2 Part B Section 2 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 2 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 the what the construction of the proposed 400 kV overhead line route entails.

Operation

- 1.2.23 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.
- 1.2.24 The overhead line within Section 2 forms part of this reinforcement by providing a high capacity power transmission route between the proposed new Grimsby West Substation and the proposed new LCS A. 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 2, 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
- 1.2.25 **PEI Report Volume 2 Part B Section 2 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 2 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 the what the operation, inspection and maintenance of the proposed 400 kV overhead line entails.

2. Landscape

Contents

2.	Landscape	2-1
2.1	Introduction	2-1
2.2	Legislation and Policy Framework	2-4
	Legislation and National Policy	2-4
	Regional and Local Policy	2-4
2.3	Scope of Assessment	2-5
2.4	Assessment Methodology	2-6
	Approach	2-6
	Assessment Assumptions and Limitations	2-7
2.5	Baseline Conditions	2-8
	Study Area	2-8
	Data Collection	2-9
	Existing Baseline	2-9
	Future Baseline	2-10
2.6	Design, Control and Additional Mitigation Measures	2-11
	Design Mitigation Measures	2-11
	Control Mitigation Measures	2-12
	Additional Mitigation Measures	2-12
2.7	Preliminary Assessment of Effects	2-13
	Likely Significant Effects	2-14
	Likely Non-Significant Effects	2-16
2.8	Monitoring	2-29
	Table 2.1 Supporting documentation	2-2
	Table 2.2 Preliminary Summary of non-significant Landscape effects – Section 2	2-21
	References	2-30

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 Grimsby West Substation to New Lincolnshire Connection Substation A (Section 2) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:

- i. An introduction to the topic (section 2.1);
- ii. Identification of key local and regional policy relevant to the assessment (section 2.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
- iii. A summary of the assessment scoping process and subsequent scope of the Landscape assessment (section 2.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
- iv. A high-level summary of the methodology of the Landscape assessment within Section 2 (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 2 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 2, based upon the assessment completed to date (section 2.7); and
- viii. An outline of the proposed monitoring requirements in relation to Landscape (section 2.8).

2.1.2 Further supporting information is set out in **Table 2.1** below, including supporting figures and technical appendices.

Table 2.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 2 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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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.

- 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 2 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 2 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 2 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 2 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 2 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 2 Chapter 11 Socio-economics, Recreation and Tourism** should be consulted in relation to areas of recreational importance which may contribute to the value of the landscape. The outputs of the landscape assessment will inform the assessment of effects on recreation and tourism.
 - vii. **PEI Report Volume 2 Part B Section 2 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 helps to inform the baseline description and supports the assessment of effects on the landscape.

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

2.2 Legislation and Policy Framework

Legislation and National Policy

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

Regional and Local Policy

- 2.2.2 Regional and local plans or policies relevant to this assessment are as follows:
 - i. North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018) (Ref 1)
 - Policy 31 Renewable and low carbon infrastructure requires that developments will be assessed on their impact on landscapes and townscapes, particularly in regard to the Landscape Character Assessment and impact on the setting and scenic beauty of the Areas of Outstanding Natural Beauty (AONB); and
 - Policy 42 Landscape requires consideration of landscape character in proposals, adherence to the Landscape Character Assessment and supports prioritising the protection and enhancement of the Lincolnshire Wolds National Landscape (AONB).
 - ii. North East Lincolnshire Local Plan Review (Ref 2)
 - Draft Strategic Policy 2: Development boundaries supports the need for assessment of impacts for visual intrusion and landscape and that development will be supported if it harmonises with the local setting and respects the area's distinctive character and landscape quality; and
 - Draft Strategic Policy 10: Landscape states that developers must consider landscape character in their proposals, prioritise the protection of the Lincolnshire Wolds National Landscape (AONB), conducting a site-specific landscape appraisal and submitting a suitable landscaping scheme.
 - iii. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 3)
 - 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.
- iv. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 4)
- 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 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 6). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Landscape chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses and Stakeholder Engagement Summary**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 2.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 2.3.3 The scope of the construction and operation assessment covers the following receptor types:
- i. Locally designated landscapes;
 - ii. Landscape Character Types (LCT);
 - iii. Regional Landscape Character Types (RLCT); and
 - iv. Landscape Character Areas (LCA).
- 2.3.4 A preliminary assessment of the effects of the Project on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (AONB) has been produced as a separate route-wide assessment and is presented in **PEI Report Volume 2 Part C Chapter 2 Landscape**. This is because multiple Sections of the Project potentially impact the 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 7) 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 North East Lincolnshire LCT 1 Industrial Landscape is located within the Study Area but has been scoped out due to distance and lack of potential for significant effects.
- 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 Section 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 is outlined below.

Approach

- 2.4.2 As explained in paragraph 5.1 GLVIA3 (Ref 8) *“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 8), 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 8), 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 8), 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 8), 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 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

- 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 2.
- 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 2 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 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 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 impacts on the character and perception of the landscape are highly unlikely to arise beyond this distance.
- 2.5.2 The preliminary cumulative landscape assessment Study Area extends to 10 km from the LoD for the new 400 kV overhead line. This radius was established to evaluate potential cumulative landscape impacts in conjunction with other committed 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 2 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 landscape assessment. The theoretical visibility of individual pylons is limited to a maximum distance of 10 km, as beyond this distance the pylons would be almost imperceptible. This also covers the full extent of the Study Area for the cumulative assessment.
- 2.5.4 Further information on Study Area definition and ZTV production is presented in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 2.5.5 To ensure that all likely significant effects are captured in the assessment, the extent of the Study Area will continue to be reviewed in the light of feedback received during statutory consultation, ongoing site surveys, and following the production of updated ZTVs as the Project develops.

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.

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 3);
 - vii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 4);
 - viii. Natural England National Character Area (NCA) Profiles (Ref 7);
 - ix. North East Lincolnshire Landscape Character Assessment, Sensitivity and Capacity Study (Ref 10);
 - x. East Midlands Region Landscape Character Assessment (Ref 12); and
 - xi. Lincolnshire Historic Landscape Characterisation (HLC) Project (Ref 11).
- 2.5.7 Site survey 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 2 Figure 2.1 Landscape Designations and Features;**
 - ii. **PEI Report Volume 2 Part B Section 2 Figure 2.2 Landform and Drainage;**
 - iii. **PEI Report Volume 2 Part B Section 2 Figure 2.3 National Character Areas;**
 - iv. **PEI Report Volume 2 Part B Section 2 Figure 2.4 Regional and Local Landscape Character Areas;** and
 - v. **PEI Report Volume 3 Appendix 2A Landscape Character Baseline.**
- 2.5.10 **PEI Report Volume 2 Part B Section 2 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 much of the Study Area for Section 2.
- 2.5.12 The Great Limber and the Chalk Wolds' Estates Area of Great Landscape Value (AGLV) covers the area immediately to the north of the Lincolnshire Wolds within the Study Area for Section 2 and is considered to be of high value and high susceptibility to the Project.

Landscape Character

- 2.5.13 The following landscape character areas cover the Study Area for Section 2.
- i. Natural England - National Character Area Profiles (NCA)
 - NCA 41 Humber Estuary;
 - NCA 42 Lincolnshire Coast and Marshes; and
 - NCA 43 Lincolnshire Wolds.
 - ii. North East Lincolnshire Landscape Character Types (LCT)
 - LCT 3 Wooded Open Farmland (Lincolnshire Coast and Marshes LCA) which is considered to be of high value and high susceptibility to the Project;
 - LCT 4 Flat Open Farmland which is considered to be of medium value and medium susceptibility to the Project;
 - LCT 5 Sloping Farmland which is considered to be of very high value and high susceptibility to the Project; and
 - LCT 6 High Farmland which is considered to be of high value and very high susceptibility to the Project.
 - iii. East Midlands Region Landscape Character Areas (RLCT)
 - RLCT 2A Settled Fens and Marshes which is considered to be of medium value and medium susceptibility to the Project;
 - RLCT 2C Fen and Marsh Margin Farmlands which is considered to be of high value and medium susceptibility to the Project; and
 - RLCT 7A Chalk Wolds which is considered to be of very high value and very high susceptibility to the Project.

Future Baseline

- 2.5.14 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.
- 2.5.15 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.

- 2.5.16 Ash trees (*Fraxinus excelsior*) in the Study Area 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 13) which apply to the routing of new overhead lines, and the 'Horlock Rules' (Ref 14) 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 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.
- 2.6.2 Following the selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 2. 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. Use of low height pylons between Barnoldby le Beck and Waithe (pylons GL18-GL36) to reduce the effects on views out from the Lincolnshire Wolds National Landscape (AONB); and
 - ii. 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 2 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 2 include:
- iii. 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.
 - iv. 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.
 - v. 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.
 - vi. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.
 - vii. 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.
 - viii. 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 upon Landscape are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. These typically include additional measures which specifically serve a mitigation function, to reduce the scale of potential impacts.
- 2.6.8 As set out within **PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 2 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 2 for Landscape includes areas of woodland planting and tree planting on field boundaries around North End, Alvingham, Keddington Corner, Grimoldby and South Reston to provide visual screening, which would help with landscape integration for Section 2.
- 2.6.9 Any measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 2.6.10 Finalised additional mitigation measures will be detailed within the ES.

2.7 Preliminary Assessment of Effects

- 2.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, because of construction and/or operational activities within Section 2.
- 2.7.2 The preliminary assessment of effects reported below takes into account the Design Mitigation Measures, Control Mitigation Measures and Additional Mitigation Measures (where they have already been included in the design), as previously described.
- 2.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 2 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in Table 2.1, 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 5).
- 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 2, 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 2.
- 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 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.

North East Lincolnshire Landscape Character Types

LCT 3 Wooded Open Farmland

- 2.7.13 LCT 3 Wooded Open Farmland, which is located within the Study Area for Section 2, is also located in Section 1 New Grimsby West Substation.
- 2.7.14 The preliminary assessment of the effects on LCT 3 Wooded Open Farmland presented below considers the part of the LCT that is located within the Study Area for Section 2.
- 2.7.15 LCT 3 Wooded Open Farmland would be directly impacted by the Project. Approximately 10 km of new 400 kV overhead line (pylons GL4-GL34) would route through the centre of the LCT between Aylesby and Ashby cum Fenby. The LCT would also be indirectly affected by the presence of the new 400 kV overhead line in the remainder of this Section to the south and the New Grimsby West Substation in Section 1 to the north. The northern end of this character area is already affected by the presence of wind turbines and overhead lines, however much of the LCT is not influenced by discordant elements. The size/scale of change resulting from the Project would diminish the farmland's rural character. The overall magnitude of predicted change is medium. Combined with the landscape's high value and

susceptibility, this would result in a likely significant effect on the part of the LCT in Section 2.

- 2.7.16 When considering the operational phase of the Project, in its entirety across all Sections, the overall magnitude of predicted change increases but would remain in the medium category. Combined with the high value and susceptibility of LCT 3 Wooded Open Farmland, the Project would result in a likely significant effect.

LCT 5 Sloping Farmland

- 2.7.17 The proposed 400 kV overhead line in Section 2 would not directly impact LCT 5 Sloping Farmland. The LCT would be indirectly affected by operation of the Project, which would run broadly parallel and within 2 km of the LCT for approximately 12 km. This would introduce a new overhead line into rural views to the west, which is a key characteristic of this LCT. Although there are currently views of multiple wind turbines and industry along the coast, these detractors are too distant to adversely affect the character of the landscape within the LCT. The Project would be in much closer proximity. The overall magnitude of the predicted change is medium. Combined with the landscape's very high value and high sensitivity, this would result in a significant effect on the part of the LCT in Section 2.

East Midlands Regional Landscape Character Types

RLCT 2C Fen and Marsh Margin Farmlands

- 2.7.18 RLCT 2C Fen and Marsh Margin Farmlands, which is located within the Study Area for Section 2, is also located in:
- Section 3 New Lincolnshire Connection Substations A and B; and
 - Section 4 New Lincolnshire Substation B to Refined Weston Marsh Substation Siting Zone.

- 2.7.19 The preliminary assessment of the effects on RLCT 2C Fen and Marsh Margin Farmlands presented below considers the part of the RLCT that is located within the Study Area for Section 2.

- 2.7.20 RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the Project. Approximately 30 km of new 400 kV overhead line (pylons GL35-GL118) would cross the central part of the RLCT along the full length of Section 2. The size/scale of change resulting from the Project would diminish the farmland's rural character which has few detractors. 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 2.

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

RLCT 7A Chalk Wolds

- 2.7.22 RLCT 7A Chalk Wolds which is within the Study Area for Section 2, is also located in:
- Section 1 New Grimsby West Substation;

- ii. Section 3 New Lincolnshire Connection Substation A and B; and
- iii. Section 4 New Lincolnshire Substation B to Refined Weston Marsh Substation Siting Zone.

- 2.7.23 The preliminary assessment of the effects on RLCT 7A Chalk Wolds presented below considers the part of the RLCT that is located within the Study Area for Section 2.
- 2.7.24 There would be no direct impacts on RLCT 7A Chalk Wolds. The Project would run broadly parallel to the east of and within 2 - 3 km of the RLCT for approximately 25 km in Section 2. Although there are currently views of multiple wind turbines as well as industry along the coast, these detractors are too distant to adversely affect the character of the landscape within the RLCT. The most noticeable part of the Project would be the new pylons (GL36-GL120 approximately). The new 400 kV overhead line would be visible on the skyline and detract from the rural character of the views from the Wolds. The overall magnitude of predicted change is medium. Combined with the landscape's very high value and susceptibility, this would result in a likely significant effect on the part of the RLCT in Section 2.
- 2.7.25 When considering the operational phase of the Project in its entirety across all Sections, the overall magnitude of predicted change is medium. Combined with the very high value and susceptibility of RLCT 7A Chalk Wolds, the Project would result in a likely significant effect.

Likely Non-Significant Effects

- 2.7.26 For completeness, Table 2.2 summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Landscape effects.
- 2.7.27 The preliminary assessment of effects below considers receptors that are not significantly affected in Section 2 but, when evaluated as a whole across all of the Sections in which they are located, would experience a likely significant effect.

Construction

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

North East Lincolnshire Landscape Character Types

LCT 3 Wooded Open Farmland

- 2.7.29 LCT 3 Wooded Open Farmland, which is located within the Study Area for Section 2, is also located in Section 1 New Grimsby West Substation.
- 2.7.30 The preliminary assessment of the effects on LCT 3 Wooded Open Farmland presented below considers the part of the LCT that is located within the Study Area for Section 2.

- 2.7.31 LCT 3 Wooded Open Farmland would be directly impacted by the construction of approximately 10 km of overhead line including pylons GL4-GL34. The works would extend through the centre of the LCT. A 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 LCT. 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 wooded open farmland between Aylesby and Ashby cum Fenby 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 susceptibility, significant effects on the part of the LCT in Section 2 are unlikely.
- 2.7.32 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change would be medium. Combined with the high value and high susceptibility of LCT 3: Wooded Open Farmland, the Project would result in a likely significant effect.

East Midlands Regional Landscape Character Types

RLCT 2A Settled Fens and Marshes

- 2.7.33 RLCT 2A Settled Fens and Marshes, which is located within the Study Area for Section 2 is also located in:
- i. Section 3 New Lincolnshire Connection Substations A and B;
 - ii. Section 4 New Lincolnshire Substation B to Refined Weston Marsh Substation Siting Zone;
 - iii. Section 5 Refined Weston Marsh Substation Siting Zone;
 - iv. Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation; and
 - v. Section 7 New Walpole B Substation.
- 2.7.34 The preliminary assessment of the effects on RLCT 2A Settled Fens and Marshes presented below considers the part of the LCT that is located within the Study Area for Section 2.
- 2.7.35 There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While construction of the Project may be present in views west out of the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by wind turbines and other discordant elements and features, which reduces the size/scale of change. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 2 are unlikely.
- 2.7.36 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 2C Fen and Marsh Margin Farmlands

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

- i. Section 3 New Lincolnshire Connection Substations A and B; and
- ii. Section 4 New Lincolnshire Substation B to Refined Weston Marsh Substation Siting Zone.

2.7.38 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 2.

2.7.39 RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the construction of approximately 30 km of new overhead line including pylons GL35-GL118 and by minor road works to facilitate access along Alvingham Road, as well as by the presence of a main construction compound and a satellite construction compound. It would also be indirectly affected by the construction of pylons in the remainder of the RLCT and by construction of the New Lincolnshire Connection Substation A and B in Section 3 to the south. A 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 2 are unlikely.

2.7.40 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 high value and medium susceptibility of RLCT 2C Fen and Marsh Margin Farmlands, the Project would result in a likely significant effect.

RLCT 7A Chalk Wolds

2.7.41 RLCT 7A: Chalk Wolds, which is located within the Study Area for Section 2, is also located in:

- i. Section 1 New Grimsby West Substation
- ii. Section 3 New Lincolnshire Connection Substations A and B; and
- iii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.

2.7.42 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 2.

2.7.43 There would be no direct impacts on RLCT 7A Chalk Wolds. While construction of the Project (pylons GL36-GL120 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 overall magnitude of predicted change is small. Even given the landscape's very high value and susceptibility, significant effects on the part of the RLCT in Section 2 are unlikely.

- 2.7.44 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

RLCT 2A Settled Fens and Marshes

- 2.7.45 RLCT 2A Settled Fens and Marshes, which is located within the Study Area for Section 2 is also located in:
- i. Section 3 New Lincolnshire Connection Substation A and B;
 - ii. Section 4 New Lincolnshire Substation B to Refined Weston Marsh Substation Siting Zone;
 - iii. Section 5 Refined Weston Marsh Substation Siting Zone;
 - iv. Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation; and
 - v. Section 7 New Walpole B Substation.
- 2.7.46 The preliminary assessment of the effects on RLCT 2A Settled Fens and Marshes presented below considers the part of the LCT that is located within the Study Area for Section 2.
- 2.7.47 There would be no direct impacts on RLCT 2A Settled Fens and Marshes. Approximately 30 km of new 400 kV overhead line (pylons GL28-GL120) would broadly parallel the western edge of this RLCT between 1-2 km in distance. The character of the landscape within this long route section is already affected by wind turbines, overhead lines and other discordant elements. 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 2 are unlikely.
- 2.7.48 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 7A Chalk Wolds

- 2.7.49 RLCT 7A: Chalk Wolds, which is located within the Study Area for Section 2, is also located in:
- i. Section 1 New Grimsby West Substation
 - ii. Section 3 New Lincolnshire Connection Substations A and B; and
 - iii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone.
- 2.7.50 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 2.

- 2.7.51 There would be no direct impacts on RLCT 7A Chalk Wolds. While the Project (pylons GL36-GL120 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 overall magnitude of predicted change is small. Even given the landscape's very high value and susceptibility, significant effects on the part of the RLCT in Section 2 are unlikely.
- 2.7.52 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 2

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
Designated Landscapes					
Great Limber and the Chalk Wolds' Estates Area of Great Landscape Value (AGLV)	Value – High Susceptibility – High	Indirectly affected by construction of the new Grimsby West Substation, works to the 4KG overhead line including temporary pylons during construction and construction of pylons within Sections 1 and 2.	Construction – small	Construction – not significant	<p>The AGLV is some 2.7 km from the nearest part of the Project. Due to this distance, and the presence of intervening settlement and vegetation the construction effects would not be significant. Taller equipment may be visible but would be temporary.</p> <p>The overall magnitude of predicted change is small. Combined with the landscape's high value and susceptibility, significant effects on the part of the AGLV in Section 2 are unlikely.</p>
		Indirectly affected by the new Grimsby West Substation and presence of pylons within Sections 1 and 2 during operation.	Operation – small	Operation – not significant	<p>Due to this distance, and the presence of intervening settlement and vegetation the operational effects would not be significant. Also, existing overhead lines are already present in views from the AGLV and in closer proximity than the Project.</p> <p>The overall magnitude of predicted change is small. Combined with the landscape's high value and susceptibility, significant effects on the part of the AGLV in Section 2 are unlikely.</p>

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
North East Lincolnshire Landscape Character Types					
LCT 3 Wooded Open Farmland	Value – High Susceptibility – High	Directly impacted by the construction of approximately 10 km of overhead line including pylons GL4-GL34.	Construction – small	Construction – not significant	LCT 3 Wooded Open Farmland would be directly impacted by the construction of approximately 10 km of overhead line including pylons GL4-GL34. The works would extend through the centre of the LCT. A 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 LCT. 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 wooded open farmland between Aylesby and Ashby cum Fenby 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 susceptibility, significant effects on this part of the LCT in Section 2 are unlikely.
LCT 4 Flat Open Farmland	Value – Medium	Indirectly affected by construction of pylons in Section 2.	Construction – small	Construction – not significant	There would be no direct impacts on LCT 4 Flat Open Farmland. The western edge of this settled LCT would

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – Medium				be indirectly affected during construction by the presence of construction activities within the adjacent LCT. 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. However, since most of the LCT is visually separated from the Project by the settlements of Waltham and Holton le Clay and since is more suburban in nature, construction would not affect the key characteristics. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the LCT in Section 2 are unlikely.
		Indirectly affected by operation of pylons in Section 2.	Operation – small	Operation – not significant	There would be no direct impacts on LCT 4 Flat Open Farmland. The western edge of this settled LCT would be indirectly affected by the presence of the Project in operation, adding to the effects of the existing overhead lines. However, the Project would not fundamentally change the character of the landscape within the LCT as overhead lines are already a feature. Most of the LCT is visually separated from the Project by the settlements of Waltham and Holton le Clay so effects

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
					would be limited. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the LCT in Section 2 are unlikely.
LCT 5 Sloping Farmland	Value – Very High Susceptibility – High	Indirectly affected by construction of pylons in Section 2.	Construction – very small	Construction – not significant	There would be no direct impacts on LCT 5 Sloping Farmland. While construction of the Project in Section 2 may be present in views east of this elevated LCT, most of the works would be obscured by the intervening vegetation and 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 be within 2 km but would be temporary in nature. The overall magnitude of predicted change is very small. Even given the landscape's very high value and high susceptibility, significant effects on the part of the LCT in Section 2 are unlikely.
LCT 6 High Farmland	Value – Very High	Indirectly affected by the construction of pylons GL3-GL38 (approx.) in views.	Construction – very small	Construction – not significant	There would be no direct impacts on LCT 6: High Farmland. While construction of the Project in Section 2 may be present in views east of this elevated LCT, most of the works would be obscured by the intervening

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – Very High				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 overall magnitude of predicted change is very small. Even given the landscape's very high value and susceptibility, significant effects on the part of the LCT in Section 2 are unlikely.
		Indirectly affected by the introduction of pylons GL3-GL38 (approx.) in views.	Operation – very small	Operation – not significant	There would be no direct impacts on LCT 6 High Farmland. While the new 400 kV overhead line may be visible in elevated easterly views, woodland cover and undulating landform, would obscure the lower parts of many of the pylons, leaving only upper parts of the lattice structures visible. Although the new 400 kV overhead line may slightly detract from the rural character of views from the Wolds, due to the rolling terrain within the LCT, views of the Project would be restricted to the eastern edge of the LCT as shown by the ZTV, and therefore 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 LCT in Section 2 are unlikely.

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
East Midlands Regional Landscape Character Types					
RLCT 2A Settled Fens and Marshes	Value – Medium Susceptibility – Medium	Indirectly affected by the construction of pylons GL28-120 (approx.) in views.	Construction – small	Construction – not significant	There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While construction of the Project may be present in views west out of the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by wind turbines and other discordant elements and features, which reduces the size/scale of change. The overall magnitude of predicted change is small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 2 are unlikely.
		Indirectly affected by the operation of pylons GL28-120 (approx.) in views.	Operation – small	Operation – not significant	RLCT 2A Settled Fens and Marshes would not be directly impacted by the Project in Section 2. Approximately 30 km of new 400 kV overhead line (pylons GL28-GL120) would broadly parallel the western edge of this RLCT between 1-2 km in distance. The character of the landscape within this long route section is already affected by wind turbines, overhead lines and other discordant elements. The new 400 kV overhead line would contribute to these urbanising elements but would not

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
					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 2 are unlikely.
RLCT 2C Fen and Marsh Margin Fenland	Value – High Susceptibility – Medium	Directed impacted by the construction of approximately 30 km of new overhead line including pylons GL35-GL118.	Construction – small	Construction – not significant	RLCT 2C Fen and Marsh Margin Farmlands would be directly impacted by the construction of approximately 30 km of new overhead line including pylons GL35-GL118 and by minor road works to facilitate access along Alvingham Road, one main construction compound and one satellite construction compound. It would also be indirectly affected by the construction of pylons in the remainder of the RLCT and by construction of the New Lincolnshire Connection Substation A and B in Section 3 to the south. A 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

Receptor	Value and susceptibility of the landscape	Impact	Magnitude of Change	Significance	Rationale
					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 2 are unlikely.
RLCT 7A Chalk Wolds	Value – Very High Susceptibility – Very High	Indirectly affected by the construction of pylons GL36-GL120 (approx.) in views.	Construction – small	Construction – not significant	There would be no direct impacts on RLCT 7A Chalk Wolds. While the Project (pylons GL36-GL120 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 overall magnitude of predicted change is small. Even given the landscape's very high value and susceptibility, significant effects on the part of the RLCT in Section 2 are unlikely.

2.8 Monitoring

- 2.8.1 No Landscape monitoring is currently proposed for Section 2, 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

- Ref 1 North East Lincolnshire Council (2018), North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018). [online] Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 20 September 2024].
- Ref 2 North East Lincolnshire Council (2022). North East Lincolnshire Local Plan Review. [online] Available at: <https://www.nelincs.gov.uk/planning-and-building-control/planning-policy/local-plan-review/> [Accessed 20 September 2024]
- Ref 3 North Kesteven District Council (2023). Central Lincolnshire Local Plan [online]. Available at: <https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf> [Accessed 20 September 2024].
- Ref 4 East Lindsey Local Plan Core Strategy (2018) [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Core_Strategy_adopted_version_for_web.pdf
- Ref 5 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 6 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 7 Natural England (2024) National Character Area Profiles [online]. Available at: <https://nationalcharacterareas.co.uk/> [Accessed 20 September 2024].
- Ref 8 Landscape Institute and Institute for Environmental Management and Assessment (IEMA) (2013) Guidelines for Landscape and Visual Impact Assessment – 3rd Edition (GLVIA3).
- 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 North East Lincolnshire Council (2015). North East Lincolnshire Landscape Character Assessment, Sensitivity and Capacity Study [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2020/10/North-East-Lincolnshire-Landscape-Character-Assessment-Sensitivity-and-Capacity-Study-sections-5-to-6.pdf> [Accessed 20 September 2024].
- Ref 11 Lincolnshire County Council (2017). Lincolnshire Historic Landscape Characterisation Project. [online] Available at: <https://www.lincolnshire.gov.uk/historic-environment/historic-landscape-characterisation> [Accessed 20 September 2024]

- Ref 12 Natural England (2010). East Midlands Region Landscape Character Assessment [online]. Available at: <https://publications.naturalengland.org.uk/publication/5635681403535360#:~:text=The%20East%20Midlands%20Region%20Landscape,distinctive%2C%20rare%20or%20special%20characteristics> [Accessed 20 September 2024].
- Ref 13 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 14 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
- Ref 15 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 16 British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction – Recommendations.

3. Visual

Contents

3.	Visual	
3.1	Introduction	3-1
3.2	Legislation and Policy Framework	3-4
	Legislation and National Policy	3-4
	Regional and Local Policy	3-4
3.3	Scope of Assessment	3-5
3.4	Assessment Methodology	3-5
	Assessment Assumptions and Limitations	3-7
3.5	Baseline Conditions	3-8
	Study Area	3-8
	Data Collection	3-8
	Existing Baseline	3-9
	Future Baseline	3-12
3.6	Design, Control and Additional Mitigation Measures	3-13
	Design Mitigation Measures	3-13
	Control Mitigation Measures	3-13
	Additional Mitigation Measures	3-14
3.7	Preliminary Assessment of Effects	3-15
	Likely Significant Effects	3-15
	Likely Non-Significant Effects	3-33
3.8	Monitoring	3-83

Table 3.1	Supporting documentation	3-2
Table 3.2	Preliminary Summary of Non-Significant Effects	3-34

References	3-84
------------	------

3. Visual

3.1 Introduction

- 3.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Visual assessment of the New Grimsby West Substation to New Lincolnshire Connection Substation (LCS) A Section (Section 2) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 3.1);
 - ii. Identification of key local and regional policy relevant to the assessment (section 3.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
 - iii. A summary of the assessment scoping process and subsequent scope 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 methodology of the Visual assessment within Section 2 (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 2 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 2 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 2 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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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 2 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 2 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 2 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 2 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 2 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 2 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 2 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 Route-wide C Chapter 2 Landscape** should be consulted in relation to the assessment of effects on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (Area of Outstanding Natural Beauty (AONB)). This includes commentary on views in relation to the Special Qualities of the AONB.

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

3.2 Legislation and Policy Framework

Legislation and National Policy

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

Regional and Local Policy

- 3.2.2 Regional and local plans or policies relevant to this assessment are as follows:
- i. North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018) (Ref 1).
 - Policy 31 Renewable and low carbon infrastructure requires that developments will be assessed on their impact on landscapes and townscapes, particularly in regard to the Landscape Character Assessment and impact on the setting and scenic beauty of the Areas of Outstanding Natural Beauty (AONB); and
 - Policy 42 Landscape requires consideration of landscape character in proposals, adherence to the Landscape Character Assessment and supports prioritizing the protection and enhancement of the Lincolnshire Wolds National Landscape (AONB).
 - ii. North East Lincolnshire Local Plan Review (Ref 2).
 - Draft Strategic Policy 2: Development boundaries supports the need for assessment of impacts for visual intrusion and landscape and that development will be supported if it harmonizes with the local setting and respects the area's distinctive character and landscape quality; and
 - Draft Strategic Policy 10: Landscape states that developers must consider landscape character in their proposals, prioritize the protection of the Lincolnshire Wolds National Landscape (AONB), conducting a site-specific landscape appraisal and submitting a suitable landscaping scheme
 - iii. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 3).
 - 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.

- iv. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 4).
 - Strategic Policy 23: Landscape states that the policy aims to protect, enhance, and manage the District's landscapes to create an attractive and healthy living and working environment. Development will adhere to the District's Landscape Character Assessment and the Council will support development that conserves and enhances designated and historic landscapes to improve the visitor experience; and
 - Strategic Policy 27: Renewable and low carbon energy which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation to landscape and amenity.

3.3 Scope of Assessment

- 3.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 6). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the 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 types:
 - i. Communities - People in communities for whom the surrounding environment is essential to their quality of life and work, including those engaging in recreational activities such as using Public Rights of Way (PRoW) and waterways; and
 - ii. Recreational Routes and Receptors - People using National Trails and regionally promoted routes, long distance cycle routes, and people at protected viewpoints, panoramas and viewing corridors and people visiting tourist attractions where views are important to the experience.
- 3.3.4 A preliminary assessment of the effects of the Project on the natural beauty and special qualities of the Lincolnshire Wolds National Landscape (AONB) has been produced as a separate route-wide assessment and is presented in **PEI Report Volume 2 Part C 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.

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 7) “*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 7), 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, for example 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 9) to document the existing visual characteristics of Section 2. 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 7), 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 7), 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 7), evaluations of 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. In accordance with paragraph 6.43 of GLVIA3 (Ref 7), 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**.
- 3.4.12 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.
- 3.4.13 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 8). 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

- 3.4.14 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 2.
- 3.4.15 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 2 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.
- 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 2 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);

¹ The Study Area for the preliminary assessment is measured from the LoD 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.

- 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. North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018) (Ref 1);
- vii. North East Lincolnshire Local Plan Review (Ref 2);
- viii. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 3); and
- ix. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 4);

3.5.7 Site survey carried out during several visits under differing weather conditions between spring 2023 and summer 2024.

Existing Baseline

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

- i. **PEI Report Volume 2 Part B Section 2 Figure 3.1 Visual Receptors and Viewpoints;**
- ii. **PEI Report Volume 2 Part B Section 2 Figure 3.2 Zone of Theoretical Visibility (ZTV);**
- iii. **PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints;**
- iv. **PEI Report Volume 3 Part B Appendix 3B Visual Baseline;** and
- v. **PEI Report Volume 2 Part B Figure 2.1 Landscape Designations and Features shows the distribution of woodland across the Study Area.**

Communities

3.5.9 The following communities, defined by parish jurisdictional boundaries, are considered receptors within the Study Area for Section 2. The viewpoint numbers refer to the representative viewpoints used to inform the assessment.

3.5.10 The people within the communities listed below are considered to be highly susceptible to visual change resulting from the Project, while the characteristics of the landscape indicate that the value of the views is assessed as high:

- | | |
|--|-------------------------------|
| i. Alvingham (VP185); | vii. Brigsley (VP12); |
| ii. Ashby cum Fenby (VP13, VP14, VP15 and VP16); | viii. Burwell; |
| iii. Authorpe; | ix. Claythorpe; |
| iv. Beelsby; | x. East Ravendale (VP16); |
| v. Belleau (VP38); | xi. Elkington; |
| vi. Brackenborough with Little Grimsby (VP23, VP24, VP25); | xii. Fotherby (VP22); |
| | xiii. Grainsby (VP17, VP193); |
| | xiv. Hatcliffe; |

- xv. Haugham;
- xvi. Haverby cum Beesby;
- xvii. Irby (VP09);
- xviii. Legbourne (VP29, VP30, VP31);
- xix. Little Cawthorpe;
- xx. Ludborough (VP19, VP20);
- xxi. Muckton;
- xxii. North Ormsby;
- xxiii. Raithby cum Maltby (VP34);
- xxiv. South Thoresby (VP39);
- xxv. Swaby (VP35a, VP35b);
- xxvi. Swallow;
- xxvii. Tathwell;
- xxviii. Utterby;
- xxix. West Ravendale;
- xxx. Wyham cum Cadeby (VP20); and
- xxxi. Yarburgh (VP187).

3.5.11 The people within the communities listed below are considered to be highly susceptible to visual change resulting from the Project, while the characteristics of the landscape indicate that the value of the views is assessed as medium.

- i. Aby with Greenfield (VP37, VP38 and VP39);
- ii. Aylesby (VP05, VP06, VP202, VP204);
- iii. Barnoldby le Beck (VP10);
- iv. Bradley (VP198, VP199, VP200, VP201);
- v. Conisholme;
- vi. Covenham St Bartholomew (VP189, VP190, VP192);
- vii. Covenham St Mary (VP188);
- viii. Fulstow (VP191);
- ix. Gayton le Marsh (VP177);
- x. Grainthorpe;
- xi. Great Carlton (VP178);
- xii. Grimoldby (VP181);
- xiii. Holton le Clay;
- xiv. Humberston;
- xv. Keddington (VP26);
- xvi. Laceby (VP07, VP08, VP09, VP203);
- xvii. Little Carlton (VP179);
- xviii. Manby (VP180);
- xix. Marshchapel;
- xx. New Waltham;
- xxi. North Cockerington (VP184);
- xxii. North Cotes;
- xxiii. North Thoresby (VP18);
- xxiv. Reston (VP31, VP32, VP33);
- xxv. Riby (VP04);
- xxvi. Saltfleetby;
- xxvii. South Cockerington (VP182);
- xxviii. South Somercotes;
- xxix. Stewton (VP28);
- xxx. Strubby with Woodthorpe (VP174);
- xxxi. Tetney;
- xxxii. Theddlethorpe All Saints;
- xxxiii. Theddlethorpe St Helen;
- xxxiv. Waithe (VP193, VP194);
- xxxv. Waltham (VP196, VP197); and
- xxxvi. Withern with Stain (VP36, VP176).

- 3.5.12 For people living within the Grimsby suburbs of Little Coates and Scartho (VP198, VP201, VP203 and VP204) and Louth, 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.
- 3.5.13 Descriptions of the baseline visual amenity of these community areas are provided in **PEI Report Volume 3 Part B Appendix 3B Visual Baseline**. This includes a description of the community area and its key visual receptors and susceptibility as well as a judgement on the value of the views currently experienced.

Recreational Routes and Receptors

- 3.5.14 People using the following recreational routes and receptors have been identified within Section 2.
- i. Greenwich Meridian Trail – A 440 km long distance trail which broadly follows 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. Within Section 2, the trail heads north from the Lincolnshire National Landscape (AONB) in Raithby cum Maltby, through Louth before crossing the community areas of Elkington, Fotherby, Brackenborough with Little Grimsby, Yarburgh, Covenham St Bartholomew, Fulstow, North Cotes and Tetney. Views are varied passing through villages and across fields but are generally considered to be high value within Section 2 due to the visual backdrop of the Wolds to the west and lack of detractors in close proximity;
 - ii. Lincolnshire Wolds Way – A 127 km long distance circular route through the Lincolnshire Wolds National Landscape (AONB). Within the Study Area, the path broadly flows the eastern edge of the Wolds between Haugham and Hatcliffe, passing through the centre of Louth in Section 2. Views are considered to have a high value and receptors have a high susceptibility to the Project;
 - iii. Lindsey Loop – A 163 km long distance route which links the six market towns in East and West Lindsey. This includes Louth in Sections 2 and 3 where the route broadly follows the edge of the Lincolnshire Wolds National Landscape (AONB). Views are considered to have a high value and receptors have a high susceptibility to the Project;
 - iv. Wanderlust Way – A 33 km circular route between Beelsby, Beesby, Brigsley and Barnoldby le Beck, the majority lying within the Lincolnshire Wolds National Landscape (AONB). Views are considered to have a medium value and receptors have a high susceptibility to the Project;
 - v. Nev Cole Way - The Nev Cole Way is a 90 km route between Burton upon Stather and Nettleton, following the edge of the Humber Estuary before passing through the northern end of the Lincolnshire Wolds National Landscape (AONB). It crosses the Study Area in Sections 1 and 2. In Section 2, between Little Coates and Beelsby, the footpath passes through a more rural area with fewer detractors and views become more elevated to the south within the Lincolnshire Wolds National Landscape (AONB). As views contribute to the landscape setting enjoyed by people using the path, their susceptibility to the Project is high and views are considered to have medium value;

- vi. Silver Lincs Way – A 40 km long distance footpath between Scartho and Louth broadly following the eastern edge of the Lincolnshire Wolds National Landscape (AONB) in Section 2. Views are considered to have a high value and receptors have a high susceptibility to the Project;
- vii. Louth Canal and Louth Canal Walk – A 20 km locally promoted waterside walk along the Louth Canal from Louth to Tetney Marshes. Views are considered to have a medium value and receptors have a high susceptibility to the Project;
- viii. National Cycle Route 1 – A 2000 km cycle route between Dover and John O’Groats up the eastern side of England and Scotland. A small section of the cycle route is located within Section 2 at Beelsby. As views contribute to the landscape setting enjoyed by people using the route, their susceptibility to the Project is high. Within Section 2, the value of the sequential views is considered to be of high due to the location within the Lincolnshire Wolds National Landscape (AONB) and lack of existing detractors; and
- ix. National Cycle Route 110 – The Cleethorpes to Beelsby route, part of Sustrans National Cycle Network Route 110, covers approximately 12 miles through scenic Lincolnshire countryside, starting at the coastal town of Cleethorpes and heading inland through villages, farmland, and rolling hills, offering a peaceful and rural cycling experience. Views are considered to have a high value and receptors have a high susceptibility to the Project.

3.5.15 Descriptions of the baseline visual amenity from these recreational routes is provided in **PEI Report Volume 3 Part B Appendix 3B Visual Baseline**. This includes a description of the route within the Study Area, susceptibility and the value of views.

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 2 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 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 10) which apply to the routing of new overhead lines, and the 'Horlock Rules' (Ref 11), which apply to the design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 12) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 3.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 2. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- Use of low height pylons between Barnoldby le Beck and Waithe (pylons GL18-GL36 inclusive) to reduce the effects on views from the Lincolnshire Wolds National Landscape (AONB); and
 - 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.
- 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 2 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 2 include:
- 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 13). 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 2 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 2 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 2 for Visual includes areas of woodland planting and tree planting on field boundaries around North End, Alvingham, Keddington Corner, Grimoldby and South Reston to provide visual screening in Section 2.

- 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 2.
- 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 2 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 5). As agreed in the Scoping Opinion adopted by the Secretary of State on 10 September 2024 (Ref 5), 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 area has been identified as being significantly affected during construction of the Project in Section 2. All other community areas would experience effects which have been judged to be not significant and are included in **Table 3.2**. There may be individual properties within community areas that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the Residential Visual Amenity Assessment (RVAA).

Aylesby

- 3.7.10 Aylesby Parish is predominantly located within Section 2, however a small part of the community is also located within Section 1 New Grimsby West Substation. The preliminary assessment of the effects on people living and moving around Aylesby Parish presented below considers the part of the community that is located within the Study Area for Section 2.
- 3.7.11 The community of Aylesby 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 The parish would be directly impacted by the construction of approximately 1.5 km of overhead line including pylons GL5-GL8 and would therefore have close proximity views of the Project, as well as being indirectly affected by views of construction activities associated with the New Grimsby West Substation including the construction compound, construction of GL2 and GL4 and works to the existing 4KG 400 kV overhead line in Section 1. The magnitude of change is considered to be medium and effects on this community area during construction would likely be significant.
- 3.7.13 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change increase to large, primarily to the construction activities associated with the New Grimsby West Substation. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

Recreational Routes and Receptors

Greenwich Meridian Trail

- 3.7.14 The Greenwich Meridian Trail is located within Section 2 and is also located within Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone 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 2.

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.

- 3.7.15 People using the Greenwich Meridian Trail have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high.
- 3.7.16 Users of the Greenwich Meridian Trail would have close range views of pylon construction in Section 2 between Little Grimsby and Yarburgh. The trail also crosses the Project near pylon GL68. Taller construction equipment would be visible over a longer stretch as people approach from both the north and south. While this impact is limited to a short section of the trail, it would result in a medium magnitude of change and result in likely localised significant effects.
- 3.7.17 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change would be medium. When combined with the medium to high value of views and high susceptibility, the Project would give rise to a likely significant effect.

Nev Cole Way

- 3.7.18 The Nev Cole Way is located within Section 2 and is also located within Section 1 New Grimsby West Substation. The preliminary assessment of the effects on people using the Nev Cole Way presented below considers the part of the footpath that is located within the Study Area for Section 2.
- 3.7.19 People using the Nev Cole Way have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high.
- 3.7.20 Users of the Nev Cole Way would have close range views of pylon construction for approximately 3.5 km, between pylons GL6 and GL18, where the trail follows field boundaries adjacent to the Project. The trail also crosses the Project between pylons GL12 and GL13. Taller construction equipment would be visible over a longer stretch as people approach from both the north and south although would be filtered in many locations along the footpath by vegetation cover along Laceby Beck and Manor Golf Course. While this impact is limited to a short section of the trail, it would result in a medium magnitude of change and result in likely localised significant effects.
- 3.7.21 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change would remain medium. When combined with the high value and high susceptibility, the Project would give rise to a likely significant effect.

Wanderlust Way

- 3.7.22 People using the Wanderlust Way have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high due to its partial location within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.23 Users of the Wanderlust Way would have close range views of pylon construction for approximately 7.5 km between pylons GL6 and GL29, where the trail follows field boundaries adjacent to the Project. The trail also crosses the Project between pylons GL12 and GL13 and for a second time between pylons GL19 and GL20. Taller construction equipment would be visible over a longer stretch as people approach from both the north and south although would be filtered in many locations along the footpath by vegetation cover along Laceby Beck, Bradley Wood and within Barnoldby

le Beck. While this impact is limited to a relatively short section of the trail, it would result in a medium magnitude of change and result in likely localised significant effects.

Silver Lincs Way

- 3.7.24 People using the Silver Lincs Way have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high due to its partial location within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.25 Users of the Silver Lincs Way would have close range views of pylon construction for approximately 5 km between pylons GL14 and GL29, where the trail follows field boundaries adjacent to the Project. The trail also crosses the Project between pylons GL19 and GL20. Taller construction equipment would be visible over a longer stretch as people approach from both the north and south although would be filtered in many locations along the footpath by vegetation cover at Bradley Gairs and within Barnoldby le Beck. While this impact is limited to a relatively short section of the trail, it would result in a medium magnitude of change and result in likely localised significant effects.

Operation

- 3.7.26 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

- 3.7.27 Thirty-eight of the 68 community areas have been identified as being significantly affected during operation of the Project in Section 2. All other community areas would experience effects which have been judged to be not significant and are included in **Table 3.2**. There may be individual properties within community areas that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the RVAA.

Aby with Greenfield

- 3.7.28 Aby with Greenfield Parish is located within Section 2, however a part of the community is also located within Section 3 New Lincolnshire Connection Substation A and B. The preliminary assessment of the effects on people living and moving around Aby with Greenfield Parish presented below considers the part of the community that is located within the Study Area for Section 2.
- 3.7.29 The community of Aby with Greenfield Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium.
- 3.7.30 The parish would be directly impacted by the operation of approximately 650 m of overhead line including pylons GL117-GL118 and would therefore have close proximity views of the Project as well as indirectly affected by views of pylons outside the community area in Sections 2 and 3. LCS-B would also be screened by mature vegetation at Mother Wood and Greenfield Wood. The Project would introduce a new

400 kV overhead line into views which currently have no existing overhead lines. Overall, this would result in a medium magnitude of change and result in likely significant effects

- 3.7.31 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains medium. Although LCS-B is located close to the edge of the parish and mitigation planting would help to screen views from visual receptors within the community, the presence of a new 400 kV overhead line would be prominent in views which currently do not contain any pylons. When combined with the medium value and high susceptibility, the operation of the Project would give rise to a likely significant effect.

Alvingham

- 3.7.32 The community of Alvingham Parish is considered highly susceptibility to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of views across the parish is judged to be high.
- 3.7.33 The parish would be directly impacted by the operation of approximately 2 km of overhead line including pylons GL72-GL77 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 2 to the north and south. The Project introduces new 400 kV overhead line to the west of Alvingham and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. There are also open views towards St James's Church in Louth from the village which would be affected by the introduction of the overhead line. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Aylesby

- 3.7.34 Aylesby Parish is predominantly located within Section 2, however a small part of the community is also located within Section 1 New Grimsby West Substation. The preliminary assessment of the effects on people living and moving around Aylesby Parish presented below considers the part of the community that is located within the Study Area for Section 2.
- 3.7.35 The community of Aylesby Parish is considered highly susceptible to visual change resulting from the Project, while the characteristics of the landscape indicate that the value of the views across the parish is judged to be medium. The parish would be directly impacted by the operation of approximately 1.5 km of overhead line including pylons GL5-GL8 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 2 to south and views of the New Grimsby west Substation to the north. Existing planting would help to screen the substation and proposed environmental mitigation, which includes screening planting, would help to reduce the effects of the substation in the long-term, but the effects of the new overhead line would remain. Overall, this would result in a medium magnitude of change and likely significant effects.
- 3.7.36 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains medium. Although the New Grimsby West Substation is located within the parish and mitigation planting

would help to screen views from visual receptors within the community, the presence of a new substation and 400 kV overhead line will spread the effects of infrastructure further across the parish. When combined with the medium value and high susceptibility, the operation of the Project would give rise to a likely significant effect.

Barnoldby le Beck

- 3.7.37 The community of Barnoldby le Beck Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.38 The parish would be directly impacted by the operation of approximately 2.5 km of overhead line including pylons GL18-GL25 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 2 to the north and south. Although views to the west of the community area already contain an existing 132 kV overhead line, the Project would introduce new 400 kV overhead line into views to the east, spreading the effects of high voltage electricity infrastructure and the number of pylons in views for people moving around the community. Even though pylons in this part of Section 2 would be low height and large areas of woodland are present around Barnoldby le Beck which would help to filter views for the village, there are a number of visual receptors in close proximity along Waltham Road and on the edges of Barnoldby le Beck and Waltham either side of the Project. Mitigation planting is proposed along field boundaries and along Waltham Road to filter views along the Project. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Brackenborough with Little Grimsby

- 3.7.39 The community of Brackenborough with Little Grimsby Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of views is judged to be high.
- 3.7.40 The parish would be directly impacted by the operation of pylon GL66 and would therefore have close proximity views of the Project, as well as indirectly affected by views of pylons outside the community area in Section 2 to the north and south. The Project introduces new 400 kV overhead line to the east of Brackenborough with Little Grimsby and in views to the north and south which have no existing overhead lines. Although this would not affect views from Brackenborough with Little Grimsby towards the National Landscape (AONB) which is to the west of this parish, the Project would change the character of views east. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Brigsley

- 3.7.41 The community of Brigsley Parish is considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate that the value of views is judged to be high.
- 3.7.42 The parish would be directly impacted by the operation of approximately 3 km of overhead line including pylons GL26-GL32 and GL34 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 2 to the east and west. The Project would introduce new 400 kV overhead line into views to the centre of the parish. These

views are currently unaffected by high voltage electricity infrastructure or other discordant features. Even though pylons in this part of Section 2 would be low height, there are a number of visual receptors in close proximity along Waltham Road and on the edges of Brigsley and Waltham either side of the Project. Mitigation planting is proposed on the edge of Brigsley and to the south of Brigsley Covert to filter views along the Project. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Claythorpe

- 3.7.43 The community of Claythorpe 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.
- 3.7.44 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Section 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Although the Project would not be visible from the village of Claythorpe itself, pylons would remain very noticeable in open views out from the east of the parish and from a public right of way that routes to the south of Tothill Wood. Overall, the operation of the Project would result in a medium magnitude of change and likely localised significant effects.

Covenham St Bartholomew

- 3.7.45 The community of Covenham St Bartholomew Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.46 While the parish would not be directly impacted by the Project, views out from the parish to the west would be affected by the presence of pylons in Section 2. The Project introduces new 400 kV overhead line to the west and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Covenham St Mary

- 3.7.47 The community of Covenham St Mary Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.48 The parish would be directly impacted by the operation of approximately 1.3 km of overhead line including pylons GL63-GL65 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 2 to the northwest and south. The Project introduces new 400 kV overhead line to the west of Covenham St Mary and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

East Ravendale

- 3.7.49 The community of East Ravendale 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. This parish is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.50 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Sections 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. Although the Project would not be visible from the village of East Ravendale itself, pylons would remain very noticeable in open views out to the east of the parish and from two PRoW that route down the eastern slopes, one of which is the Wanderlust Way. The new overhead line would comprise low height pylons between Barnoldby le Beck and Waithe which would help to reduce the proportion of pylons visible but would still remain a new feature across the wide open views from the PRoWs. Overall, the operation of the Project would result in a medium magnitude of change and likely localised significant effects.

Elkington

- 3.7.51 The community of Elkington 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. This parish is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.52 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Section 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. Although the Project would not be visible from the village of North Elkington or South Elkington, pylons would remain very noticeable in open views out to the east of the parish and from a public right of way that routes along the eastern slope of the National Landscape (AONB). Overall, the operation of the Project would result in a medium magnitude of change and likely localised significant effects.

Fotherby

- 3.7.53 The community of Fotherby 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. The western half of the parish is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.54 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Sections 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. Pylons would be very noticeable in open views out to the east of the parish and from a PRoW to the west of the parish on the slopes of the National Landscape (AONB). Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Fulstow

- 3.7.55 The community of Fulstow 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 The parish would be directly impacted by the operation of approximately 3.2 km of overhead line including pylons GL49-GL57 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 2 to the north and south. The Project introduces new 400 kV overhead line to the west of Fulstow and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Gayton le Marsh

- 3.7.57 The community of Gayton 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 views is judged to be medium.
- 3.7.58 While the parish would not be directly impacted by the Project, views out from the parish to the west would be affected by the presence of pylons in Sections 2. The Project introduces new 400 kV overhead line to the west and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west, particularly from properties on the A157. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, this would result in a medium magnitude of change and likely significant effects.

Grainsby

- 3.7.59 The community of Grainsby Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be high.
- 3.7.60 The parish would be directly impacted by the operation of approximately 1.3 km of overhead line including pylons GL41-GL44 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 2 to the north and south. The Project would introduce new 400 kV overhead line into views to the east of the parish. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Great Carlton

- 3.7.61 The community of Great Carlton Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.62 While the parish would not be directly impacted by the Project, views out from the parish to the west would be affected by the presence of pylons in Section 2. The Project introduces new 400 kV overhead line, approximately 1 km to the west of the

village, which would be seen on the skyline. It would impact views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west, however these views tend to be glimpsed from the road network and filtered by vegetation around the village and on road sides. Views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Grimoldby

- 3.7.63 The community of Grimoldby Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.64 While the parish would not be directly impacted by the Project, views out from the parish to the west would be affected by the presence of pylons in Section 2. The Project introduces new 400 kV overhead line, approximately 1.7 km to the west of the village, which would be seen on the skyline and would impact views towards the Lincolnshire Wolds National Landscape (AONB). Views west are currently unaffected by high voltage electricity infrastructure or other discordant features. Mitigation planting is proposed on field boundaries within the draft Order Limits to the west of the parish, but pylons would remain visible. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Hawerby cum Beesby

- 3.7.65 The community of Hawerby cum Beesby 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. It is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.66 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Sections 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. Pylons would be very noticeable in open views out to the east of the parish and from a public right of way to the west of the parish on the slopes of the Wolds. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Holton le Clay

- 3.7.67 The community of Holton le Clay Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.68 While the 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 2. The Project introduces new 400 kV overhead line into views that are currently unaffected by high voltage electricity infrastructure or other discordant features. Although views from the main village would be filtered by linear vegetation along field boundaries and along the dismantled railway, there would be open views from Station Road where the Project would be prominent in views. Views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of

the Project would result in a medium magnitude of change and likely localised significant effects.

Keddington

- 3.7.69 The community of Keddington Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.70 The parish would be directly impacted by the operation of pylon GL81 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 2 to the north and south. The Project introduces new 400 kV overhead line to the east of Keddington. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Laceby

- 3.7.71 The community of Laceby Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.72 The parish would be directly impacted by the operation of approximately 1.7 km of overhead line including pylons GL9-GL13 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 2 to the north and east. Although there are already views of 132 kV overhead lines which pass through the eastern edge of the parish and are visible to the north, the Project would appear more prominent. Mitigation planting is proposed along Laceby Beck, within the draft Order Limits, which will help to filter views along the Project, but close proximity views of pylons will remain to the north of the parish. Overall, the operation of the Project would result in a medium magnitude of change and likely localised significant effects.

Legbourne

- 3.7.73 The community of Legbourne Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be high.
- 3.7.74 The parish would be directly impacted by the operation of approximately 1 km of overhead line including pylons GL90-GL92 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 2 to the north and east. The Project introduces new 400 kV overhead line to the east of Legbourne and in views to the north and south which have no existing overhead lines. Although this would not affect views from Legbourne towards the 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 the B1200. Mitigation planting is proposed along field boundaries, within the draft Order Limits, to the east of the parish and adjacent the caravan park to filter views, however the Project would remain prominent in views to the east of the parish. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Little Carlton

- 3.7.75 People living and moving around the parish of Little Carlton have a high susceptibility to change arising from the Project and the value of the views currently experienced is considered to be medium.
- 3.7.76 The parish would be directly impacted by the operation of approximately 2.3 km of overhead line including pylons GL93-GL98 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 2 to the north and south. The Project would introduce new 400 kV overhead line into views across the centre of the parish. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Mitigation planting is proposed along field boundaries, within the draft Order Limits, to the west of the village which will help to filter views along the Project, but close proximity views of pylons will remain. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Ludborough

- 3.7.77 The community of Ludborough 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.
- 3.7.78 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Section 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Although the Project would be filtered by vegetation from the village itself, pylons would remain very noticeable in open views out from the east of the parish and from public rights of way that route between the A16 and A18 on elevated landform. Overall, the operation of the Project would result in a medium magnitude of change and likely localised significant effects.

Muckton

- 3.7.79 The community of Muckton 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. The western edge of the parish is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.80 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Section 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. Pylons would be very noticeable in open views out to the east of the parish and from a PRow. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

North Cockington

- 3.7.81 The community of North Cockington Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.82 The parish would be directly impacted by the operation of approximately 1 km of overhead line including pylons GL78-GL80 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 2 to the north and south. The Project introduces new 400 kV overhead line to the west of North Cockerington. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. There are also open views towards St James's Church in Louth from the village which would be affected by the introduction of the overhead line. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

North Ormsby

- 3.7.83 The community of North Ormsby 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. This parish is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.84 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Section 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. The Project would remain very noticeable in open views out to the east of the parish and from a public right of way that routes along the eastern slopes of the National Landscape (AONB). Overall, this would result in a medium magnitude of change and likely localised significant effects.

North Thoresby

- 3.7.85 The community of North Thoresby 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 1.4 km of overhead line including pylons GL45-GL48 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 2 to the north and south. The Project introduces new 400 kV overhead line to the west of the village of North Thoresby, where views are filtered by existing woodland blocks and vegetation along the dismantled railway. Mitigation planting on field boundaries, within the draft Order Limits, is proposed to the east of the village, however views are currently unaffected by high voltage electricity infrastructure or other discordant features, and the Project would remain visible. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Reston

- 3.7.87 The community of Reston Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.88 The parish would be directly impacted by the operation of approximately 2.3 km of overhead line including pylons GL99-GL105 and would therefore have close proximity views of the Project, as well as indirectly affected by views of pylons outside the community area in Section 2 to the north and southeast. The Project introduces new 400 kV overhead line to the northeast of North Reston and east of

South Reston, in views which have no existing overhead lines. Although this would not affect views from the two villages towards the National Landscape (AONB) which is to the west of this parish, the Project and would change the character of views east. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects

South Cockrington

- 3.7.89 The community of South Cockrington Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.90 The parish would be directly impacted by the operation of approximately 1.4 km of overhead line including pylons GL82-GL85 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 2 to the north and south. The Project introduces new 400 kV overhead line to the west of South Cockerington. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. There are also open views towards St James's Church in Louth from the village which would be affected by the introduction of the overhead line. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Stewton

- 3.7.91 The community of Stewton Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.92 The parish would be directly impacted by the operation of approximately 1.2 km of overhead line including pylons GL86-GL89 and would therefore have close proximity views of the Project, as well as indirectly affected by views of pylons outside the community area in Section 2 to the north and southeast. The Project introduces new 400 kV overhead line to the east of Stewton and in views which have no existing overhead lines. Although this would not affect views from Stewton towards the National Landscape (AONB) which is to the west of this parish, the Project and would change the character of views east. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Strubby with Woodthorpe

- 3.7.93 The community of Strubby with Woodthorpe Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.94 The parish would be directly impacted by the operation of approximately 500 m of overhead line including pylons GL115-GL116 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 2 to the northwest and south. The Project introduces new 400 kV overhead line to the west of Woodthorpe and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Utterby

- 3.7.95 The community of Utterby Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be high.
- 3.7.96 The parish would be directly impacted by the operation of approximately 1.5 km of overhead line including pylons GL58-GL62 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 2 to the north and southeast. The Project introduces new 400 kV overhead line to the east of Utterby, which has no existing overhead lines. Although this would not affect views from Utterby towards the National Landscape (AONB) which is to the west of this parish, the Project and would change the character of views east. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Waithe

- 3.7.97 The community of Waithe Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.98 The parish would be directly impacted by the operation of approximately 1.8 km of overhead line including pylons GL35-GL42 (GL35 and GL36 are low height pylons) 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 2 to the north and south. Although there are few visual receptors, the Project would introduce new 400 kV overhead line into views through the centre of the parish. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Waltham

- 3.7.99 The community of Waltham Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.
- 3.7.100 While the 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 2. The Project introduces new 400 kV overhead line into views that are currently unaffected by high voltage electricity infrastructure or other discordant features. Although views from the main village would be filtered by linear vegetation along field boundaries, and the low height pylons between GL18-GL36 would be more easily filtered by vegetation, there would be close proximity views for people living on Waltham Road and open views from Station Road where the Project would be prominent in views. Views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely localised significant effects.

Withern with Stain

- 3.7.101 The community of Withern with Stain Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views is judged to be medium.

- 3.7.102 The parish would be directly impacted by the operation of approximately 3.3 km of overhead line including pylons GL106-GL114 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 2 to the northwest and south. The Project introduces new 400 kV overhead line to the west of Withern and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Wyham cum Cadeby

- 3.7.103 The community of Wyham cum Cadeby 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. This parish is located within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.104 While the parish would not be directly impacted by the Project, views out from the parish to the east would be affected by the presence of pylons in Sections 2. These views are currently unaffected by high voltage electricity infrastructure or other discordant features with the exception of some very distant offshore wind turbines. The Project would remain very noticeable in open views out to the east of the parish and from public rights of way that routes along the eastern slope of the National Landscape (AONB). Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Yarburgh

- 3.7.105 The community of Yarburgh Parish is considered highly susceptible to visual change resulting from the Project whilst the characteristics of the landscape indicate that the value of views across the parish is judged to be high.
- 3.7.106 The parish would be directly impacted by the operation of approximately 1.6 km of overhead line including pylons GL67-GL71 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 2 to the north and south. The Project introduces new 400 kV overhead line to the west of Yarburgh and impacts views towards the Lincolnshire Wolds National Landscape (AONB) beyond which forms a distant skyline to the west. These views are currently unaffected by high voltage electricity infrastructure or other discordant features. There are also open views towards St James's Church in Louth from the village which would be affected by the introduction of the overhead line. Overall, the operation of the Project would result in a medium magnitude of change and likely significant effects.

Recreational Routes and Receptors

Greenwich Meridian Trail

- 3.7.107 The Greenwich Meridian Trail is located within Section 2 and is also located within Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone 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 2.

- 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 2 indicate that the value of the sequential views experienced is judged to be high.
- 3.7.109 Users of the Greenwich Meridian Trail would have views of the new 400 kV overhead line for approximately 5 km as the trail travels from the edge of the Wolds towards Yarburgh. The trail would pass beneath the Project close to GL68. This area does not currently contain any existing overhead lines. This would result in a medium magnitude of change and result in likely localised significant effects.
- 3.7.110 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change would remain medium. This is mainly due to effects within Section 6 in combination with the effects in Section 2, but also as the Project affects the trail in three separate locations. When combined with the medium to high value of views and high susceptibility, the Project would give rise to a likely significant effect.

Lincolnshire Wolds Way

- 3.7.111 People using the Lincolnshire Wolds Way have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high due to its location within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.112 Users of the Lincolnshire Wolds Way would have views of the new 400 kV overhead line for approximately 30 km as the footpath routes along the eastern slopes of the Wolds running broadly parallel with the Project. This area does not currently contain any existing overhead lines. Although some views would be filtered by vegetation and landform as people walk the footpath and seen in the context of wider views which contain offshore windfarms and the wind turbines at Fen farm and Gayton le Marsh, the Project would be visible in views towards the coast and across wide panoramas from some locations. This would result in a large magnitude of change and result in likely localised significant effects.

Lindsey Loop

- 3.7.113 The Lindsey Loop is located within Section 2 and is also located within Section 3 New Lincolnshire Connection Substation A and B.
- 3.7.114 The preliminary assessment of the effects on people using the Lindsey Loop presented below considers the part of the Loop that is located within the Study Area for Section 2.
- 3.7.115 People using the Lindsey Loop are considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate the value of the views currently experienced is considered to be high in Section 2 due to its location partially within the Lincolnshire Wolds National Landscape (AONB). While the footpath would not be directly impacted by the Project, views from the footpath to the east would be affected by the presence of pylons in Section 2 and 3. These views are currently free from high voltage electricity infrastructure and contain few other detractors. Overall, this would result in a medium magnitude of change and likely significant effects.
- 3.7.116 When considering the operation phase of the Project, in its entirety across all Sections, the predicted magnitude of change is large. Approximately 30 km of the

route would have views of new 400 kV overhead line from the edge of the Wolds. When combined with the high value views and high susceptibility of people using the Lindsey Loop, the Project would give rise to a likely significant effect.

Wanderlust Way

- 3.7.117 People using the Wanderlust Way have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high due to its partial location within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.118 Users of the Wanderlust Way would have close proximity views of the new 400 kV overhead line for approximately 7.5 km between pylons GL6 and GL29, where the trail follows field boundaries adjacent to the Project. The trail also crosses the Project between pylons GL12 and GL13 and for a second time between pylons GL19 and GL20. From the rest of the footpath there would also be longer distant views from the more elevated areas within the Wolds. Views from the southern half of the footpath do not currently contain any existing overhead lines, although there are close proximity views of an existing 132 kV overhead line to the north. Although some views would be filtered by vegetation and landform as people walk the footpath and seen in the context of wider views which contain offshore windfarms and the wind turbines at Fen farm and Gayton le Marsh, the Project would be visible in views towards the coast and across wide panoramas from some locations. This would result in a large magnitude of change and result in likely localised significant effects.

Nev Cole Way

- 3.7.119 The Nev Cole Way is located within Section 2 and is also located within Section 1 New Grimsby West Substation.
- 3.7.120 The preliminary assessment of the effects on people using the Nev Cole Way presented below considers the part of the footpath that is located within the Study Area for Section 2.
- 3.7.121 People using the footpath are considered highly susceptible to visual change resulting from the Project, whilst the characteristics of the landscape indicate the value of the views currently experienced is considered to be high in Section 2 due to its location partially within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.122 Users of the Nev Cole Way would have close proximity views of the new 400 kV overhead line for approximately 5 km between pylons GL6 and GL29, where the trail follows field boundaries adjacent to the Project. The trail also crosses the Project between pylons GL12 and GL13. From the rest of the footpath there would also be longer distant views from the more elevated areas within the Wolds. There are close proximity views of an existing 132 kV overhead line to the east near Laceby Manor. Although some views would be filtered by vegetation and landform as people walk the footpath and seen in the context of wider views, the Project would be visible in views to the east and more prominent than the existing overhead line. This would result in a medium magnitude of change and result in likely localised significant effects.
- 3.7.123 When considering the operation phase of the Project, in its entirety across all Sections, the predicted magnitude of change remains medium. Approximately 5 km of the route would have views of new 400 kV overhead line from the edge of the Wolds to the New Grimsby West Substation. When combined with the high value

views and high susceptibility of people using the Nev Cole Way, the Project would give rise to a likely significant effect.

Silver Lincs Way

- 3.7.124 People using the Silver Lincs Way have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high due to its partial location within the Lincolnshire Wolds National Landscape (AONB).
- 3.7.125 Users of the Silver Lincs Way would have close proximity views of the new 400 kV overhead line for approximately 5 km between pylons GL14 and GL29, where the trail follows field boundaries adjacent to the Project. The trail also crosses the Project between pylons GL19 and GL20. From the rest of the footpath there would also be longer distant views from the more elevated areas within the Wolds. Views from the southern half of the footpath do not currently contain any existing overhead lines, although there are close proximity views of an existing 132 kV overhead line to the north. Although some views would be filtered by vegetation and landform as people walk the footpath and seen in the context of wider views which contain offshore windfarms and the wind turbines at Fen farm and Gayton le Marsh, the Project would be visible in views towards the coast and across wide panoramas from some locations. This would result in a large magnitude of change and result in likely localised significant effects.

Louth Canal and Louth Canal Walk

- 3.7.126 People using the Louth Canal and the adjacent Louth Canal Walk have a high susceptibility to change arising from the Project while the characteristics of the landscape in Section 2 indicate that the value of the sequential views experienced is judged to be high.
- 3.7.127 Users of the Louth Canal and Louth Canal Walk would have views of the new 400 kV overhead line for approximately 3 km as the canal passes between Alvingham and Keddington. The trail would pass beneath the Project between GL77 and GL78. This area does not currently contain any existing overhead lines. This would result in a medium magnitude of change and result in likely localised significant effects

Likely Non-Significant Effects

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

Table 3.2 Preliminary summary of non-significant Visual effects – Section 2

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Communities					
Aby with Greenfield	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 650 m of overhead line including pylons GL117-GL118. Indirectly affected by views of construction activities associated with LCS-A and pylons in Section 2 and 3.	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 large woodland blocks at Swinn Wood, Mother Wood and Greenfield Wood would heavily filter views although taller equipment may be visible. However, these effects would be very 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>
Alvingham	Value of Views – High Susceptibility – High	Directly impacted by the construction of approximately 2 km of overhead line including pylons GL72-GL77. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be very 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.
Ashby cum Fenby	Value of Views – High Susceptibility – High	Directly impacted by the construction of pylon GL33. Indirectly affected by views of construction of pylons in Section 2.	Construction – very small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries and the intervening village of Brigsley would heavily filter views of construction from the slightly elevated areas of the parish near the A18. Taller equipment may be visible, however, these effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields.</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>
		Directly impacted by the operation of pylon GL33 and close proximity views of the Project. Indirectly affected by views of pylons in Section 2.	Operation – small	Operation – not significant	<p>The Project would be visible to the north and east of this community area. An existing 132 kV overhead line passes to the north of the parish. For the majority of the community area, the use of low height pylons from GL18-GL36 combined with the vegetation would mean views of the Project would be heavily filtered. There would be more open views from the more elevated areas towards the A18 but only a small proportion of the low height pylons would be seen against the sky and seen in combination with the</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>built up areas of Grimsby and distant wind turbines.</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>
Authorpe	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>At 2 km, the vegetation within the community area and at Tothill Wood would heavily filter views. The tops of taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible to the north and east of this community area. For the majority of the community area, the vegetation cover including along the dismantled railway and the large block of woodland at Tothill Wood would be heavily filter views. There may be glimpsed views as people move around the parish, however the Project would not affect views towards the Lincolnshire Wolds National Landscape (AONB)</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.
Barnoldby le Beck	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 2.5 km of overhead line including pylons GL18-GL25. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – small	Construction – not significant	Although there would be open views towards construction activities from the east of the community, the majority of construction would be screened or filtered by the mature vegetation. Accesses and bellmouth have been sited away from visual receptors. Taller equipment would be perceptible over a wider area, 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.
Beelsby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the elevated areas of the parish. Taller equipment may be visible, however, these effects would be very 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.
		Indirectly affected by the presence of pylons in Section 2 during operation.	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 132 kV overhead line, 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 which remain the more prominent feature. Views from the majority of the village would be screened by landform and filtered by blocks of vegetation.</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>
Belleau	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the majority of the parish including the village itself. Taller equipment may be visible, however, these effects would be very temporary in nature.</p> <p>The magnitude of change is considered to be very 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.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	<p>The new 400 kV overhead line would be noticeable in views east but only from the northern part where there are few visual receptors. These views are transitory for people travelling on the road network. Views from the majority of the village itself would be screened by landform and filtered by blocks of vegetation.</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>
Bracken-borough with Little Grimsby	Value of Views – High Susceptibility – High	<p>Directly impacted by the construction of pylon GL66.</p> <p>Indirectly affected by views of construction of pylons in Section 2.</p>	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very 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
Bradley	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 1.5 km of overhead line including pylons GL14-GL17. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – very small	Construction – not significant	Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries and large woodland blocks at Bradley Wood and Dixon Wood would heavily filter views of construction. Taller equipment may be visible, however, these effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Directly impacted by the operation of approximately 1.5 km of overhead line including pylons GL14-GL17. Indirectly affected by presence of pylons in Section 2.	Operation – small	Operation – not significant	There are few visual receptors within the western side of the parish where the Project is located. This part of the parish is dominated by a solar farm and two existing 132 kV overhead lines which passes to the west and south of the parish. The Project would be seen in combination with the 132 kV overhead lines, but also heavily filtered from visual receptors by large woodland blocks including Bradley Wood and Dixon Wood. Mitigation will introduce an additional block of woodland. Therefore, the Project would not fundamentally alter the composition or character of the views currently experienced.

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.
Brigsley	Value of Views – High Susceptibility – High	Directly impacted by the construction of approximately 3 km of overhead line including pylons GL26-GL32 and GL34. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – small	Construction – not significant	Although there would be open views towards construction activities from the centre of the community, the majority of construction would be screened or filtered by the vegetation along field boundaries and around the villages of Brigsley and southern parts of Waltham. Taller equipment would be perceptible over a wider area, 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.
Burwell	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	Views from the community are heavily filtered by large woodland blocks at Burwell Wood and Muckton Wood, the areas with the most visibility having few visual receptors. The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this

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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 4 km to the east of this community area, however, the vegetation cover including Burwell Wood and Muckton Wood would heavily filter views. There would be no views from the village itself due to the undulating landform.</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>
Claythorpe	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>Vegetation within the community area and at Tothill Wood and around the village would heavily filter views. The parts of the community in close proximity to construction have few visual receptors. The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. Visual effects of accesses would be limited to the immediate fields which are just east of the parish boundary.</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
Conisholme	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	At 2.2 km, the majority of construction activities would not be visible across the relatively flat landscape in this area due to intervening vegetation. Taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	The Project would be visible 2.2 km to the west. Although pylons would be visible and noticeable in views, the existing wind farm at Fen Farm would remain the dominant feature in views, 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.
Covenham St Batholomew	Value of Views – Medium Susceptibility – High	Directly impacted by an access track and bellmouth during construction. Indirectly affected by views of construction	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		activities for the overhead line in Section 2.			<p>very 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>
Covenham St Mary	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 1.3 km of overhead line including pylons GL63-GL65. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be very 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>
East Ravendale	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the east of the parish. There would be no views from the village itself due to the undulating landform. Taller equipment may be</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>visible, however, these effects would be very 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>
Elkington	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction. There would be no views from the villages of North Elkington or South Elkington due to the undulating landform which screens views. Taller equipment may be visible from locations to the east of the parish, however, these effects would be very 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>
Fotherby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the village. Taller equipment may be visible particularly from the more elevated areas</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>to the west of the parish where there are fewer visual receptors. These effects would be very 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>
Fulstow	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 3.2 km of overhead line including pylons GL49-GL57. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be very 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>
Gayton le Marsh	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields which are outside the parish to the west.</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.
Grainsby	Value of Views – High Susceptibility – High	Directly impacted by the construction and operation of pylons GL42-GL45 in Section 2. A satellite construction compound is proposed adjacent to the A16.	Construction – small	Construction – not significant	Mature blocks of woodland and trees along the road networks and disused railway and helps to filter views of construction activities associated with the overhead line. Taller equipment may be visible, however, these effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields. The presence of the construction compound on the A16 will introduce a slightly longer term effect but temporary and away from properties. The magnitude of change is considered to be small and effects on this community area during construction would likely be not significant.
Grainthorpe	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	At 3.3 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 3.3 km to the west. Although pylons would be visible and noticeable in views, to the south of the parish and around the village of Lundy, the existing wind farm at Fen Farm would remain the dominant feature, and therefore the Project would not fundamentally alter the composition or character of the views currently experienced. There would be views of the Project from the east of the parish but there are few properties in this area, views mainly from roads and transitory in nature.</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>
Great Carlton (VP178)	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities to the west of the community area, the landform and existing vegetation along field boundaries means that effects would mainly occur from taller equipment. These effects would be very 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>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Grimoldby	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields which are outside and to the west of the parish.</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>
Grimsby suburbs of Little Coates and Scartho	Value of Views – Medium Susceptibility – Medium	Indirectly affected by views of construction activities for the overhead line in Sections 1 and 2.	Construction – small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction. Taller equipment may be visible, however, these effects would be very 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>
		Indirectly affected by the presence of pylons in Sections 1 and 2 during operation.	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 132 kV overhead line, and therefore the Project</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>would not fundamentally alter the composition or character of the views currently experienced. The existing overhead line would remain the more prominent feature from Little Coates. Views would be limited to those properties on the very edge of the suburbs and would be filtered by vegetation.</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>
Hatcliffe	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the elevated areas of the parish. Taller equipment may be visible, however, these effects would be very 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 2 during operation.	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 132 kV overhead line, and therefore the Project would not fundamentally alter the</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>composition or character of the views currently experienced. The existing overhead line would remain the more prominent feature, with the Project over 1.5 km away and at a lower elevation. Views from the village would be screened by landform and filtered by blocks of vegetation.</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>
Haugham	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>Views from the community are heavily filtered by large woodland blocks at Haugham Wood and Haugham Pasture, the areas with the most visibility having few visual receptors. The tops of taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 4.5 km to the east of this community area, however, the vegetation cover including Haugham Wood and Haugham Pasture would heavily filter views. There would</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>be no views from the village itself due to the undulating landform.</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>
Hawerby cum Beesby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the village. Taller equipment may be visible particularly from the more elevated areas to the west of the parish where there are fewer visual receptors. These effects would be very 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>
Holton le Clay	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>There would be views towards construction activities to the south of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the main areas of settlement. Taller equipment may be visible, however, these effects would be very temporary in nature.</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.
Humberston	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>Taller equipment may be perceptible but at over 3.6 km 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 2 during operation.	Operation – very small	Operation – not significant	<p>At 3.6 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>
Irby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the elevated areas of the parish. Taller equipment

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>may be visible, however, these effects would be very 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 2 during operation.	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 132 kV overhead line, 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 to the east. Views from the majority of the village of Irby upon Humber would be screened by landform and filtered by blocks of vegetation.</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>
Keddington	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of pylon GL81. Indirectly affected by views of construction of pylons in Section 2.	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very 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>
Laceby	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 1.7 km of overhead line including pylons GL9-GL13. Indirectly affected by views of construction activities at the New Grimsby West Substation and pylons in Sections 1 and 2.	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, layers of vegetation along field boundaries and along the River Freshney and Laceby Beck will filter views of construction from the majority of the community area. Taller equipment may be visible across a wider area, however, these effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields and seen in the context of the A46 dual carriageway.</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>
Legbourne	Value of Views – High Susceptibility – High	Directly impacted by the construction of approximately 1.7 km of overhead line including pylons GL90-GL92.	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by views of construction of pylons in Section 2.			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.
Little Carlton	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 2.3 km of overhead line including pylons GL93-GL98. Indirectly affected by views of construction of pylons in Section 2.	Construction – small	Construction – not significant	Although there would be views towards construction activities through the centre of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very 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.
Little Cawthorpe	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	At 2.8 km, the vegetation within the community area and at Legbourne Wood would heavily filter views. The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this

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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 2.8 km to the north and 4.5 km to the east of this community area. For the majority of the community area, the vegetation cover including within the village of Little Cawthopre the large block of woodland at Legbourne Wood would heavily filter 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>
Louth	Value of Views – Medium Susceptibility – Medium	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction. Taller equipment may be visible, however, these effects would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 1.8 km to the east. The new 400 kV overhead line would be noticeable in views east but limited to those properties on the very</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>edge of the settlement and would be filtered by vegetation.</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>
Ludborough	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>Vegetation around the village would heavily filter views, with few visual receptors within the rest of the parish. The parts of the community in close proximity to construction have few visual receptors. The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. Visual effects of accesses would be limited to the immediate fields which are just east of the parish boundary.</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>
Manby	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries and buildings at Manby Airfield mean that effects would be mainly occur from taller equipment. These effects would be very temporary in nature. Visual effects of accesses would be limited to the</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>immediate fields which are outside and to the west of the parish.</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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible to the west and south. Although pylons would be visible and noticeable in views, this would be limited to those properties on the edge of the settlement, the majority of views being filtered by vegetation or the buildings around Manby Airfield.</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>
Marshchapel	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>At 2.8 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very 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	Operation – small	Operation – not significant	<p>The Project would be visible 2.8 km to the west. Although pylons would be visible and noticeable in views, views</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Section 2 during operation.			<p>would be filtered by vegetation within the villages of Marshchapel, West End and Eskham. There would be views of the Project from the east of the parish but there are few properties in this area, views mainly from roads and transitory in nature.</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>
Muckton	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the village. Taller equipment may be visible particularly from the more elevated areas to the west of the parish. These effects would be very 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>
New Waltham	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>The majority of construction activities would be screened by surrounding buildings and vegetation. Taller equipment may be perceptible from some limited locations within the parish but at over 2.2 km would be distant and</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>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 2 during operation.	Operation – very small	Operation – not significant	<p>At 2.2 km and being heavily filtered by surrounding buildings and vegetation, there would be no effects on views from the majority of this community area. The Project may be perceptible at some limited locations, however an existing 132 kV overhead line passes through the parish and therefore pylons would not be a new feature.</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>
North Cockerington	Value of Views – Medium Susceptibility – High	<p>Directly impacted by the construction of approximately 1 km of overhead line including pylons GL78-GL80.</p> <p>Indirectly affected by views of construction of pylons in Section 2.</p>	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the landform and existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. However, these effects would be very 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.
North Cotes	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	At 2.7 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	The Project would be visible 2.7 km to the west. Although pylons would be visible and noticeable in views, views would be filtered by vegetation within the village of North Cotes. There would be views of the Project from the east of the parish but there are few properties in this area, views mainly from roads and transitory in nature. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
North Ormsby	Value of Views – High	Indirectly affected by views of construction activities for the	Construction – very small	Construction – not significant	There would be views towards construction activities to the east of the community area, however existing

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – High	overhead line in Section 2.			<p>vegetation including woodland blocks and along field boundaries would filter views of construction. There would be no views from the village due to vegetation which screens views. Taller equipment may be visible from locations to the east of the parish, however, these effects would be very 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>
North Somercotes	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>At 3.5 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 3.5 km to the west. Although pylons would be visible and noticeable in views, the existing wind farm at Fen Farm would remain the dominant feature in views, and therefore the Project would not fundamentally alter the composition or</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>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>
North Thoresby	Value of Views – Medium Susceptibility – High	Directly impacted by the construction and operation of pylons GL46-GL49 in Section 2.	Construction – small	Construction – not significant	<p>Mature blocks of woodland and trees along the road networks and disused railway and helps to filter views of construction activities associated with the overhead line. Taller equipment may be visible particularly from the more elevated areas to the west of the parish. These effects would be very 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>
Raithby cum Maltby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>Views from the community are filtered by vegetation along the A16 and at Kenwick Bar which is the most elevated area. Views tend to be transitory from roads. The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance.</p> <p>The magnitude of change is considered to be very 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.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 4 km to the east of this community area, however, vegetation along the A16 and around properties filters views. Although the Project may be visible around Kenwick Bar, this area of the community is influenced by the A16 and the roundabout junction with the A157 and transitory views are filtered by roadside vegetation.</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>
Reston	Value of Views – Medium Susceptibility – High	<p>Directly impacted by the construction of approximately 2.3 km of overhead line including pylons GL99-GL105.</p> <p>Indirectly affected by views of construction of pylons in Section 2.</p>	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very 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.
Riby	Value of Views – Medium Susceptibility – High	Indirect effects on views from the presence of construction activities associated with the New Grimsby West Substation in Section 1 and pylons in the northern parts of Section 2.	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>
		Indirect effects on views from the presence of the New Grimsby West Substation in Section 1 and pylons in the northern parts of Section 2 during operation.	Operation - small	Operation - not significant	<p>At 2 km, the taller components of the Project may be perceptible but the effect on visual amenity would not be significant and would be seen in the context of the existing 4KG 400 kV overhead lines which is in views to the west of this community area.</p> <p>Due to the limited nature of views, the magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.</p>
Saltfleetby	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>At 3 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very temporary in nature and at distance.</p> <p>The magnitude of change is considered to be very 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.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 3 km to the west. Although pylons would be visible and noticeable in views, the existing wind farm at Gayton le Marsh would remain the dominant feature in views, and therefore 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>
South Cockerington (VP182)	Value of Views – Medium Susceptibility – High	<p>Directly impacted by the construction of approximately 1.4 km of overhead line including pylons GL82-GL85.</p> <p>Indirectly affected by views of construction of pylons in Section 2.</p>	Construction – small	Construction – not significant	<p>Although there would be open views towards construction activities to the west of the community area, the landform and existing vegetation along field boundaries means that effects would mainly occur from taller equipment. However, these effects would be very 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>
South Somercotes	Value of Views – Medium	Indirectly affected by views of construction	Construction – very small	Construction – not significant	At 3.4 km, the majority of construction activities would not be visible across the

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – High	activities for the overhead line in Section 2.			<p>relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 3.4 km to the west. Although pylons would be visible and noticeable in views, the existing wind farm at Fen Farm to the north and Gayton le Marsh to the south are skyline features, and therefore 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>
South Thoresby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for LCS-A and the overhead line in Sections 2 and 3.	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 LCS-A and	Operation – small	Operation – not significant	<p>Due to the landform and vegetation cover, views would be limited, views from</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		pylons in Sections 2 and 3 during operation.			<p>the village would be heavily filtered by vegetation. For the more elevated areas to the west, 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, much of which is outside the Study Area. There may be views from the A16, but these are transitory and many filtered by roadside vegetation.</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>
Stewton	Value of Views – Medium Susceptibility – High	<p>Directly impacted by the construction of approximately 1.2 km of overhead line including pylons GL86-GL89.</p> <p>Indirectly affected by views of construction of pylons in Section 2.</p>	Construction – small	Construction – not significant	<p>Although there would be views towards construction activities on the eastern edge of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very 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
Strubby with Woodthorpe	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 500 m of overhead line including pylons GL115-GL116. Indirectly affected by views of construction of LCS-A and pylons in Sections 2 and 3.	Construction – small	Construction – not significant	<p>The landform, existing vegetation including woodland blocks and along field boundaries means that effects would be mainly occur from taller equipment which would be visible above vegetation. However, these effects would be very temporary in nature. There are no visual receptors within the community area in the immediate vicinity of the Project.</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>
Swaby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>Views from the community are heavily filtered by vegetation. The tops of taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 3.3 km to the east of this community area, however, the vegetation cover would heavily filter views. There would be no views from the village itself due to the undulating landform.</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 operation would likely be not significant.
Swallow	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	Views in and around this community are heavily filtered by a large woodland block at Irby Dales Wood, the village itself screening by the undulating landform. The tops of taller construction equipment may be perceptible from the very east of the parish but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	The Project would be visible 4.7 km to the east of this community area, however, the vegetation cover including Irby Dales Wood would heavily filter views. There would be no views from the village itself due to the undulating landform. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Tathwell	Value of Views – High	Indirectly affected by views of construction activities for the	Construction – very small	Construction – not significant	Views from the community are heavily filtered by large woodland blocks at Maltby Wood and Jenny Wood, the

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
	Susceptibility – High	overhead line in Section 2.			<p>areas with the most visibility having few visual receptors. The tops of taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 3.3 km to the east of this community area, however, the vegetation cover including Maltby Wood and Jenny Wood would heavily filter views. There would be no views from the village itself due to the undulating landform.</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>
Tetney	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>Although less than 1 km from the southern edge of the parish, the majority of construction activities would not be visible across the relatively flat landscape and mature vegetation in this area including at Tetney Golf Club. Taller construction equipment may be perceptible but would be very temporary in nature and at distance.</p>

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 construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	Although pylons would be visible and noticeable in views south, views would be heavily filtered by vegetation within the parish, and only glimpses of the Project. There are few properties to the south of the area, views mainly from roads and transitory in nature. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Theddlethorpe All Saints	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	At 4.5 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	The Project would be visible 4.5 km to the west. Although pylons would be visible and noticeable in views, the existing wind farm at Gayton le Marsh would remain the dominant feature in

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>views, and therefore 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>
Theddlethorpe St Helen	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>At 4.5 km, the majority of construction activities would not be visible across the relatively flat landscape in this area. Taller construction equipment may be perceptible but would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>The Project would be visible 4.5 km to the west. Although pylons would be visible and noticeable in views, the existing wind farm at Gayton le Marsh and a single turbine within the parish would remain the dominant features in views, and therefore the pylons 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</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					community area during operation would likely be not significant.
Utterby	Value of Views – High Susceptibility – High	Directly impacted by the construction of approximately 1.5 km of overhead line including pylons GL58-GL62. Indirectly affected by views of construction of pylons in Section 2.	Construction – small	Construction – not significant	Construction activities are limited to the eastern edge of the community area where there are few visual receptors. Taller equipment may be visible across a wider area, however, these effects would be very 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 operation would likely be not significant.
Waithe	Value of Views – Medium Susceptibility – High	Directly impacted by the construction and operation of pylons GL36-GL41 in Section 2.	Construction – small	Construction – not significant	Mature blocks of woodland and trees along the road networks helps to filter views. Taller equipment may be visible across a wider area, however, these effects would be very 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 operation would likely be not significant.
Waltham	Value of Views – Medium Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	Construction activities are limited to the eastern edge of the community area, views filtered for vegetation surrounding the village. Taller equipment may be visible across a wider area, however,

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>these effects would be very temporary in nature. Visual effects of accesses would be limited to the immediate fields which are outside this parish to the east.</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 Ravendale	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction from the elevated areas of the parish. Taller equipment may be visible, however, these effects would be very 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 2 during operation.	Operation – small	Operation – not significant	<p>There are few visual receptors within this parish, limited to two farms which have views filtered by mature trees. The Wanderlust Way follows the only road, located within a valley and therefore views are screened by landform.</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.
Withern with Stain	Value of Views – Medium Susceptibility – High	Directly impacted by the construction of approximately 3.3 km of overhead line including pylons GL106-GL114. Indirectly affected by views of construction of pylons in Section 2.	Construction – small	Construction – not significant	Although there would be views towards construction activities to the east of the community area, the existing vegetation along field boundaries would filter views of construction from the majority of the parish. Taller equipment may be visible across a wider area, however, these effects would be very 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.
Wold Newton	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	Taller construction equipment may be perceptible but would be very temporary in nature. 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 2 during operation.	Operation – very small	Operation – not significant	The Project would be visible 3.6 km to the west of this community area but only from the eastern edge where there are no visual receptors. The village would not have any views of the Project due to the undulating landform as shown by the ZTV.

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.
Wyham cum Cadeby	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	There would be views towards construction activities to the east of the community area, however existing vegetation including woodland blocks and along field boundaries would filter views of construction. Taller equipment may be visible from locations to the east of the parish, however, these effects would be very 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.
Yarburgh	Value of Views – High Susceptibility – High	Directly impacted by the construction of approximately 1.6 km of overhead line including pylons GL67-GL71. Indirectly affected by views of construction activities from pylons in Section 2.	Construction – small	Construction – not significant	Although there would be open views towards construction activities to the west of the community area, the existing vegetation along field boundaries means that effects would be mainly occur from taller equipment. These effects would be very 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.

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
Recreational Route and Receptors					
Lincolnshire Wolds Way	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>There would be views towards construction activities to the east of the footpath as it routes along the eastern slopes of the Wolds. However, existing vegetation including woodland blocks and along field boundaries would filter views of construction. Taller equipment may be visible but would not be across wider views all at the same time. These effects would be very temporary in nature.</p> <p>The magnitude of change is considered to be small and effects on this footpath during construction would likely be not significant.</p>
Lindsey Loop	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – small	Construction – not significant	<p>There would be views towards construction activities to the east of the footpath as it routes along the eastern slopes of the Wolds. However, existing vegetation including woodland blocks and along field boundaries would filter views of construction. Taller equipment may be visible but would not be across wider views all at the same time. These effects would be very temporary in nature.</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.
Louth Canal	Value of Views – High Susceptibility – High	Indirectly affects by construction in Section 2, the route crosses the Project between pylons GL77 and GL78 along the Louth Canal.	Construction – small	Construction – not significant	<p>Although in close proximity, views of access roads and working areas associated with the proposed 400 kV overhead line in Section 2 would be filtered by vegetation along the Louth Canal and River Ludd and views would be transient. Taller equipment may be visible above vegetation but would be temporary in nature.</p> <p>As only a short section would be in close proximity, the magnitude of change is considered to be small and effects on people using the footpath likely be not significant during construction.</p>
National Cycle Network Route 1	Value of Views – High Susceptibility – High	Indirectly affected by views of construction activities for the overhead line in Section 2.	Construction – very small	Construction – not significant	<p>There would be views towards construction activities to the east of the cycle route. However, existing vegetation including woodland blocks and along field boundaries would filter views of construction which would be over 3.7 km away. Taller equipment may be visible but would not be across wider views all at the same time. These effects would be very temporary in nature.</p> <p>The magnitude of change is considered to be very small and effects on people using the cycle route during construction would likely be not significant.</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	<p>At 3.7 km, and as the cycle route is passing through undulating landform, views would be varied. Although the Project may be visible, as views would be transitory, at distance and filtered by roadside vegetation in many locations, the Project would not be prominent in views.</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>
National Cycle Network Route 110	Value of Views – High Susceptibility – Medium	Indirectly affected by construction in Section 2, the route crosses the Project between pylons GL22 and GL23 along Waltham Road.	Construction – small	Construction – not significant	<p>Although in close proximity, views of access roads and working areas associated with the proposed 400 kV overhead line in Section 2 would be filtered by vegetation along Waltham Road and views would be transient. Taller equipment may be visible above vegetation but would be temporary in nature.</p> <p>As only a short section would be in close proximity, the magnitude of change is considered to be small and effects on people using the cycle route likely be not significant during construction.</p>
		Indirectly affected by the presence of pylons in Section 2 during operation.	Operation – small	Operation – not significant	<p>Although pylons would be visible and noticeable in views for people using the cycle route travelling east from the Wolds, views would be distant for the</p>

Receptor	Value of Views and Susceptibility of Receptor	Impact	Magnitude of Change	Significance	Rationale
					<p>majority of the cycle route and seen in the context of existing 132 kV overhead lines. There would be close proximity views where the route pass beneath the new overhead line between GL2 and G23 but views would be glimpsed and transitory from the road.</p> <p>The magnitude of change is considered to be small and effects on people using the cycle route would likely be not significant during operation.</p>

3.8 Monitoring

- 3.8.1 No Visual monitoring is currently proposed for Section 2, 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

- Ref 1 North East Lincolnshire Council (2018), North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018). [online] Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> (Accessed 20 September 2024)
- Ref 2 North East Lincolnshire Council (2022). North East Lincolnshire Local Plan Review. [online] Available at: <https://www.nelincs.gov.uk/assets/uploads/2024/01/2023-LocalPlanReview-DraftPlanWithOptions-Accessible.pdf> [Accessed 20 September 2024]
- Ref 3 North Kesteven District Council (2023). Central Lincolnshire Local Plan [online]. Available at: <https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf> [Accessed 20 September 2024].
- Ref 4 East Lindsey Local Plan Core Strategy (2018) [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Core_Strategy_adopted_version_for_web.pdf
- Ref 5 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 6 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 7 Landscape Institute and Institute for Environmental Management and Assessment (IEMA) (2013) Guidelines for Landscape and Visual Impact Assessment – 3rd Edition (GLVIA3).
- Ref 8 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 9 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 10 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 11 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at:

<https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].

- Ref 12 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 13 British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction – Recommendations.

4. Ecology and Biodiversity

Contents

4.	Ecology and Biodiversity	4-1
4.1	Introduction	4-1
4.2	Legislation and Policy Framework	4-4
	Legislation and National Policy	4-4
	Regional and Local Policy	4-4
	Biodiversity Net Gain	4-5
4.3	Scope of Assessment	4-5
4.4	Assessment Methodology	4-6
	Assessment Assumptions and Limitations	4-6
4.5	Baseline Conditions	4-7
	Study Areas and Survey Areas	4-7
	Data Collection	4-8
	Existing Baseline	4-9
	Future Baseline	4-34
4.6	Design, Control and Additional Mitigation Measures	4-34
	Design Mitigation Measures	4-34
	Control and Management Measures	4-35
	Additional Mitigation Measures	4-42
4.7	Preliminary Assessment of Effects	4-43
	Likely Significant Effects	4-44
	Likely Non-Significant Effects	4-54
4.8	Monitoring	4-69
	Table 4.1 Supporting documentation	4-2
	Table 4.2 Study Areas for key ecological features for Section 2	4-7
	Table 4.3 Sites designated for their biodiversity value, their qualifying features and distance from the Section 2 draft Order Limits	4-11
	Table 4.4 Notable fish species identified within the Section 2 Study Area	4-31
	Table 4.5 Notable aquatic macroinvertebrate species identified within the Section 2 Study Area	4-32
	Table 4.6 Preliminary summary of non-significant Ecology and Biodiversity effects - Section 2	4-55
	References	4-70

4. Ecology and Biodiversity

4.1 Introduction

4.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Ecology and Biodiversity assessment of the New Grimsby West Substation to New Lincolnshire Connection Substation (LCS) A Section (Section 2) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:

- i. An introduction to the topic (section 4.1);
- ii. Identification of key local and regional policy relevant to the assessment (section 4.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy 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 2 (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 2 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 2, 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 2 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 2 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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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.

- 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 2 Chapter 6 Water Environment and Flood Risk** includes details of the location of sensitive features, including Water Framework Directive (WFD) waterbodies, and the associated mitigation that would also be required to address potential impacts upon important ecological features, such as wetland Habitats of Principal Importance (HPI) and aquatic fauna.
 - ii. **PEI Report Volume 2 Part B Section 2 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 2 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 2 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 2 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 2 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 3 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 Context** 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. North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018) (Ref 1):
 - Policy 9 Habitat Mitigation – South Humber Bank: which requires proposals within the Mitigation Zone, which will adversely affect the Humber Estuary Special Protection Area (SPA)/Ramsar site due to loss of functionally linked land, to provide their own mitigation to comply with the requirements of the Habitats Regulations.
 - Policy 40 Green Infrastructure: development will be expected to maintain and improve the network of green infrastructure. Recognition should be made to the role such green infrastructure plays in mitigating the effects of recreational pressure on the Humber Estuary Special Area of Conservation (SAC)/SPA/Ramsar.
 - Policy 41 Biodiversity and Geodiversity: which sets out a strategic approach, which positively plans for the creation, protection, enhancement and management of sites of biodiversity and geodiversity value.
 - Policy 31 Renewable and Low Carbon Infrastructure: Proposals for renewable and low carbon energy generating systems will be supported where any significant adverse impacts are satisfactorily minimised and the residual harm is outweighed by the public benefits of the proposal. Developments and their associated infrastructure will be assessed on their merits and subject to impact considerations including biodiversity, geodiversity and nature conservation, with regard given to the findings of the site and project specific Habitat Regulations Assessment (HRA) and potential impacts on SPA birds, where appropriate.
- ii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2):
 - Strategy Policy 24 (SP24) Biodiversity and Geodiversity: which stipulates that development proposals should seek to protect and enhance biodiversity and geodiversity value of land, minimise fragmentation and maximise opportunities for connection between natural habitats.
 - Strategic Policy 27 (SP27) Renewable and Low Carbon Energy: which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation to sites or features of biodiversity or geodiversity importance, or protected species.

Biodiversity Net Gain

- 4.2.3 National Grid Electricity Transmission plc (National Grid) has committed to 10 per cent net gain in environmental value, including as a minimum 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 through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Ecology and Biodiversity chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 4.3.2 Non-statutory consultation feedback has been addressed in the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 4.3.3 The scope of the Ecology and Biodiversity assessment for Section 2 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 2 Survey Area which could be impacted through habitat loss or degradation, disturbance (e.g. due to noise or light pollution) or killing/injury. Species considered are:
 - terrestrial invertebrates;
 - great crested newt;

- reptiles;
 - wintering birds;
 - breeding birds;
 - badger;
 - bats;
 - otter;
 - water vole;
 - fish;
 - aquatic macroinvertebrates and macrophytes; and
 - other notable species.
- vi. invasive non-native species (INNS) – risk of spread due to construction and operational/maintenance activities and influence of presence upon habitat condition.

4.4 Assessment Methodology

- 4.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Ecology and Biodiversity assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all 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's (CIEEM's) 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 Ecology and Biodiversity are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 2.

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 2 have been informed by published guidance and professional judgement. They include the area within the draft Order Limits and a wider zone of potential influence. This zone represents the areas within which effects could reasonably occur as a result of the Project and associated activities. It should be noted that in relation to each assessed receptor, the Project’s zone of influence can vary, for example depending on the importance or sensitivity of the identified designated ecological sites. This could for example relate to where the features that define a given site are mobile or there could be connectivity between the proposed Project and a given site. The Study Areas will be reviewed and, as appropriate, refined for the assessment presented in the ES.
- 4.5.2 The desk Study Areas for different ecological features (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 2 have also been informed by published guidance and professional judgement. As with the desk Study Area, the Survey Areas are defined on a case-by-case basis and differ for each of the ecological features surveyed. The Survey Areas typically include land within the draft Order Limits (i.e. within the ‘Site’ boundary) plus wider areas within the Zone of Influence, where the Project could result in impacts upon habitats or species.
- 4.5.4 The field Survey Areas for key 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 2

Study Area (distance from Section 2 draft Order Limits)	Ecological feature
30 km	Special Areas of Conservation (SAC), Special Protection Areas (SPAs) 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).

Study Area (distance from Section 2 draft Order Limits)	Ecological feature
5 km	Statutory designated sites of up to national nature 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)).
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 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, aquatic macroinvertebrates; and
- 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 2 Figure 4.1 Sites Statutorily designated for their International Biodiversity Importance;**
- ii. **PEI Report Volume 2 Part B Section 2 Figure 4.2 Sites Statutorily designated for their National and County Biodiversity Importance;**
- iii. **PEI Report Volume 2 Part B Section 2 Figure 4.3 Sites Statutorily designated for their County Biodiversity Importance; and**

iv. **PEI Report Volume 3 Part B Section 2 Appendix 4A Bird Survey Data 2022-24.**

Section Overview

- 4.5.12 A description of the works within Section 2 is provided within **PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project**. In summary, Section 2 of the Project includes approximately 40 km of new 400 kilovolt (kV) overhead line from the New Grimsby West Substation (Section 1) to LCS-A (Section 3). There are 115 pylons proposed within Section 2, positioned at approximately 350 m intervals. The proposed overhead line route within Section 2 commences to the north-east of Laceby and runs in a south westerly direction, passing west of the town of Louth and connecting with Section 3 to the east of the village of Claythorpe.
- 4.5.13 The habitats within the Section 2 Study Area are dominated by arable farmland divided by a network of boundary hedgerows and ditches. Small woodlands are also scattered across the Study Area. There are 10 Main Rivers which cross the Section 2 Study Area, these are Laceby Beck, Waithe Beck, Old Fleet Drain, Black Leg Drain, Poulton Drain, Louth Canal, River Ludd, Grayfleet Drain, Long Eau, Great Eau.

Designated Sites

- 4.5.14 No site (nor part of any site) statutorily designated for its biodiversity importance is present within the Section 2 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 2 Study Area is provided in **Table 4.3**, which includes a summary of the main qualifying features and their relative distances from the Section 2 draft Order Limits at the closest point.
- 4.5.15 The Humber Estuary, an SPA, SAC and Ramsar site, Greater Wash SPA and Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC, all fall within 10 km of the Section 2 draft Order Limits. In addition, Gibraltar Point SPA and Ramsar site and The 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 2 draft Order Limits.
- 4.5.16 There are seven SSSIs and four LNRs within the Section 2 Study Area (i.e. within 5 km of the draft Order Limits and/or where the SSSI Impact Risk Zones (IRZ's) overlap) including Bradley and Dixon Woods LNR which is present within 0.1 km of the Section 2 draft Order Limits. The Impact Risk Zones (IRZ's) for Muckton Wood SSSI, Humber Estuary SSSI, Calceby Marsh SSSI, Saltfleetby - Theddlethorpe Dunes SSSI and Tetney Blow Wells SSSI partially overlap with the Section 2 draft Order Limits.
- 4.5.17 There are 34 sites non-statutorily designated for their biodiversity value as Local Wildlife Sites (LWSs) and Roadside Nature Reserves (RNRs) within the 2 km Study Area, ten which are located within or within 0.1 km of the draft Order Limits of Section 2. These are Mother and Greenfield Woods LWS, Bradley and Dixon's Woods LWS, Grange Plantation, Aby LWS, Long Eau West LWS, Great Eau LWS, Laceby Beck North LWS, Withern Ings LWS, Withern Wood LWS, River Freshney Headwaters LWS and Waithe Beck East LWS.

Table 4.3 Sites designated for their biodiversity value, their qualifying features and distance from the Section 2 draft Order Limits

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Internationally Designated (Statutory)				
Gibraltar Point	SPA	422.2	Qualifying features of the SPA: <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 	22.5 km south-east
Gibraltar Point	Ramsar site	414.1	Designated under: <p>Ramsar Criterion 1: Coastal dunes and saltmarsh habitats, including freshwater marsh.</p> <p>Ramsar Criterion 2: Wetland invertebrate assemblage</p> <p>Ramsar Criterion 5: Assemblages of international importance, specifically species with peak counts in winter. 53072 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"> • Grey plover (<i>Pluvialis squatarola</i>) • 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>) 	22.5 km south-east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p>Species/populations identified subsequent to designation for possible future consideration under Criterion 6.</p> <ul style="list-style-type: none"> Red knot (<i>Calidrus canutus islandica</i>) 	
Humber Estuary	SPA	37,630.2	<p>Qualifying features of the SPA:</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 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>Sternula 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 	4.2 km north east
Humber Estuary	SAC		<p>Designated for Annex I habitats:</p> <ul style="list-style-type: none"> H1110 Sandbanks which are slightly covered by sea water all the time H1130 Estuaries 	4.2 km north east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • H1140 Mudflats and sandflats not covered by seawater at low tide • H1150 Coastal lagoons • H1310 Salicornia and other annuals colonising mud and sand • H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) • H2110 Embryonic shifting dunes • H2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('White dunes') • H2130 Fixed dunes with herbaceous vegetation ('Grey dunes') • H2160 Dunes with <i>Hippophae rhamnoides</i> <p>Designated for Annex II species:</p> <ul style="list-style-type: none"> • S1095 Sea lamprey (<i>Petromyzon marinus</i>) • S1099 River lamprey (<i>Lampetra fluviatilis</i>) • S1364 Grey seal (<i>Halichoerus grypus</i>) 	
Humber Estuary	Ramsar site	37,630.2	<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>	4.2 km north east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> 153,934 waterfowl, non-breeding season (5 year peak mean 1996/97-2000/2001) <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"> 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>	
Greater Wash	SPA	344,267	<p>Qualifying features of the SPA:</p> <ul style="list-style-type: none"> Common scoter (<i>Melanitta nigra</i>) – non-breeding Common tern (<i>Sterna hirundo</i>) – breeding Little gull (<i>Hydrocoloeus (Larus) minutus</i>) – non-breeding Little tern (<i>Sternula albifrons</i>) – breeding Sandwich tern (<i>Thalasseus sandvicensis</i>) - breeding 	8.8 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> Red-throated diver (<i>Gavia stellata</i>) – non-breeding 	
Saltfleetby-Theddlethorpe Dunes (including Gibraltar Point)	SAC	968	<p>Qualifying features of the SAC:</p> <ul style="list-style-type: none"> H2110 Embryonic shifting dunes H2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('White dunes') H2130 Fixed dunes with herbaceous vegetation ('Grey dunes') H2160 Dunes with <i>Hippophae rhamnoides</i> H2190 Humid dune slacks 	8.4 km east
The Wash	SPA	63,135	<p>Qualifying features of the SPA include:</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 	24.1 km south east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • 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 • Shelduck (<i>Tadorna tadorna</i>) – non-breeding • Turnstone (<i>Arenaria interpres</i>) – non-breeding • Waterbird assemblage. 	
The Wash	Ramsar site		<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><i>Species with peak counts in winter:</i></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 	24.1 km south east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p>Knot (<i>Calidris canutus</i>) – Wintering</p> <ul style="list-style-type: none"> • Sanderling (<i>Calidris alba</i>) • Curlew (<i>Numenius arquata arquata</i>) – Breeding • Redshank (<i>Tringa totanus</i>) • 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 	
Nationally Designated (Statutory)				
Calceby Marsh	SSSI	10.8	An example of a base-rich marsh. This habitat type typically follows the distribution of calcareous springlines and streams, in this case Calceby Beck, a Lincolnshire Wolds chalk stream. Such areas of base-rich marsh are becoming	3.3 km south west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			increasingly scarce in the county, as elsewhere in England, through the effects of drainage and other agricultural improvements. The site consists of three areas of marshland each differing slightly in species composition. They are surrounded by tussocky neutral grassland which is of value to breeding snipe (<i>Gallinago gallinago</i>) and lapwing (<i>Vanellus vanellus</i>). The site has been well surveyed for moths with at least four notable species recorded. The site is one of the few stations in the county, outside the Cambridgeshire Fens, where the marsh moth (<i>Athetis palustris</i>) occurs.	
Humber Estuary	SSSI	37,001	The Humber Estuary is a nationally important site with a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals (<i>Halichoerus grypus</i>), river lamprey (<i>Lampetra fluviatilis</i>) and sea lamprey (<i>Petromyzon marinus</i>), a vascular plant assemblage and an invertebrate assemblage.	4.2 km north east
Muckton Wood	SSSI	16.7	An example of primary woodland on boulder clay at the eastern edge of the Lincolnshire Wolds. Alder (<i>Alnus glutinosa</i>) is an unusual feature which replaces the typical oak/ash canopy with hazel understorey in areas where there is sub-surface water movement towards Muckton Beck. The area is managed as hazel coppice. A well-developed shrub layer includes hawthorn (<i>Crataegus monogyna</i>), holly (<i>Ilex</i>	2.7 km south west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<i>aquifolium</i>) and blackthorn (<i>Prunus spinosa</i>). Wood margins have abundant field maple (<i>Acer campestre</i>) with aspen (<i>Populus tremula</i>). Brambles, (species of <i>Rubus</i>) dominate part of the ground flora but do not exclude herbs, including those indicative of ancient woodland. The site supports one of the largest heronries in the county with over 30 breeding pairs.	
Saltfleetby - Theddlethorpe Dunes	SSSI	952.2	This is a nationally important site and includes flats, dunes, salt and freshwater marsh which combined supports an exceptionally rich flora and fauna. There are outstanding assemblages of vascular plants, invertebrates and breeding birds and it is the most north-easterly breeding site in Britain for the natterjack toad (<i>Epidalea calamita</i>). The rapid accretion of dunes and saltmarsh make this an important site for research into the processes of coastal development. The intertidal sands and muds provide extensive feeding and roosting grounds for wildfowl and waders. Both the salt and freshwater marsh provide opportunities for breeding birds including warblers, water rail (<i>Rallus aquaticus</i>), snipe and yellow wagtail (<i>Motacilla flava</i>). Around the freshwater marsh natterjack toads breed along with other amphibians and the open water within ponds and dykes allows dragonflies to breed. At the interface between freshwater marsh and dunes, southern (<i>Dactylorhiza praetermissa</i>) and early marsh orchids (<i>D. incarnata</i>) are found in abundance. In the absence of grazing the dunes become dominated by scrub of sea buckthorn (<i>Hippophae rhamnoides</i>), hawthorn (<i>Crataegus monogyna</i>), wild privet (<i>Ligustrum vulgare</i>) and elder (<i>Sambucus nigra</i>), all frequented by migrant birds. Invertebrates recorded include several notable moths and nationally rare species from the Lepidoptera and Coleoptera orders.	8.4 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Swaby Valley	SSSI	3.5	A glacial overflow valley supporting two habitats now scarce in Lincolnshire: floristically diverse, lime-rich marsh and unimproved chalk turf. The marsh borders a stream bisecting the valley floor and the interest of the grassland is increased by the terraced nature of the slopes. Amongst the dominant tor-grass (<i>Brachypodium pinnatum</i>) are typical chalk herbs including salad burnet (<i>Sanguisorba minor</i>) and burnet saxifrage (<i>Pimpinella saxifraga</i>). A feature of the north facing slope is the number of common spotted and pyramidal orchids (<i>Dactylorhiza fuchsia</i> and <i>Anacamptis pyramidalis</i>). Scattered hawthorn scrub provides structural diversity and sheltered conditions for up to 15 species of butterfly. Hard and jointed rushes (<i>Juncus inflexus</i>) and (<i>Juncus articulatus</i>) dominate the marsh providing cover for breeding snipe.	3.7 km south west
Swallow Wold	SSSI	4.2	A glacial meltwater channel valley cut into Wold chalk with deposits of bedded sands. It is the most extensive of Northern Chalk Grasslands in north Lincolnshire with frog orchid (<i>Coeloglossum viride</i>) present on the site. One southern slope is important for common blue butterfly (<i>Polyommatus icarus</i>). Linnet (<i>Linaria cannabina</i>) is noted to breed on the site.	5 km west
Tetney Blow Wells	SSSI	14.9	Reedbeds together with base-rich fen and swamp vegetation associated with the calcareous water of four large artesian springs. These physiographic features, known locally as blow wells, were once numerous across east Lincolnshire. Ground water abstraction has resulted in many blow wells drying out. The water plant communities of the blow wells are characterised by common duckweed (<i>Lemna minor</i>), ivy-leaved duckweed (<i>Lemna trisulca</i>), stoneworts (species of <i>Chara</i>) and common water starwort (<i>Callitriche stagnalis</i>). All these species are typical of nutrient-rich, eutrophic waters.	1.8 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			There are strands of common reed (<i>Phragmites australis</i>) and other water associated species around the margins of the open water. There are areas of dense willow scrub and neutral grassland which does get marsh supporting marsh plant species.	
Bradley and Dixon woods	LNR	41.77	Woodland site with ancient and deciduous woodland habitat. Meadow areas present along with ponds.	<0.1 km east
Freshney Parkway	LNR	10.06	Small greenspace developed by the local council in the 1980s from an old landfill. Area now deemed valuable to wildlife with water vole present on the site along the River Freshney. Area is predominantly meadow with wildflowers and areas of tree plantations. Connected to larger Freshney Parkway LWS. Freshney River LWS forms part of this LNR	1.5 km east
South Thoresby Warren	LNR	12.43	Early successional grassland with young plantation. This former landfill site has been transformed into an area for both people and wildlife.	4.3 km south west
Weelsby Woods Park	LNR	34.7	Council managed woodland area open to the public containing ornamental trees. Native trees occur in the marginal woodland along with interesting ground flora.	4 km east
County Designated (Non-statutory)				
Brackenborough Road Verge	LWS	0.5	Verge along road with good quality semi-improved grassland.	0.5 km east
Brackenborough	RNR	0.5	Semi-improved grassland road verge.	0.5 km east
Brackenborough Wood	LWS	9.0	Area of deciduous woodland.	1 km east

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Bradley and Dixon Woods	LWS	42.46	Woodland site with ancient and deciduous woodland habitat. Meadow areas present along with ponds.	<0.1 km east
Covenham Reservoir	LWS	126.8	A constructed reservoir (approximately 1km x 1km) used for sailing but with approximately 10% designated for birds. The site has seen some rarities including hen harrier, black redstart (<i>Phoenicurus ochruros</i>) and black-necked grebe (<i>Podiceps nigricollis</i>).	0.6 km east
Disused Railway North of Swinn Wood	LWS	N/A	Disused railway with lowland mixed deciduous woodland and lowland calcareous grassland habitats	1.2 km west
Freshney Parkway	LWS	34.76	Council developed woodland and meadow area that runs adjacent to the river Freshney. Lowland mix deciduous woodland and wet woodland present on-site. Important for wildlife within the local area.	0.9 km east
Freshney Parkway North	LWS	3.0	A stretch of the River Freshney immediately downstream of Freshney Parkway Local Nature Reserve, plus adjacent drains and a little marsh, grassland and woody vegetation.	2 km north-east
Fulstow Pit	LWS	4.5	Pond bordered by woodland.	1.2 km east
Grange Plantation, Aby	LWS	3.4	Woodland area of lowland mixed deciduous woodland and woodland pasture and parkland habitats.	0.1 km west
Great Carlton Wetlands	LWS	7.1	Area of coastal and floodplain grazing marsh running next to the Long Eau.	0.8 km north-west
Great Eau	LWS	20.0	River habitat with lowland meadows and coastal and floodplain grazing marsh along its banks. Runs next to Withern Ings LWS which comprises lowland fen habitat.	Runs through Section 2 draft Order Limits

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Gloucester House Ponds	LWS	2.15	Area containing priority habitat such as reedbeds, meadow and lowland mixed deciduous woodland.	0.6 km east
Hoppers Holt	LWS	1.4	Woodland area of lowland mixed deciduous woodland habitat.	0.5 km east
Laceby Beck North	LWS	6.24	Connected to the Freshney Parkway LWS and continues to run adjacent to the River Freshney. Lowland mixed deciduous woodland and wet woodland present on the site.	Runs through Section 2 draft Order Limits
Laceby Carr Plantation and Pond	LWS	3.93	Lowland mixed deciduous woodland and wet woodland with several small ponds, that is located next to the river Freshney.	0.5 km east
Legbourne Grassland	LWS	1.16	Area of lowland meadow within the village of Legbourne.	1.9 km west
Long Eau West	LWS	N/A	River habitat with coastal and floodplain grazing marsh and deciduous woodland along its banks. Connected to Manaby wetlands and Great Carlton wetlands.	<0.1 km east
Manby Wetlands	LWS	10.4	Area of coastal and floodplain grazing marsh running next to the Long Eau.	0.6 km north-west
Moors Wood, Aby	LWS	0.7	Ancient woodland dominated by ash (<i>Fraxinus excelsior</i>)	2 km south-west
Mother and Greenfield Woods	LWS	48.4	Ancient/semi ancient woodland area of lowland mixed deciduous woodland habitat. Mix of ancient and ancient replanted woodland.	<0.1 km south-west
Oak Plantation, Woodthorpe	LWS	1.0	Woodland area of lowland mixed deciduous woodland habitat.	0.8 km east
Ratspen Lane Verges	LWS	N/A	Neutral and damp grassland verges.	0.8 km south-west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Ratspen Lane	RNR	N/A	Neutral and damp grassland verges	0.8 km south-east
Red Leas Lane Verges	LWS	N/A	Road verge with Lowland calcareous grassland.	1.9 km east
River Freshney Headwaters	LWS	N/A	River corridor bordered by areas of deciduous woodland and wet woodland.	Runs through Section 2 draft Order Limits
Swinn Wood	LWS	25.0	Ancient woodland area of lowland mixed deciduous woodland habitat.	1.1 km south-west
Swinn Wood	RNR	N/A	Road verge running adjacent to woodland	1.6 km south-west
Swinn Wood Road Verges	LWS	N/A	Road verge running adjacent to woodland	1.6 km south-west
The Browse	LWS	5.2	Woodland area of lowland mixed deciduous woodland habitat.	0.3 km east
Tothill Wood	LWS	78.0	Ancient woodland area made up of lowland mixed deciduous woodland.	0.3 km west
Waithe Beck East	LWS	N/A	Small chalk stream with deciduous woodland in places.	Runs through Section 2 draft Order Limits
Withern Ings	LWS	9.0	Area comprises lowland fen habitat.	Runs through Section 2 draft Order Limits
Withern Wood	LWS	4.6	Ancient woodland area of lowland mixed deciduous woodland habitat.	<0.1 km east

Habitats

Habitats of Principal Importance

4.5.18 The following HPI have been identified within the Section 2 Study Area:

- i. Coastal and Floodplain Grazing Marsh;
- ii. Woodland (if meets HPI criteria); and
- iii. Chalk streams.

Ancient Woodland

4.5.19 There are no areas of designated ancient woodland within the draft Order Limits of Section 2, however several areas of ancient woodland are located within the Section 2 Study Area.

4.5.20 Two ancient woodlands are located adjacent to the Section 2 draft Order Limits, Bradley Wood in the north and Mother Wood in the south. Tothill Wood ancient woodland is located approximately 500 m west of the draft Order Limits and a small parcel of ancient woodland to the east of Tothill Wood lies adjacent to the draft Order Limits. These woodlands are irreplaceable habitats and are of National importance.

Terrestrial Habitats

4.5.21 Where the UKHab surveys have been completed within the Section 2 Survey Area, the primary habitat type comprised cropland, which is of negligible ecological importance.

4.5.22 The surrounding arable field margins, hedgerows and patches of low diversity scrub provide important connectivity through the landscape and are therefore considered to be of Local importance.

4.5.23 Two woodlands were assessed to be HPI, which were located adjacent to the draft Order Limits in the North Thoresby area.

4.5.24 An additional small woodland was located within the draft Order Limits near Barnoldby le Beck, which is of Local importance.

4.5.25 Areas of modified grassland were also present throughout the Section 2 Survey Area, some of which are classified as HPI Coastal and Floodplain Grazing Marsh (notably at Withern) and are assessed as being of up to County importance.

4.5.26 Other areas of modified grassland not classed as HPI were noted within the Section 2 Survey Area, which are of negligible importance.

4.5.27 Urban areas were found along the route which are of negligible importance.

4.5.28 Survey work will continue through 2025 to characterise the terrestrial habitat types which are present within the Section 2 Survey Area, and 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.

Aquatic Habitats

- 4.5.29 11 statutory Main Rivers are crossed by the proposed route: Laceby Beck, Waithe Beck, Old Fleet Drain, Black Leg Drain, Poulton Drain, Louth Canal, River Ludd, Stewton Beck, Grayfleet Drain, Long Eau, Great Eau. These play a role in local hydrology and provide habitat for aquatic and riparian species and are therefore assessed as being of County importance. Laceby Beck, Waithe Beck and Great Eau are also LWS as noted in **Table 4.3**; and Laceby Beck, Waithe Beck, River Lud, The Beck and Great Eau are HPI chalk streams.
- 4.5.30 A total of six ponds were identified within the Section 2 draft Order Limits and 171 were identified within the Survey Area.
- 4.5.31 A network of smaller ditches/drains are also traversed along the 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 2 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 The Section 2 draft Order Limits cross the following WFD waterbodies, all of which are hydrologically linked to the Humber Estuary SAC.
- i. Laceby Beck/River Freshney Catchment (to N Sea) (GB104029067530);
 - ii. Waithe Beck lower catchment (to Tetney Lock) (GB104029062100);
 - iii. Poulton Drain Catchment (trib. of Louth Canal) (GB104029062010);
 - iv. Black Dyke Catchment (trib. of Louth Canal) (GB104029062000); and
 - v. Louth Canal (GB104029061990);
 - vi. South Dike and Grayfleet Drain (GB105029061680);
 - vii. Long Eau (GB105029061670);
 - viii. Great Eau (downstream of South Thoresby) (GB105029061660).
- 4.5.34 Further details of these WFD waterbodies are provided within **PEI Report Volume 2 Part B Section 2 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 the area within the Section 2 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 2 Survey Area largely comprise agricultural land which is of limited value to terrestrial invertebrates. However, floodplain grazing

marsh, hedgerow and woodland habitats are also recorded within the Section 2 Survey Area and provide potential for a more diverse assemblage of terrestrial invertebrates.

- 4.5.37 Any areas within the Section 2 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 populations of great crested newt are present around the Louth area and further south at Swinn Wood, which is located approximately 1.5 km west of the draft Order Limits.
- 4.5.39 Great crested newt surveys to date have included various waterbodies across several locations within the Section 2 Survey Area. Surveys have specifically included Habitat Suitability Index (HSI) survey and analysing water samples from ponds for great crested newt eDNA.¹
- 4.5.40 Of the 171 ponds identified within the Section 2 Survey Area, 77 have been surveyed for great crested newt. Most locations show negative results for eDNA, with only one pond testing positive, to the west of the proposed overhead line route at Barnoldby le Beck. Many ponds have poor or below average HSIs, suggesting low habitat suitability for great crested newt, although some locations, such as North Thoresby, show good or excellent HSI scores but returned negative eDNA results.
- 4.5.41 Several locations had inconclusive eDNA results, particularly where HSI ratings were good or average. Overall, the majority of surveyed waterbodies showed no evidence of great crested newt presence.
- 4.5.42 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 assessment of impacts and effects and the details of appropriate mitigation to be presented within the ES.

Reptiles

- 4.5.43 Desk study research has indicated that there are no records for reptile species within the Section 2 Study Area.
- 4.5.44 The floodplain grazing marsh, hedgerow and woodland habitats in the Section 2 Study Area have potential for common reptiles, however the general habitats within the remaining Section 2 Study Area that are suitable for reptiles appear to be limited in extent, being confined to field boundaries and the margins of ditches. Therefore, as any use of the habitats by reptiles is likely to be localised, Section 2 can be considered to be of no more than Local importance for common reptile species.
- 4.5.45 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.

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.

Wintering Birds

- 4.5.46 Surveys for wintering birds were carried out within the Section 2 Survey Area between November 2022 and March 2023. Surveys involved monthly vantage point (VP) surveys (November 2022 to March 2023), split walked/driven transects (December 2022 to March 2023), and driven transects (once in January 2023 and once in March 2023). Across Section 2, there were a total of seven VPs (VP 14 to VP 20). Data are presented from the draft Order Limits of Section 2 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 2, 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 including gulls, geese, waders, and ducks. The largest counts recorded (>70 birds) were of lapwing (*Vanellus vanellus*), greylag goose (*Anser anser*), common gull (*Larus canus*) and black-headed gull (*Chroicocephalus ridibundus*). A number of species are considered as qualifying species of internationally designated sites. Four species are on the Red-list of conservation concern, and twelve species on the Amber-list (Ref 13). As **Table A4.3** summarises, the majority of wintering species recorded are considered to be of Local importance.
- 4.5.48 Further avian survey work has been undertaken across the winter of 2024/2025 and will be analysed (along with all of the avian survey data) to inform the design of appropriate mitigation and the assessment of impacts within the ES.

Breeding Birds

- 4.5.49 Surveys for breeding birds were carried out between March 2024 and July 2024. A total of four transects covered the Section 2 Survey Area.
- 4.5.50 For breeding bird data, the number of territories 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 Transects 1, 2, 3 and 4 in Section 2, are presented in **PEI Report Volume 3 Part B Section 2 Appendix 4A Bird Survey Data 2022-24, Table 4A.2**. A range of bird species were recorded on-site, typical of an arable landscape. Species included farmland specialists, such as skylark (*Alauda arvensis*) and yellowhammer (*Emberiza citrinella*). Nine Red-listed species and 15 Amber-listed species were recorded in Section 2.
- 4.5.52 Cetti's warbler was the only species considered to be of County importance, based upon a combination of survey records, local distribution and Birds of Conservation Concern (BoCC) status. The remaining species were of Local importance or less (see **PEI Report Volume 3 Part B Section 2 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 2 Appendix 4A Bird Survey Data 2022-24** are incomplete. Once available, the full survey results will be presented and assessed within the ES.

- 4.5.54 It is important to note that this section considers the importance of a species in the context of the geographical extent of Section 2 only. An initial route-wide assessment is included in **PEI Report Volume 2 Part C Route-wide Assessment Chapter 3 Ecology and Biodiversity**.

Badger

- 4.5.55 Desk study survey records included over 300 records of badger within the Section 2 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 Seven potential main badger setts, and multiple latrines were recorded within the Section 2 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 2 Study Area included records of roosting brown long-eared (*Plecotus auritus*) and noctule bat (*Nyctalus noctula*). Of these records only one falls within the draft Order Limits, a brown long-eared roosting located between pylons GL36 and GL40.
- 4.5.61 There is one known European Protected Species Licence (EPSML) application within 2 km of the draft Order Limits for common pipistrelle (*Pipistrellus pipistrellus*) and brown long-eared bat.
- 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 bat species present within the Section 2 Survey Area include common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Nathusius' pipistrelle (*Pipistrellus nathusii*), noctule (*Nyctalus noctula*), brown long-eared (*Plecotus auritus*), Daubenton's (*Myotis daubentonii*), barbastelle (*Barbastella barbastellus*), Leisler's bat (*Nyctalus leisleri*) and *Myotis* sp. bats. The activity surveys indicated that hedgerows and woodland edges are being utilised by foraging and commuting bats along the proposed overhead line route.
- 4.5.64 Survey work was also conducted in winter 2024/2025 and will continue in spring/summer 2025 to confirm 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 to 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 2 draft Order Limits. If any buildings or structures are identified within the Section 2 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 2 Study Area. These included signs of otter activity including spraints and footprints throughout the area, as well as road traffic casualties.
- 4.5.67 Surveys for otter were carried out between March 2024 and October 2024.
- 4.5.68 Within the Section 2 Survey Area, no breeding or resting sites were recorded. However, multiple field signs of otter have been identified along a number of watercourses throughout the Survey Area for Section 2.
- 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 records of three notable fish species within the Section 2 Study Area. These are bullhead (*Cottus gobio*), brown/sea trout (*Salmo trutta*) and European eel (*Anguilla anguilla*) (see **Table 4.4**).
- 4.5.73 Historic EA records of European eel have been found within the WFD waterbody Waithe Beck lower catchment (to Tetney Lock) (GB104029062100), Long Eau (GB105029061670), Laceby Beck/River Freshney Catchment (to N Sea) (GB104029067530), Black Dyke Catchment (trib of Louth Canal) (GB104029062000) and Great Eau (downstream of South Thoresby) (GB105029061660).
- 4.5.74 EA records of brown/sea trout were identified within the same WFD waterbodies and the Louth Canal (GB104029061990).
- 4.5.75 Historic EA records of bullhead were found within the Great Eau (downstream of South Thoresby) (GB105029061660), Louth Canal (GB104029061990) and Laceby Beck/River Freshney Catchment (to N Sea) (GB104029067530) whereas records of Lamprey sp. (*Petromyzontidae*) were only found within Long Eau (GB105029061670).
- 4.5.76 Furthermore, river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*) are qualifying features of the Humber Estuary SAC, which is hydrologically linked to watercourses within Section 2. Environment Agency records of Lamprey sp. were also identified within the WFD waterbody Long Eau (GB105029061670).

Table 4.4 Notable fish species identified within the Section 2 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 the small population size likely to be affected.
Bullhead	<i>Cottus gobio</i>	Annex II of the Habitats Directive	Local, 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, but the population size likely to be affected is small.
European river lamprey	<i>Lampetra fluviatilis</i>	Appendix III of the Bern Convention, Annex II and V of the Habitats Directive, Section 41 NERC Act 2006, , UKBAP 2007, Habitats Regulation Schedule 4	National, migratory species that is a qualifying feature of the hydrologically linked Humber Estuary SAC and relative scarcity of this species. However, a small population size is likely to be affected.
Sea lamprey	<i>Petromyzon marinus</i>	Appendix III of the Bern Convention, Annex II of the Habitats Directive, OSPAR, Section 41 NERC Act 2006, , UKBAP 2007	National, migratory species that is a qualifying feature of the hydrologically linked Humber Estuary SAC. However, a small population size is likely to be affected.

- 4.5.77 Survey work will be undertaken in 2025 to confirm the status of fish within the Section 2 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

- 4.5.78 Based upon desk study research (data search), five notable aquatic macroinvertebrates were identified within the Section 2 Study Area (see **Table 4.5**). These are white-barred soldier (*Oxycera morrisii*), riffle beetle (*Riolus subviolaceus*), shore bug (*Saldula palustris*), the sedge flies *Limnephilus hirsutus* and *L. binotatus*.

Table 4.5 Notable aquatic macroinvertebrate species identified within the Section 2 Study Area

Common Name	Scientific name	Designation/Status	Importance
White-barred soldier	<i>Oxycera morrisii</i>	Global Red List Post 2001, Nationally Scarce	County, due to relative scarcity of this species
Riffle beetle	<i>Riolus subviolaceus</i>	Nationally Scarce	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.
Sedge fly	<i>Limnephilus hirsutus</i>	Global Red List Post 2001, Nationally Scarce	County, due to relative scarcity of this species.
Sedge fly	<i>Limnephilus binotatus</i>	Global Red List Post 2001, Nationally Scarce	County, due to relative scarcity of this species.

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

Aquatic Macrophytes

- 4.5.80 Based upon desk study research (data search), no notable aquatic macrophyte species have been identified within the Section 2 Study Area.
- 4.5.81 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 any appropriate mitigation measures to be presented within the ES.

Water Vole

- 4.5.82 Desk study records included over than 1,300 records of water vole within the Section 2 Study Area. These included sightings of individuals and signs of water vole activity including droppings and burrows throughout the area.

- 4.5.83 Initial surveys for water vole were carried out between March 2024 and October 2024.
- 4.5.84 Within the Section 2 Survey Area, the species was found to be present in at least nine watercourses including Laceby Beck, Old Fleet Drain, Waithe Beck, Great Eau and Old Eau Drain. Other watercourses were not named watercourses, mostly drainage ditches. Evidence included numerous field signs of water vole, including latrines, burrows and feeding signs.
- 4.5.85 Where suitable water vole habitat exists, surveys will be completed to confirm presence/absence.
- 4.5.86 Given its declining status and importance within the county, where water vole is present, the species is assessed as being of County importance.
- 4.5.87 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

- 4.5.88 The desk study returned records for brown hare (*Lepus europaeus*) and hedgehog (*Erinaceus europaeus*) within the Section 2 Study Area.
- 4.5.89 Habitats within the Section 2 Survey Area are suitable for brown hare and hedgehog which are SPI and of Local importance.
- 4.5.90 Survey work will continue in 2025 to inform the full assessment of impacts and effects and the details of any appropriate mitigation measures to be presented within the ES.

Invasive Non-Native Species

- 4.5.91 Desk study research has identified the presence of a total of eight INNS within the Section 2 Study Area. These are: Nuttall's waterweed (*Elodea nuttallii*), Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), New Zealand pigmyweed (*Crassula helmsii*), Japanese knotweed (*Reynoutria japonica*), Japanese rose (*Rosa rugosa*), variegated yellow archangel (*Lamium galeobdolon* subspecies *argentatum*), and floating pennywort (*Hydrocotyle ranunculoides*). Giant hogweed, Himalayan balsam and floating pennywort are listed under both Schedule 2 of the Invasive Alien (Enforcement and Permitting) Order 2019 and Schedule 9 of the Wildlife Countryside Act 1981. By contrast, Nuttall's waterweed is only listed under Schedule 2 of the Invasive (Enforcement and Permitting) Order 2019 and New Zealand pigmyweed, Japanese rose, variegated yellow archangel and Japanese knotweed are listed under Schedule 9 of the Wildlife Countryside Act 1981.
- 4.5.92 No specific INNS survey has been undertaken to date, however field observations have been made during other ecological surveys undertaken within the Survey Area. Based upon the surveys completed to date, two invasive non-native plant species were identified within the Section 2 Survey Area in 2024. A *Cotoneaster* species was noted outside the draft Order Limits north-east of Aylesbury and Himalayan balsam has been recorded in two separate locations to the east of the draft Order Limits: along Louth Navigation; and along Laceby Beck.
- 4.5.93 Further planned habitat and species surveys, such as those for aquatic habitats and invertebrates, will include the recording of invasive non-native species. The results of these surveys will be presented in the ES.

Future Baseline

- 4.5.94 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.
- 4.5.95 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.
- 4.5.96 Habitats within the Section 2 draft Order Limits and Study Area comprise mainly arable farmland currently under cultivation.
- 4.5.97 In addition to the main habitat coverage, field boundaries are in places defined by hedgerows, ditches and farm tracks and Section 2 is crossed by four streams designated as LWS (Laceby Beck North LWS; River Freshney Headwaters LWS; Waithe Beck East LWS; and Withern Ings LWS).
- 4.5.98 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.
- 4.5.99 Relative to the current baseline, the value of priority ecological features present within or close to the Section 2 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.
- 4.5.100 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 design measures; control and management measures; and additional mitigation measures. Those measures relevant to the assessment of effects on important ecological features are set out below.

Design Mitigation Measures

- 4.6.2 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 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 2 draft Order Limits on which this assessment is based have been located to avoid designated sites, HPis and important receptors as far as practicable. This is in accordance with the Planning Inspectorate's Advice on Habitats Regulations Assessment relevant to nationally significant infrastructure projects (September 2024) (Ref 18), 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 2. 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, and those with WFD status, will be crossed using clear span bridges. Where culverts are unavoidable, these will either be arch culverts, leaving the natural bed undisturbed, or as far as reasonably practicable, they would be installed with the invert set below the natural bed level for a semi-natural bed to establish within the culvert.
- 4.6.6 Wherever practicable, areas of temporary habitat loss will be reinstated back to the type of baseline habitat affected or improved/enhanced. The ES will also include proposals for enhancing existing habitats. Areas of permanent habitat loss will be considered during the siting and design of measures required to achieve a net gain in biodiversity value.

Control 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).
 - 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. 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 (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'.
- 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. 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.

- vii. 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.
- viii. 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.
- ix. 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.
- x. 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).
- xi. 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.
- xii. 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 of an Ecological Clerk of Works (ECoW). 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 ECoW(s). 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 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 Environment Agency).
- 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.
- 4.6.13 Additionally, habitats created or enhanced by the Project and embedded within the design, will be managed in accordance with the LEMP.

Additional Mitigation Measures

- 4.6.14 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 4.6.15 Potential additional mitigation measures which may be required to reduce the effects of the Project upon Ecology and Biodiversity are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment.
- 4.6.16 As set out within **PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 2 Figure 1.3 Permanent and Operation Features**, initial measures within Section 2 include:
- i. Woodland, species rich grassland, hedgerows and scattered tree habitats;
 - ii. Potential water vole mitigation areas (mitigation requirements to be confirmed following surveys);
 - iii. Potential badger sett mitigation areas (mitigation requirements to be confirmed following surveys); and

iv. Grassland and pond enhancement.

- 4.6.17 Any mitigation or compensation measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 4.6.18 Finalised additional mitigation or compensation measures will be detailed within the ES.

4.7 Preliminary Assessment of Effects

- 4.7.1 The following section presents the findings of the preliminary assessment of effects upon the ecological receptors identified within the Study Area, as a result of construction, maintenance and/or operational activities within Section 2.
- 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/Survey 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 significant effects have not been excluded. Therefore, at this stage, most of the ecological receptors identified in the baseline of this PEI Report have been retained in the assessment. The significance of effects reported may be greater than that reported at the ES stage, once all survey data has been collated, the status of these receptors confirmed and all mitigation measures identified. An updated assessment will be included within the ES submitted with the DCO application.
- 4.7.4 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described. This assessment does not take into account the Additional Mitigation Measures at this stage as these are subject to further design refinement and will be informed by stakeholder engagement and the baseline survey findings.
- 4.7.5 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 4 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 4.6**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 4.7.6 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

Likely Significant Effects

Construction

Designated Sites

- 4.7.7 The nearest international site is the Humber Estuary SAC, SPA and Ramsar located 4.2 km north-east of the Section 2 draft Order limits at its closest point. Saltfleetby-Theddlethorpe Dunes (including Gibraltar Point) SAC is located 8.4 km east and The Greater Wash SPA is located 8.8 km east of the section 2 Draft Order Limits.
- 4.7.8 In addition, the Gibraltar Point SPA and Ramsar and Wash SPA and Ramsar (where bird species with large foraging ranges are noted as, or one of, the qualifying features), are located 22.5 km south-east and 24.1 km south-east of the Section 2 draft Order Limits at their closest point respectively.
- 4.7.9 According to Natural England guidance (Ref 21), only those main component species of Internationally designated sites which have an overlapping IRZ with the Section 2 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 Humber Estuary SPA and Ramsar site include birds as qualifying features. Potential pathways of effect between the Project and these designated sites include habitat loss within FLL, noise and visual disturbance within FLL, changes in water quality and flow, and atmospheric pollution. The potential for likely significant effects (LSE) upon these sites will be assessed within the Report to inform HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.11 The Humber Estuary SAC and Ramsar site lists river lamprey and sea lamprey as qualifying features which undertake upstream migrations to reach suitable spawning habitats. Works within or adjacent to watercourses which are hydrologically linked to the Humber Estuary could therefore impact lamprey species, therefore significant effects cannot be excluded at this stage in the assessment.
- 4.7.12 Saltfleetby-Theddlethorpe Dunes (including Gibraltar Point) SAC is designated for its dune habitats. Potential pathways of effect include changes in water quantity, level and flow. The potential for LSE upon this site will be assessed within the Report to inform Habitats Regulations Assessment (HRA), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.13 The Greater Wash SPA site includes birds as qualifying features. Potential pathways of effect include loss of habitat within FLL, noise and visual disturbance within FLL, changes in water quantity, level and flow. The potential for LSE upon this site will be assessed within the Report to inform HRA, and significant effects cannot be excluded at this stage in the assessment.

- 4.7.14 The Gibraltar Point SPA and Ramsar site include birds as qualifying features. The Section 3 draft Order Limits are beyond the core foraging ranges of all qualifying species, many of which are also more tightly associated with coastal habitats, rather than inland FLL. Therefore no LSE upon birds as qualifying features are anticipated. The potential for changes in hydrology to impact functionally linked habitats will be assessed within the Report to inform HRA and associated significant effects cannot be excluded at this stage in the assessment.
- 4.7.15 The Wash SPA and Ramsar site includes birds as qualifying features. Pathways of effect include loss of habitat within FLL, noise and visual disturbance in FLL, changes in water quantity, level and flow. The potential for LSE upon these sites will be assessed within the Report to inform HRA, and significant effects cannot be excluded at this stage in the assessment.
- 4.7.16 The Impact Risk Zones (IRZ's) for the nationally designated Muckton Wood SSSI (designated for its primary woodland and notable large heronry), Humber Estuary SSSI (designated for habitats such as estuary, intertidal mudflats, sandflats and coastal marsh, saline lagoons and sand dunes as well its populations of waterfowl, waders, grey seals lamprey, plant and invertebrate assemblages), Calceby Marsh SSSI (designated for its base-rich marsh), Saltfleetby - Theddlethorpe Dunes SSSI (designated for its flats, dunes, salt and freshwater marsh and rich flora and fauna (including breeding birds) and Tetney Blow Wells SSSI (designated for its reedbeds, base-rich fen and swamp vegetation) partially overlap with the Section 2 draft Order Limits.
- 4.7.17 Muckton Wood SSSI is located 2.7 km south-west of the Section 2 draft Order Limits. 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 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.
- 4.7.18 The Humber Estuary SSSI is located 4.2 km north-east of the Section 2 draft Order Limits. There are potential hydrological links between the Project and this SSSI, however given the separation distances and the pollution prevention measures outlined in the Preliminary CoCP, no effects upon habitats are predicted. The bird assemblage of the SSSI may use habitats within the wider area for foraging and there is potential for some of the land to be functionally linked. In addition, river lamprey and sea lamprey may be present within hydrologically linked watercourses. Potential impacts upon the bird assemblage and lamprey species 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 Saltfleetby - Theddlethorpe Dunes SSSI is located 8.4 km east of the Section 2 draft Order Limits. There are potential hydrological links between the Project and this SSSI, however given the separation distances and the pollution prevention measures outlined in the Preliminary CoCP, no effects upon habitats are predicted. The bird assemblage of the SSSI may use habitats within the wider area for foraging and there is potential for some of the land 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.

- 4.7.20 In addition, the nationally designated Bradley and Dixon Wood LNR is located less than 100 m from the Section 2 draft Order Limits. Due to the proximity of the draft Order Limits, there is a risk of adverse effects on habitats within this LNR (through habitat degradation) as well as potentially any fauna (e.g. bats) which may be using the wider area for foraging and commuting, which could therefore be functionally linked. The following measures are detailed within the Preliminary CoCP and would manage the risk of harm to woodland habitats (GG03, GG04, GG06, GG07, GG09, GG16, LV04, B01, B04). Further survey work will establish the nature and importance of any receptors associated with this LNR that may be affected by the works and inform the requirement for and detail of any additional mitigation measures. As such, and on a precautionary basis, significant effects cannot be excluded at this stage of the assessment.
- 4.7.21 Taking into account the pollution prevention measures set out in the Preliminary CoCP (such as GG15, GG16, GG17) impacts upon the remaining nationally designated sites within 5 km of the Section 2 draft Order Limits (or where the IRZ overlaps) are unlikely to result in significant effects and assessment of these sites is included within **Table 4.6**.
- 4.7.22 There are ten LWS that are located within or within 0.1 km of the draft Order Limits of Section 2 (Mother and Greenfield Woods LWS, Bradley and Dixon's Woods LWS, Grange Plantation, Aby LWS, Long Eau West LWS, Great Eau LWS, Laceby Beck North LWS, Withern Ings LWS, Withern Wood LWS, River Freshney Headwaters LWS and Waithe Beck East LWS) which includes watercourses which are crossed by the overhead line route and woodlands that lie adjacent to the Section 2 draft Order Limits. As above, due to the proximity of the draft Order Limits to these LWS there is a risk of adverse effects on habitats as well as potentially any fauna (e.g. bats, otter and water vole) associated with these LWS. Further survey work will establish the nature and importance of any receptors associated with these LWS that may be affected by the works. On a precautionary basis, significant effects cannot be excluded at this stage of the assessment.
- 4.7.23 No significant effects are anticipated for the 24 remaining LWS within 2 km of the Section 2 draft Order Limits and these are included within **Table 4.6** below.

Habitats

Terrestrial Habitats

- 4.7.24 Initial habitat survey results indicate that the majority of Section 2 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 temporary haul roads for construction.
- 4.7.25 Pylons have been located outside of HPI where possible, however some areas of HPI could be directly affected by construction works within Section 2, including the Coastal and Floodplain Grazing Marsh in the Withern area.
- 4.7.26 Grazing marsh is defined as periodically inundated pasture or meadow, typically with ditches or rills containing standing brackish or fresh water. The ground works 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 (GG06, GG07, 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.

- 4.7.27 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 road route and permanent access routes are proposed. Existing tracks and roads would be utilised where practicable, however these may require widening in certain instances resulting in localised impacts upon habitats. Wherever practicable, those habitats which would be directly impacted by the establishment of haul roads and/or stringing works would be reinstated upon completion of construction (Preliminary CoCP measure LV01).
- 4.7.28 Survey work will continue through to 2025 to characterise the terrestrial habitat types, and their constituent flora and fauna, within the Section 2 Survey Area. These surveys will confirm the condition of relevant habitats, in order to inform the design of appropriate mitigation or compensation and the assessment effects, which will be developed fully in the ES.
- 4.7.29 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects due to impacts upon terrestrial habitats within the Section 2 Study Area cannot be excluded at this preliminary stage of assessment.

Aquatic Habitats

- 4.7.30 There are four streams designated as LWSs that are crossed by the Section 2 draft Order Limits. There are also a number of other watercourses, ditches and ponds located within or close to the Section 2 draft Order Limits.
- 4.7.31 Potential direct impacts upon aquatic habitats within the Section 2 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 impacts are likely to be temporary.
- 4.7.32 Within Section 2, the construction of the assumed 82 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. Where sensitive watercourses are crossed, clear span bridges are proposed to reduce potential impacts. Based upon the implementation of best practice construction methods and reinstatement of the affected habitats post construction (see Preliminary CoCP measures W01 to W11), effects associated with access crossings are likely to be temporary.
- 4.7.33 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 2 includes SuDS basins to allow settlement before discharge into any river system.

Further assessment of potential indirect impacts due to construction activities, including changes in water quality, will be undertaken and reported within the ES.

- 4.7.34 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 the Section 2 Survey Area. Survey findings will also confirm the condition of relevant habitats and inform the design of appropriate mitigation or compensation measures and the assessment of impacts and effects, which will be reported in the ES.
- 4.7.35 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects on aquatic habitats within the Section 2 Study Area cannot be excluded at this stage of the assessment.

Protected or notable species

Terrestrial Invertebrates

- 4.7.36 Survey results to date indicate that the majority habitats (i.e. cropland) within the Section 2 Survey Area have limited value to terrestrial invertebrates. However, floodplain grazing marsh, hedgerow and woodland habitats also recorded within the Section 2 Survey Area may have suitability to support a more diverse invertebrate assemblage.
- 4.7.37 Potential impacts upon terrestrial invertebrates include habitat loss, habitat fragmentation and death/injury through the loss of floodplain grazing marsh, woodland habitats and severance of hedgerows.
- 4.7.38 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).
- 4.7.1 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.
- 4.7.2 On a precautionary basis, significant effects on terrestrial invertebrates cannot be excluded at this stage of the assessment.

Great Crested Newt

- 4.7.3 The survey results to date indicate that populations of great crested newt are present in discrete areas within the Section 2 Study Area.
- 4.7.4 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.
- 4.7.5 Where impacts upon great crested newt cannot be avoided, a licence from Natural England would be required to permit derogation from legislation (as outlined in

management measure B01). Indicative locations for mitigation are provided on **PEI Report Volume 2 Part B Section 2 Figure 1.3 Permanent and Operational Features**.

- 4.7.6 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).
- 4.7.7 Survey work will continue in 2025 to inform the assessment of impacts and effects and the design of appropriate mitigation to be reported in the ES. Further survey findings will also be used to confirm any licencing and enhancement requirements.
- 4.7.8 On a precautionary basis, significant effects on great crested newt cannot be excluded at this stage of the assessment

Reptiles

- 4.7.9 The majority of habitats within the Section 2 draft Order Limits suitable for reptiles are limited in extent, being confined to field boundaries and the margins of ditches. The floodplain grazing marsh, hedgerow and woodland habitats in this area have potential for common reptiles.
- 4.7.10 There are potential impacts through habitat loss and risk of killing and/or injury of reptiles during construction.
- 4.7.11 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).
- 4.7.12 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).
- 4.7.13 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.
- 4.7.14 On a precautionary basis, significant effects on reptiles cannot be excluded at this stage of the assessment.

Birds: Wintering and Breeding

- 4.7.15 The surveys for wintering birds carried out between November 2022 and March 2023 indicate that a range of species was found to be present in winter, as collected by the driven transects, vantage point and transect data (see **PEI Report Volume 3 Part B Section 2 Appendix 4A Bird Survey Data 2022-24, Table 4A.3**).
- 4.7.16 Surveys for breeding birds, carried out between March 2024 and July 2024, indicated that low use is made by breeding birds of the land within the Section 2 Survey Area (see **PEI Report Volume 3 Part B Section 4 Appendix 4A Bird Survey Data 2022-24, Table 4A.2 and Table 4A.3**).

- 4.7.17 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 7 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.
- 4.7.18 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).
- 4.7.19 It should be noted that bird surveys are incomplete, and survey work will continue over the winter of 2024/2025 and the 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.
- 4.7.20 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

- 4.7.21 Seven potential main badger setts were recorded within the Section 2 Survey Area and there is 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 accesses and within the footprint of proposed pylons.
- 4.7.22 There is also potential for general disturbance impacts during construction from noise and vibration, temporary site lighting, human presence and potentially an increased risk of vehicle-animal collisions. In addition, there are legal restrictions regarding certain construction works (e.g. piling) which could take place close to active setts.
- 4.7.23 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.
- 4.7.24 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).
- 4.7.25 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 and any appropriate mitigation and enhancement measures, which will be developed fully and presented within the ES.
- 4.7.26 On a precautionary basis, significant effects on badger cannot be excluded at this stage of the assessment.

Bats

- 4.7.27 Surveys in 2024 confirmed that bats were foraging and commuting within the Section 2 Survey Area and indicated that bats were associated with hedgerows and woodland edges along the overhead line route.
- 4.7.28 There is potential for both permanent and temporary loss of roosting, foraging and commuting habitat for bats and severance of commuting routes, and there would likely be impacts from disturbance such as noise, vibration and lighting during construction. Specifically, hedgerow and areas of woodland habitats would require clearance during construction to establish haul roads and construction compounds and within the footprint of proposed pylons.
- 4.7.29 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).
- 4.7.30 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).
- 4.7.31 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 2 draft Order Limits. The outputs of these surveys will be used to confirm the status of bats and inform the assessment reported within the ES.
- 4.7.32 On a precautionary basis, significant effects on bats cannot be excluded at this stage of the assessment.

Otter

- 4.7.33 Initial surveys for otter carried out in 2024 identified otter field signs within the Section 2 Survey Area, although no breeding or resting sites were recorded.
- 4.7.34 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.
- 4.7.35 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).
- 4.7.36 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.

- 4.7.37 Survey work will continue in 2025 to confirm the status of otter and will be used to inform the assessment of impacts and effects, details of any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.38 On a precautionary basis, significant effects on otter cannot be excluded at this stage of the assessment.

Fish

- 4.7.39 Notable fish species were recorded within the Section 2 Study Area.
- 4.7.40 There is a risk that habitats supporting protected and notable fish species would be impacted during construction by transmission line infrastructure, supporting structures and temporary haul road crossings. Short-term impact on habitat connectivity, fragmentation, degradation and disturbance cannot be discounted at this stage, as well as the risk of incidental mortality of protected fish species during construction works.
- 4.7.41 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).
- 4.7.42 Additional relevant management measures set out in the 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.
- 4.7.43 Survey work completed in 2025 will be used to confirm the status of species present and 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.
- 4.7.44 A precautionary approach has therefore been taken and significant effects on fish cannot be excluded at this stage of the assessment.

Aquatic Macroinvertebrates

- 4.7.45 Notable aquatic macroinvertebrates were identified within the Section 2 Study Area.
- 4.7.46 There is a risk that habitats suitable for protected and notable aquatic macroinvertebrate species are impacted by proposed construction works e.g. habitat loss, fragmentation and disturbance and a risk of incidental mortality of aquatic macroinvertebrates.
- 4.7.47 Relevant management measures set out in the Preliminary CoCP to reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W1 to W11), implementation of Management Plans (GG06), establishment of protective areas (GG09) and lighting restrictions (LV04).
- 4.7.48 Survey work will be carried out in 2025 to confirm the status of this taxon and inform assessment of impacts and effects, and the details of any appropriate mitigation plans if required, which will be developed fully and 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.

- 4.7.49 A precautionary approach has therefore been taken and significant effects on aquatic macroinvertebrates cannot be excluded at this stage of the assessment.

Aquatic Macrophytes

- 4.7.50 There are no records of notable and/or protected aquatic macrophyte species within the Section 2 Study Area.
- 4.7.51 There is however 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).
- 4.7.52 Relevant management measures set out in the Preliminary CoCP to reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W1 to W11), implementation of Management Plans (GG06) and establishment of protective areas (GG09).
- 4.7.53 Survey work will be carried out in 2025 to confirm the status of aquatic macrophytes and inform the assessment of impacts and effects, any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.54 On a precautionary basis, significant effects on aquatic macrophytes cannot be excluded at this stage of the assessment.

Water Vole

- 4.7.55 Initial survey work indicates that water vole are within at least nine watercourses within the Section 2 Survey Area.
- 4.7.56 Where suitable habitat for water voles exists, there is a risk of construction works impacting watercourses and associated riparian habitat causing damage to burrows and incidental mortality of water vole. 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).
- 4.7.57 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).
- 4.7.58 Additional relevant management measures set out in the Preliminary CoCP to reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W1 to W11), implementation of Management Plans (GG06), establishment of protective areas (GG09) and lighting restrictions (GG21). 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.
- 4.7.59 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.
- 4.7.60 On a precautionary basis, significant effects on water vole cannot be excluded at this stage of the assessment.

Operation and Maintenance

Designated Sites

- 4.7.61 The Humber Estuary SPA, Ramsar site and SSSI, The Wash SPA and Ramsar, Muckton Wood SSSI and Saltfleetby - Theddlethorpe Dunes SSSI are designated (or partially designated) for their bird interest. There is potential for collision mortality to occur during the operational phase of the Project. This will be assessed once baseline surveys are complete and the results presented within the ES and the report to inform HRA.
- 4.7.62 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.
- 4.7.63 European designated sites within the Section 2 Study Area are sensitive to changes in flow regimes, including the volume of water supplied, water depth and water flow rates. In SACs, the potential impact of altered flow regimes can directly affect the qualifying habitats and hydrological changes may impact SAC/SPA species indirectly. The potential for LSE upon these sites will be assessed within the Report to inform HRA, and significant effects cannot be excluded at this stage in the assessment.

Protected and Notable Species

Birds: Breeding and Wintering

- 4.7.64 As noted above in relation to designated sites, the collision risk with the overhead line within the Section 2 Study Area will be fully assessed once further wintering and breeding bird data have been collected.
- 4.7.65 Therefore, on a precautionary basis, significant effects upon breeding and wintering birds associated with collision risk cannot be excluded at this stage of the assessment.

Likely Non-Significant Effects

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

Table 4.6 Preliminary summary of non-significant Ecology and Biodiversity effects - Section 2

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
Construction					
Swaby Valley SSSI; Swallow Wold SSSI; Freshney Parkway LNR; South Thoresby Warren LNR; and Weelsby Woods Park LNR	Habitat loss	National	Permanent or Temporary	Due to the distance of these sites from the Order Limits of Section 2 there would be no habitat loss within these nationally designated sites.	Not Significant
	Habitat degradation as a result of contamination during construction, changes in air quality, dust and/or changes in water quality	National	Temporary	The likelihood of contamination is considered to be minimal, assuming appropriate management (such as Preliminary CoCP pollution prevention measures GG15, GG16 and GG17).	Not Significant
Brackenborough Road Verge LWS; Brackenborough RNR; Brackenborough Wood LWS; Covenham Reservoir LWS; Disused Railway North of Swinn Wood LWS; Freshney Parkway LWS; Freshney Parkway North LWS; Fulstow Pit LWS; Great Carlton Wetlands LWS;	No Impact	County	Permanent or Temporary	Due to the distances between these receptors and the Section 2 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
<p>Gloucester House Ponds LWS;</p> <p>Hoppers Holt LWS;</p> <p>Laceby Carr Plantation and Pond LWS;</p> <p>Legbourne Grassland LWS;</p> <p>Manby Wetlands LWS;</p> <p>Moors Wood, Aby LWS;</p> <p>Oak Plantation;</p> <p>Woodthorpe LWS;</p> <p>Ratspen Lane Verges LWS; Ratspen RNR;</p> <p>Red Leas Lane Verges LWS;</p> <p>Swinn Wood RNR;</p> <p>Swinn Wood Road Verges LWS;</p> <p>The Browse LWS; and</p> <p>Tothill Wood LWS</p>					
Hedgehog, brown hare	Habitat loss, incidental harm or mortality	Local	Permanent or Temporary	<p>The following control measures detailed within the Preliminary CoCP would prevent harm to hedgehog and brown hare during construction: G06, B01, B03. Habitats impacted temporarily during construction would also be reinstated post construction (GG08).</p>	

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
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					
Claceby Marsh SSSI; Swaby Valley SSSI; Swallow Wold SSSI; Tetney Blow Wells SSSI; Freshney Parkway LNR; South Thoresby Warren LNR; and Weelsby Woods Park LNR	No Impact	National	Permanent or Temporary	Due to the distances between these receptors and the Section 2 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
Sites designated for their County biodiversity importance: Mother and Greenfield Woods LWS; Bradley and Dixon's Woods LWS; Grange Plantation; Aby LWS; Long Eau West LWS; Great Eau LWS; Laceby Beck North LWS; Withern Ings LWS; Withern Wood 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 during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).	Not Significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
River Freshney Headwaters LWS; and Waithe Beck East LWS.					
Sites designated for their Local biodiversity importance: Brackenborough Road Verge LWS; Brackenborough RNR; Brackenborough Wood LWS; Covenham Reservoir LWS; Disused Railway North of Swinn Wood LWS; Freshney Parkway LWS; Freshney Parkway North LWS; Fulstow Pit LWS; Great Carlton Wetlands LWS; Gloucester House Ponds LWS; Hoppers Holt LWS; Laceby Carr Plantation and Pond LWS; Legbourne Grassland LWS; Manby Wetlands LWS; Oak Plantation, Woodthorpe LWS; Moors	No pathways of effect	County	Permanent or Temporary	Due to the distances between these receptors and the Section 2 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
Wood, Aby LWS; Ratspen Lane Verges LWS; Ratspen RNR; Red Leas Lane Verges LWS; Swinn Wood LWS; Swinn Wood RNR; Swinn Wood Road Verges LWS; The Browse LWS; and Tothill Wood LWS.					
Habitats: ancient woodland	Contamination during maintenance works	National	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).	Not Significant
Habitats:HPI quality Woodland, Coastal and Floodplain Grazing Marsh; Laceby Beck; Waithe Beck; Two tributaries of the Louth Canal (north and	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	Not Significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
south of North Thoresby); Poulton Drain; Louth Canal; River Ludd; Monk's Dike; The Beck; and Great Eau				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). 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.	
Habitats: arable field margins, hedgerows, woodland (non-HPI quality), 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 within and adjacent to assets (e.g. substations, pylons, access routes).	Not Significant
Terrestrial Invertebrates	Habitat loss or fragmentation	TBC following surveys (if necessary)	Permanent	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and mitigated accordingly.	Not Significant

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

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

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

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
	Disturbance (e.g. noise, vibration) during maintenance works	County	Temporary	The nature of maintenance works is 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. 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.	Not Significant
Fish	Disturbance (e.g. noise, vibration) during maintenance works	TBC following baseline surveys	Temporary	The nature of maintenance works is anticipated to be small in scale and of an intermittent nature and therefore broadly comparable to current agricultural operations or less.	Not Significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
	Contamination of habitats during maintenance works	TBC following baseline surveys	Temporary	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). 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.	Not Significant
Aquatic macroinvertebrates	Disturbance (e.g. noise, vibration) during maintenance works	TBC following baseline surveys	Temporary	The nature of maintenance works is 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	Not Significant

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

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
Water vole	Habitat Loss, killing or injury	County	Permanent or Temporary	National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and mitigated accordingly.	Not Significant
	Disturbance (e.g. noise, vibration) during maintenance works	County	Temporary	The nature of maintenance works is 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. 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	Not Significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/ Rationale	Likely Significance of Effect
				fauna of works near controlled waters.	
Brown hare, hedgehog	No impact	Local	N/A	The nature of maintenance works is 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 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 Environmental Statement once the ongoing surveys are complete (and a detailed data set obtained), and mitigation and enhancement measures have been fully developed.

References

- Ref 1 North East Lincolnshire District Council (2018). The North East Lincolnshire Local Plan 2013 to 2032 [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 15 October 2024].
- Ref 2 East Lindsey District Council (2019) East Lindsey Local Plan Core Strategy (Adopted July 2019) Supporting Economic Growth for the Future [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230 [Accessed 15 October 2024].
- Ref 3 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 4 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 5 Chartered Institute of Ecology and Environmental Management (CIEEM) (2018, updated 2019). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Second Edition v1.1. CIEEM, Winchester.
- Ref 6 Multi-Agency Geographic Information for the Countryside (MAGIC) website [online]. Available at: <https://magic.defra.gov.uk/> [Accessed 18 October 2024].
- Ref 7 H.M. Government (2006). Natural Environment and Rural Communities Act 2006. HMSO, London [online]. Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents> [Accessed 3 June 2024].
- Ref 8 Natural England Designated Sites View [online]. Available at: <https://designatedsites.naturalengland.org.uk/> [Accessed October 2024].
- Ref 9 Joint Nature Conservation Committee (JNCC) website [online]. Available at: <https://jncc.gov.uk/> [Accessed 3 October 2024].
- Ref 10 Environment Agency Ecology & Fish Data Explorer [online]. Available at: <https://environment.data.gov.uk/ecology/explorer/> [Accessed October 2024].
- Ref 11 Environment Agency Catchment Data Explorer [online]. Available at: <https://environment.data.gov.uk/catchment-planning/> [Accessed October 2024].
- Ref 12 UKHab (2018.2022). The UK Habitat Classification System [online]. Available at: <https://ukhab.org/> [Accessed 01 March 2024].
- Ref 13 Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle

of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747.

- Ref 14 IUCN. (2022). The IUCN Red List of Threatened Species. Version 2022-2 [online]. Available at: <https://www.iucnredlist.org> [Accessed 3 June 2024].
- Ref 15 National Grid. The Holford Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 15 October 2024].
- Ref 16 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 15 October 2024].
- Ref 17 Grimsby to Walpole Corridor Preliminary Routeing and Siting Study. January 2024 [online]. <https://www.nationalgrid.com/document/352621/download> [Accessed 18 September 2024].
- Ref 18 Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments (September, 2024) [online]. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments> [Accessed 15 October 2024].
- Ref 19 H.M. Government (2018). The Conservation of Habitats and Species Regulations 2017 (as amended). HMSO, London [online]. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents/made> [Accessed 3 October 2024].
- Ref 20 Natural England and Department for Environment, Food & Rural Affairs (2022). Protected species and development: advice for local planning authorities [online]. Available at: <https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications> [Accessed 3 June 2024].
- Ref 21 Natural England (2019) Impact Risk Zones Guidance; Sites of Special Scientific Interest Notified for Birds. Version 1.1

5. Historic Environment

Contents

5.	Historic Environment	5-1
5.1	Introduction	5-1
	Regional and Local Policy	5-3
5.3	Scope of Assessment	5-4
5.4	Assessment Methodology	5-5
	Assessment Assumptions and Limitations	5-5
5.5	Baseline Conditions	5-6
	Study Area	5-6
	Data Collection	5-6
	Existing Baseline	5-7
	Future Baseline	5-19
5.6	Design, Control and Additional Mitigation Measures	5-20
	Design Mitigation Measures	5-20
	Control Mitigation Measures	5-20
	Additional Mitigation Measures	5-22
5.7	Preliminary Assessment of Effects	5-23
	Likely Significant Effects	5-24
	Likely Non-Significant Effects	5-30
5.8	Monitoring	5-58
	Table 5.1 Supporting documentation	5-2
	Table 5.2 Designated heritage assets within the 3 km Section 2 Study Area	5-8
	Table 5.3 Designated heritage assets of high value within the 3 to 5 km Section 2 Study Area	5-9
	Table 5.4 Designated heritage assets of high value beyond the 5 km Section 2 Study Area	5-9
	Table 5.5 Non-designated heritage assets within the 1 km Section 2 Study Area	5-10
	Table 5.6 Preliminary summary of non-significant Historic Environment effects - Section 2	5-53
	References	5-59

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 Grimsby West Substation to New Lincolnshire Connection Substation A Section (Section 2) 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 2. 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 2 (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 2 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 in 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 2 (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 supporting figures and technical appendices.

Table 5.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 2 Figures	Figure 5.1 Designated Heritage Assets; Figure 5.2 Non-designated Heritage Assets
PEI Report Volume 3 Part B Section 2 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 2 Appendix 5B Preliminary Summary of Likely Non-Significant effects	A table summarising the preliminary assessment of likely non-significant effects on heritage assets within the assessment Study Areas. The assessment of likely non-significant effects will be updated and amended as required for the ES.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, including the design and overview, construction and operation of the Section.
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 2 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 2 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 2 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 2 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment; 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.

5.2 Legislation and Policy Framework

- 5.2.1 Legislation and national policy relevant to the Project and this chapter are described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** and supporting appendices, 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:
- The North East Lincolnshire Local Plan 2013 to 2032 (Ref 1).
 - Policy 39 Conserving and enhancing the Historic Environment: Proposals for development will be permitted where they would sustain the cultural distinctiveness and significance of North East Lincolnshire's historic urban,

rural and coastal environment by protecting, preserving and, where appropriate, enhancing the character, appearance, significance and historic value of designated and non-designated heritage assets and their settings.

- ii. Central Lincolnshire Local Plan 2023 (Ref 2).
 - Policy S57 The Historic Environment: Development proposals should protect, conserve and seek opportunities to enhance the Historic Environment of Central Lincolnshire.
- iii. East Lindsey Local Plan Core Strategy (Ref 3):
 - Strategic Policy 11 Historic Environment : proposals that will be supported are those which are able to preserve and enhance heritage assets and their settings.

5.3 Scope of Assessment

- 5.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 4) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 5). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Historic Environment chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement..**
- 5.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 5.3.3 The scope of the construction assessment covers the following heritage assets:
 - i. Designated heritage assets (scheduled monuments, listed buildings, conservation areas and registered parks and gardens, noting that no World Heritage Sites or registered battlefields are located within the Section 2 Study Areas); and
 - ii. Non-designated heritage assets (e.g. buried archaeological remains, earthwork remains, non-designated historic buildings and structures, non-designated historic parks and gardens, tracks/routeways and artefact scatters).
- 5.3.4 The scope of the operation assessment covers the following heritage assets:
 - i. Designated heritage assets (scheduled monuments, listed buildings, conservation areas and registered parks and gardens, noting that no World Heritage Sites or registered battlefields are located within the Section 2 Study Areas); and
 - ii. Non-designated heritage assets (e.g. earthwork remains, non-designated historic buildings and structures, non-designated historic parks and gardens and tracks/routeways).

5.4 Assessment Methodology

- 5.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Historic Environment assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. 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 2 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:
- The assessment of an asset's value (heritage significance) using the criteria set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** and taking into account the asset's designated status, heritage interest (e.g. archaeological, architectural, artistic) as defined by paragraph 5.9.3 of EN-1 (Ref 6) with reference to the National Planning Policy Framework (NPPF) Annex 2 Glossary (Ref 7), consultation, regional variation and individual qualities.
 - 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).
 - The classification of the significance of the effects arising from the Project on each heritage asset. The significance of effect is determined using the matrix provided in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Effects can be neutral, adverse, or beneficial.
 - 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**.
- 5.4.5 A limitation in respect of the baseline evidence available at the preliminary stage of assessment specific to Section 2 relates to the Waithe Beck where further archaeological evaluation is required to to understand the location, extent, date, state of preservation and value of deposits along the Beck, which may contain

palaeoenvironmental evidence and archaeological remains. Any such deposits will be assessed in the ES.

- 5.4.6 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.

5.5 Baseline Conditions

Study Area

- 5.5.1 The preliminary assessment for the Historic Environment utilises the following Study Areas, comprising the area directly affected by the Project and a buffer around the draft Order Limits, as detailed further in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**:
- i. 1 km from the draft Order Limits for non-designated heritage assets;
 - ii. 3 km from the draft Order Limits for all designated heritage assets; and
 - iii. 3-5 km from the draft Order Limits for designated heritage assets of high value (World Heritage Sites, scheduled monuments, grade I and II* listed buildings and grade I and II* registered parks and gardens) where setting is a key factor in their value and where this setting extends over a large area.
- 5.5.2 In addition, designated heritage assets of high value located beyond the 5 km Section 2 Study Area will be assessed where there is potential for their setting to be impacted by the Project. The selection of designated heritage assets beyond the 5 km Section 2 Study Area has been undertaken using professional judgement and in consideration of heritage assets highlighted by stakeholders.

Data Collection

- 5.5.3 The following data has been used to inform assessment of the baseline conditions:
- i. the National Heritage List for England (NHLE), held by Historic England, for designated assets;
 - ii. North East Lincolnshire and Lincolnshire HER for non-designated heritage assets;
 - iii. historic landscape characterisation (HLC) mapping undertaken by local planning authorities;
 - iv. geological mapping held by the British Geological Survey (BGS); and
 - v. various online sources including:
 - Historic Ordnance Survey (OS) 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 Appendices and Figures as found within **PEI Report Volume 2** and **Volume 3** respectively:
- i. **PEI Report Volume 2 Part B Section 2 Chapter 5 Figure 5.1 Designated Heritage Assets;**
 - ii. **PEI Report Volume 2 Part B Section 2 Chapter 5 Figure 5.2 Non-designated Heritage Assets;** and
 - iii. **PEI Report Volume 3 Part B Section 2 Appendix 5A Known Heritage Assets.**
- 5.5.5 Designated heritage assets are referenced with their NHLE reference number (e.g. NHLE 1010947).
- 5.5.6 Non-designated assets are referenced using the North East Lincolnshire HER unique identifier number (e.g. MNL240) and the Lincolnshire HER unique identifier number (e.g. MLI88164).
- 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 2 extends for a distance of 39 km across National Character Area (NCA) 42 Lincolnshire Coast and Marshes, a wide, flat, coastal plain extending from the foot of the Lincolnshire Wolds National Landscape (Area of Outstanding Natural Beauty-) eastwards to the North Sea coast (Ref 8).
- 5.5.9 The northern section of Section 2 is located within the Northern Marshes. The landscape is largely rural, consisting of large modern fields formed from the consolidation of smaller eighteenth-century planned Parliamentary enclosure fields. Surviving planned enclosure landscapes across the character area, and the modern fields, produced through a process of consolidation in the twentieth century, seem to retain much of the rectilinear character of the underlying planned enclosures.
- 5.5.10 There is a pattern of dispersed settlement associated with the network of watercourses and drainage channels such as the Waithe Beck and Great Eau, traditional pastures and occasional fields of vegetable crops (Ref 8). Larger nucleated settlements are present towards the south of the Grazing Marshes within the route section, and include Willoughby, Orby and Alford, with smaller isolated farmsteads located across the lower lying landscape.
- 5.5.11 The British Geological Survey (Ref 9) records the bedrock of the Study Area as predominantly being Cretaceous chalk of the Burnham and Welton Chalk Formations and Sandstone of the Carstone Formation. Recorded superficial deposits predominantly comprise Devensian Glacial Till with pockets of sand and gravel glaciofluvial deposits. Lacustrine deposits are present in isolated pockets within the north of the Study Area, with Holocene alluvium comprised of clay, silt, sand and gravels present where the Project crosses Laceby Beck. At the southern end of the Section superficial deposits are more variable as the draft Order Limits cross the River Great Eau with bands of clay, silt, sand and gravel alluvium, glaciofluvial sand and gravels. Isolated pockets of sand and gravel River Terrace Deposits and Tidal

Flat deposits are also recorded alongside the river as it drains eastwards into the North Sea.

Designated Heritage Assets

- 5.5.12 There are no World Heritage Sites, registered battlefields or registered parks and gardens within the 3 km or 5 km Section 2 Study Areas.
- 5.5.13 Located within the 3 km Section 2 Study Area there are 234 designated heritage assets, summarised in **Table 5.2**, with none located within the draft Order Limits. There are 21 scheduled monuments located within the 3 km Section 2 Study Area which include one deserted medieval village, five medieval moated sites and eight churchyard crosses. Of the 206 listed buildings within this Study Area, one grade I, 10 grade II* and 11 grade II listed buildings are located within Louth Conservation Area. The majority of the remaining listed buildings are predominantly located within five of the other conservation areas, namely, Laceby, Scartho, Irby upon Humber, Waltham and North Thoresby. Other settlements with concentrated groups of listed buildings include Utterby, Alvingham, Manby and Little Cawthorpe. Standalone listed buildings scattered throughout the rural landscape include parish churches, isolated farms, farmhouses, country houses and structures associated with the management of the waterways such as locks.

Table 5.2 Designated heritage assets within the 3 km Section 2 Study Area

Designation	Number of assets within the Study Area	Number of assets within the draft Order Limits
Scheduled monument	21	0
Conservation area	7	0
Grade I listed building	16	0
Grade II* listed building	22	0
Grade II listed building	168	0
Grade I registered park and garden	0	0
Grade II* registered park and garden	0	0
Grade II registered park and garden	0	0

- 5.5.14 There are 33 designated heritage assets of high value within the 3 to 5 km Section 2 Study Area and their designations are listed in **Table 5.3**.

Table 5.3 Designated heritage assets of high value within the 3 to 5 km Section 2 Study Area

Designation	Number of assets within the Study Area
Scheduled monument	12
Grade I listed building	4
Grade II* listed building	17
Grade I registered park and garden	0
Grade II* registered park and garden	0

5.5.15 Seven designated heritage assets of high value located beyond the 5 km Section 2 Study Area have been identified at the preliminary assessment stage as having the potential to be impacted by the Project for Section 2. These assets are all scheduled monuments, listed in **Table 5.4**, and comprise a group of Neolithic long barrow funerary monuments located along the higher ridge along the eastern edge of the Lincolnshire Wolds, west of the draft Order Limits.

Table 5.4 Designated heritage assets of high value beyond the 5 km Section 2 Study Area

Designation	Number of assets within the Study Area
Scheduled monument	7
Grade I listed building	0
Grade II* listed building	0
Grade I registered park and garden	0
Grade II* registered park and garden	0

Non-designated Heritage Assets

5.5.16 The North-East Lincolnshire and Lincolnshire HERs record a total of 466 non-designated heritage assets, 421 of which are located within the 1 km Section 2 Study Area. An additional 45 non-designated heritage assets are located within the draft Order Limits. A total of 168 non-designated buildings have been identified which remain extant within the 1 km Section 2 Study Area, with a further five located within the draft Order Limits. A further 34 non-designated buildings are recorded by the HERs as having been demolished and are no longer extant, of these one former building is located within the draft Order Limits. The types of non-designated heritage assets identified are 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 2 Study Area

Asset type	Number of assets within the Study Area	Number of assets within the draft Order Limits
Cropmarks	25	3
Earthworks (including roddons and sea defences)	28	0
Saltern Site	0	0
Settlement site	20	2
Deserted medieval village	3	3
Moated Site	9	0
Ridge and Furrow	50	11
Parkland	9	4
Farmsteads and buildings, extant	168	5
Farmsteads and buildings, demolished	33	1
Military Remains	6	1
Roads/trackways	7	5
Ecclesiastical	12	0
Woodland/Covert/Watercourse	11	6
Find spot	33	2
Funerary remains/Burial	3	1
Post Medieval Remains	4	1

- 5.5.17 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

- 5.5.18 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. Palaeolithic activity has been identified close to rivers and streams within the Middle Marsh.

- 5.5.19 Evidence of Palaeolithic activity within the draft Order Limits follows this pattern of activity close to natural watercourses and includes the Waith Beck (MNL4344), a natural stream which may have existed since the Palaeolithic, and a Palaeolithic flint scatter (MNL3918) identified close to the Waithe Beck. A second water course that connects to Welbeck Spring was identified at Laceby Beck (MNL4273), within the draft Order Limits. No evidence of Mesolithic occupation or activity has been recorded within the draft Order Limits or the 1 km Section 2 Study Area.
- 5.5.20 The move into the Neolithic period is characterised nationally by the domestication of animals, woodland clearance and the erection of monuments within the landscape, such as henges and barrows, a tradition continued through into the Bronze Age.
- 5.5.21 Surviving examples of Neolithic settlements within the wider county landscape have been recorded at Tetford, approximately 11 km west of the draft Order Limits, and Salmonby 12 km west of the draft Order Limits. Within the 1 km Section 2 Study Area a likely multi-phased settlement, occupied between the Early Neolithic and Roman periods, has been identified at Laceby Beck, with a series of enclosures identified within the settlement (MNL319). Further undated enclosures and ditches were recorded in close proximity to these Neolithic settlement remains (MNL2546 and MNL3911), within the draft Order Limits and may be part of this multi-phased settlement. Further cropmarks that are likely Neolithic in date have also been recorded close to Pyewipe Farm in Aylesby (MNL122).
- 5.5.22 Settlement across northern Lincolnshire continued into the Bronze Age with the landscape of the 1 km Section 2 Study Area continuing to be occupied. It has been previously identified that much of the Bronze Age funerary activity is located on the high limestone ridge of the Wolds, to the west of the draft Order Limits (Ref 10). At Holten-Le-Clay on lower lying ground close to the Waithe Beck, a Bronze Age funerary landscape has been previously identified, with a group of eight barrows comprising the Tetney round barrow cemetery scheduled monument (NHLE 1469975) and a group of non-designated barrows (MLI125571 and MLI125572) also located in this area close to Holten-Le-Clay.
- 5.5.23 Evidence of further Bronze Age funerary activity has been recorded close to several other settlements in the 1 km Section 2 Study Area, including at Covenham St Mary (MLI87809), with barrows at Little Carlton (MLI124962), Aylseby (MNL4759), Keddington (MLI88514) and at Alvingham (MLI82175).
- 5.5.24 Isolated findspots of prehistoric artefacts have also been recorded across the 1 km Section 2 Study Area, which include Bronze Age axe heads (MLI41212) and a perforated stone hammer (MLI41947).
- 5.5.25 Iron Age activity within the 1 km Section 2 Study Area is limited to enclosures recorded at Keddington (MLI87931, MLI8792, MLI87925) and at Laceby (MNL3103). Several enclosures dated to the Iron Age (MLI87670) have been recorded extending within the draft Order Limits at North Thoresby. Lincolnshire was quickly subdued and colonised by the Romans after their conquest in AD43, evidence of known settlements has been recorded at Louth, approximately 4.5 km west of the draft Order Limits, and at Saltfleetby, located approximately 4 km east of the draft Order Limits, within the Outer Marshes. The settlement at Saltfleetby has been heavily buried by marine alluvial deposits (Ref 11).
- 5.5.26 Possible settlement activity within the 1 km Section 2 Study Area has been recorded in the Ludborough area, comprising a likely Roman enclosure (MLI98689) and a single Roman burial (MLI126146) identified at Pear Tree Lane.

- 5.5.27 Whilst there is wider Roman activity across the marshes, evidence for Roman occupation is relatively scarce within the 1 km Section 2 Study Area, with activity predominantly limited to isolated small finds. A single sherd of Roman pottery was recorded in a field in Laceby (MNL3917), within the draft Order Limits. Within the wider 1 km Section 2 Study Area, pottery has been recorded at South Reston (MLI42501), Legbourne (MLI41836), and at Alvingham (MLI41253). A Roman coin hoard was recovered from a field just outside North Thoresby (MLI41204) within the 1 km Section 2 Study Area.
- 5.5.28 With the withdrawal of the Roman Empire from Britain, migration from the European mainland and Northern Europe occurred between the 5th and 10th centuries. Large settlements were established on the Outer Marsh including Saltfleet, located 10 km east of the draft Order Limits, and Grainthorpe, located approximately 4.7 km east of the draft Order Limits. Much of the settlement during the early medieval period was situated on the coastal zones, east of the draft Order Limits, however a number of villages within the 1 km Section 2 Study Area originated during the early medieval period along the eastern edge of the Middle Marsh and areas of higher ground, including Fulstow (MLI87674), Covenham St Bartholomew (MLI127094) and North Cockerington (MLI83365) located adjacent to the draft Order Limits. An Anglo-Saxon burial ground (MLI124961) has been identified at Little Carlton and extends within the draft Order Limits.
- 5.5.29 An early medieval settlement was established at Brigsley (MNL2250), which continued to expand and develop into the medieval period with the establishment of the grade II* St Helen's Church, Brigsley (NHLE1103490) at the centre of the settlement in the 11th century.
- 5.5.30 Find spots of Anglo-Saxon pottery have also been recorded within the 1 km Section 2 Study Area during field walking and through incidental observations. These include sherds dating to between the 7th and 10th century (MLI43725, MLI43680, MLI43242).
- 5.5.31 Expansion of existing settlements and the establishment of new settlements occurred after the Norman conquest and are visible across the 1 km Section 2 Study Area. One of these settlements, Castle Carlton (MLI42503), was designed to consolidate the Norman powerbase developed around the scheduled monument Castle Hill motte and bailey castle (NHLE 1016783), constructed in the 11th century and located approximately 750 m south-west of the draft Order Limits. The deserted medieval village of Castle Carlton (MLI42503), at South Reston, was established in the 1220s by Robert Bardolf, likely as a place for those involved in the salt making industry to live. Surviving evidence of the medieval village is still visible within the existing settlement as earthworks, with the Holy Cross Church (MLI42502) and the graveyard (MLI42506) both located within the 1 km Section 2 Study Area. A medieval cross (MLI42505) is located within this graveyard.
- 5.5.32 Another medieval fortification recorded within the 1 km Section 2 Study Area is the Toot Hill motte and bailey castle scheduled monument (NHLE 1016782), the earthwork and buried archaeological remains of which are located approximately 150 m south-west of the draft Order limits. Situated on a low mound overlooking the Great Eau, the motte and bailey castle was constructed by the Norman earls of Chester during the 11th or 12th century. The fortification either dates to the immediate post-Conquest period or to the civil war during King Stephen's reign and was likely established to provide control of the surrounding area of the Middel Marsh, and the Great Eau which was at the time a significant watercourse. The earthwork remains consist of a roughly circular motte which is approximately 8 m high and 70 m in

diameter. To the west of the motte was the bailey, which was enclosed by defensive ditches. Internally, domestic buildings would have been located in this area of the castle. On the southern and western sides are a series of dry parallel 'V'-shaped ditches provides further defences, measuring 14 m in width.

- 5.5.33 Associated with the Toot Hill motte and bailey castle a deserted medieval village may be located at Tothill (MLI42242), within the draft Order Limits, although evidence is limited. Further earthworks which may represent the remains of tofts (MLI88310) are located just outside of the draft Order Limits.
- 5.5.34 Settlements within the Middle 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.
- 5.5.35 The major settlements in this region were Boston and Louth, with Boston the major trading centre further south within the Fens. Louth 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, became an important trading port during the medieval period and acted as a major trading hub to the smaller settlements in the region.
- 5.5.36 The settlement of Great Carlton (MLI42802) is located adjacent to the draft Order Limits. Recorded in the Domesday Survey as Magna Carleton, Great Carlton developed and expanded during the 11th and 12th centuries alongside the settlement of Little Carlton. The grade I listed Church of St John the Baptist (NHLE 1360012) is located at the centre of Great Carlton, and further pottery spreads dating from the 13th to the 16th century (MLI41425) have been recorded close to the settlement.
- 5.5.37 Evidence of medieval occupation has been identified by several archaeological investigations within the 1 km Section 2 Study Area at the settlement of Little Carlton, including the discovery of a medieval coffin (MLI42635) during the levelling of a bank associated with a moat. At the centre of the settlement lies grade I listed Church of St Edith at Little Carlton (MLI43082) On the periphery of Little Carlton a likely medieval enclosure (MLI88735) and a spread of pottery dating between the 13th and 16th century have been recorded (MLI43706).
- 5.5.38 Settlements across the Section 2 Study Areas are highly nucleated and located in close proximity to one another, comprising a mixture of surviving settlements that flourished throughout the medieval period and deserted or shrunken villages that were abandoned. Surviving medieval settlements recorded within the 1 km Section 2 Study Area include the settlement of Manby (MLI43500), and Covenham St Bartholomew (MLI87799). Settlement evidence identified through earthworks and cropmarks indicate a medieval settlement at North Thoresby (MLI88927) and at South Cockerington (MLI43243).
- 5.5.39 Several medieval settlements have been recorded adjacent to the Order Limits, including the settlement of Yarburgh (MLI41248) which survives as a mixture of earthworks such as ridge and furrow and buried archaeological remains evidenced by cropmarks of enclosures and trackways. At the centre of Yarburgh is the medieval grade I listed Church of St John the Baptist, Yarburgh (NHLE 1063089).

- 5.5.40 A settlement at North End (MLI87878) which included earthworks such as a pond, ridge and furrow and cropmarks that indicate boundary ditches, and enclosures was recorded adjacent to the draft Order Limits.
- 5.5.41 A single scheduled monument Deserted Medieval Village (NHLE1003616) is located within the limits of the current settlement of Brackenborough, approximately 2 km west of the draft Order Limits. Further deserted medieval villages within the 1 km Section 2 Study Area, identified through aerial photography and survey, include Gayton Le Marsh (MLI90913) located just south of Great Carlton and the shrunken medieval village of Grainsby (MLI41222) which became deserted in the late medieval period.
- 5.5.42 Towards the northern end of Section 2 the deserted medieval village of Waithe (MLI41233) is located within the draft Order Limits. The village was recorded in the Domesday Survey of 1086 and the Lindsey Survey of 1115. Extensive earthworks are associated with this non-designated heritage asset, representing crofts, tofts, enclosures, a mill and trackways were identified during aerial surveys, although those in the fields to the north and south of the Church of St Martin have been ploughed out. The grade I listed Church of St Martin (NHLE 1359965), which lies within the 1 km Section 2 Study Area, is still extant within the existing settlement of Waithe. Its churchyard (MLI116162) likely dates to the medieval period, with two sherds of 13th century pottery recovered out of context from the churchyard of the Church of St Martin (NHLE 1359965). Several medieval enclosures (MLI88656) were identified to the west of the shrunken medieval village of Waithe and are located within the draft Order Limits.
- 5.5.43 Two further medieval settlements are recorded extending within the draft Order Limits, the shrunken medieval village of Stewton (MLI88733) and the settlement of Alvingham (MLI41254), where extensive earthworks surrounding the modern village provide evidence for tofts, crofts and strip fields (MLI87867).
- 5.5.44 The landscape of the medieval period (AD1066-1540) included nucleated settlements, manorial sites and agricultural land. Evidence of this survives as extant buildings and archaeological remains. Archaeological investigations and studies of the landscape have revealed that throughout the medieval period, the landscape was altered and utilised, further exploiting and developing the earlier Anglo-Saxon and Roman landscapes.
- 5.5.45 Evidence for the medieval agricultural regime and former open fields is provided by ridge and furrow which is widespread across the 1 km Section 2 Study Area, typically recorded close to settlements such as Holton (MLI41239), Bradley (MNL2246), Brigsley (MNL2230, MNL2246), Great Carlton (MLI42814), Covenham St Mary (MLI87807), and Yarburgh (MLI87846). Medieval field systems have also been identified at Laceby (MNL315), Ashby cum Fenby (MNL2448), Aby with Greenfield (MLI88739), Covenham St Bartholomew (MLI87732), Little Carlton (MLI88734), North Cockerington (MLI87887), Fulstow (MLI87685), Barnoldby-Le-Beck (MNL2228) and at Keddington (MLI125478).
- 5.5.46 Medieval ridge and furrow is recorded extending within the draft Order Limits at Brigsley (MNL2230), Alvingham (MLI42794), Little Carlton (MLI88028), North Cockerington (MLI87883 and MLI98748) and Legbourne (MLI116430, MNL2224, MNL2225, MNL2228, MNL2230, MNL2243, MNL2246)
- 5.5.47 Likely medieval cropmark enclosures have been recorded within the 1 km Section 2 Study Area at Ashby cum Fenby (MNL2448).

- 5.5.48 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, and the important religious centre located at Lincoln. These monastic centres all had their origins in the Anglo-Saxon period, with smaller religious houses, granges and hermitages often located in isolated locations within the Lincolnshire Marshes and Fenland landscape.
- 5.5.49 Two examples of these isolated religious houses associated with the Cistercian religious order are the scheduled monuments of Legbourne Priory (NHLE 1011455) and Louth Park Abbey (NHLE 1005002) and the grade I listed Louth Abbey Ruins (NHLE 1063050) located 2.2 km west and 560 m west of the draft Order Limits respectively. The remains include standing and buried remains. The scheduled monument, Louth Park Abbey (NHLE 1005002) dates to the 12th century and was a daughter-house of Fountains Abbey in North Yorkshire.
- 5.5.50 The Site of Gilbertine priory and post-Dissolution house, moats, 18th century garden, medieval settlement and cultivation remains (NHLE 1010706) is located approximately 3.5 km west of the draft Order Limits. The priory takes the form of a series of earthworks and buried deposits that includes the remains of the Priory of St Mary, a double-house for nuns and canons of the Gilbertine order founded in 1148-54 by Gilbert fitz Robert of Ormsby. Adjacent to the west are the remains of a post-medieval formal garden, two moats and a series of ponds; to the east is an area of medieval and post-medieval settlement remains.
- 5.5.51 Other non-designated ecclesiastical assets are also recorded within the 1 km Section 2 Study Area, including The Priory of St Mary at Alvingham (MLI41255) and Legbourne Grange (MLI41848 and MLI118222).
- 5.5.52 Numerous grade I and II* listed medieval churches are recorded within the 3 km Section 2 Study Area (NHLE 1063089; 1359965; 1346952; 1103486; 1261895; 1063076; 1161566; 1309123; 1359986; 1063692; 1359942; 1063122; 1379408; 1161130; 1346925; 1346948; 1103490; 1359976; 1063111; 1063109; 1063108; 1359941; 1063043; 1161283; 1359987; 1308718; 1063086; 1308396; 1063630; 1062988) as well as associated scheduled and listed medieval stone crosses, which are also a feature of churchyards. These include Churchyard cross, St George's Church (NHLE 1015314), Cross in St Martin's churchyard (NHLE 1019402), Cross in St Lawrence's churchyard (NHLE 1018295), Cross in St Edith's churchyard (NHLE 1018282), Cross in St Andrew's churchyard (NHLE 1018294), Cross in St Peter and St Paul's churchyard (NHLE 1018296), Cross in St Peter's churchyard (NHLE 1018286), and Cross in St John the Baptist's churchyard (NHLE 1018283).
- 5.5.53 Another feature of the medieval landscape are moated sites, usually surviving as a house, or the remains of a house on an island surrounded by a moat. These were typically constructed by landowners between 1250 and 1350 as status symbols, with some also holding a defensive function. Several scheduled moated sites are recorded within the 5 km Section 2 Study Area including Belleau Manor moated site and dovecote (NHLE 1019069), located approximately 2.6 km west of the draft Order Limits, The Manor moated site and fishpond complex (NHLE 1019979), located approximately 2 km west of the draft Order Limits, North Cockerington Hall moated site (NHLE 1004988), located approximately 1.2 km east of the draft Order Limits, and Moated site immediately west of Hall Farm (NHLE 1019070), located adjacent to the draft Order Limits. Several non-designated moated sites are recorded within the 1 km Section 2 Study Area, including a moated site recorded at Little Carlton

(MLI43532, MLI42634) and a moated manorial site close to the settlement of Fulstow (MLI42848 and MLI87686).

- 5.5.54 The move into the post-medieval period was associated with the drainage of the Lincolnshire Outer Marshes, on the periphery of the 1 km Section 2 Study Area and the Fens to the south. From the mid-17th century, a campaign to drain the Outer Marshes and convert them into arable land was undertaken. During this time many new drainage channels were cut 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 (Ref 11).
- 5.5.55 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. Many of the medieval settlements continued to be occupied through the post-medieval period. These range from numerous small rural villages to larger towns, namely Louth. There are a large number of post-medieval, extant buildings in Louth, concentrated around the centre of the settlement. The listed buildings within the 3 km Section 2 Study Area are mostly located along Eastgate and include a late 18th century public house (NHLE 1078198), house at Eastfield Road (NHLE 1359895), early 19th century houses (NHLE 1359881; 1317127; 1359906; 1240149), a flour mill (NHLE 1078197), and a late 19th century almshouse (NHLE 1415542).
- 5.5.56 Industrialisation occurs during the 18th and 19th centuries which leads to the expansion of the canals and waterways within Lincolnshire to provide faster more direct trade routes. The Louth Canal (Louth Navigation MLI86587) was opened as a navigation of the River Lud in 1770, between Louth to the Humber Estuary. Along the canal within Section 2 are four surviving grade II listed locks, all built in 1767 under the supervision of John Grundy (NHLE 1063048; 1063081; 1063080; 1063049). The locks are similarly constructed of red brick, limestone ashlar dressings, wood and cast iron fixtures, with lock chamber walls of three or four concave brick sections on either side. There are two grade II listed late 18th century warehouses (NHLE 1261127; 1240242) located to the north-east of Louth alongside the canal and the grade II listed Woolpick Inn (NHLE 1078198) have group value representing the once prosperous local industries, particularly wool and grain.
- 5.5.57 Other post-medieval water management features recorded within the 1 km Section 2 Study Area include a sluice gate (MNL1549) recorded at Ashby cum Fenby and at Laceby Beck (MNL304). The mechanisation of agriculture and processing in the area is represented in the Study Area by the presence of a number of windmills and watermills including the grade II* Waltham Windmill (NHLE 1161256), listed watermills at Waithe (NHLE 1147753; MLI41246) and Little Carlton (NHLE 1063021), a windmill in Legbourne (NHLE 1063695) and a non-designated water mill in Withern (MLI126232).
- 5.5.58 With the move to increasing industrialisation across Lincolnshire, transport links became more important, with railways and tramway networks established across the county. Three post-medieval toll roads, named as Waltham Road (MNL3439), Green Lane (MNL3440) and Waith Lane (MNL3442) have been recorded as extending through the draft Order Limits at Brigsley. Further post-medieval highways recorded within the Study Area are Waltham Road (MNL3443) at Barnoldby Le Beck, Grimsby Road at Laceby (MNL3459) and Aylesbury Road (MNL3482).

- 5.5.59 Agriculture and farming dominated the landscape during the post-medieval period. The former large medieval open fields that surrounded the settlements within Section 2 were enclosed during this period. This change from the communal cultivation of strip fields surrounding villages to privately owned and enclosed farms led to the development of a large number of farmsteads from this period, dating to the 17th century (NHLE 1063127; 1062987; 1359935; 1063075) and 18th century (NHLE 1103526; 1359960; 1063078; 1103527; 1063018) and farmhouses and outbuildings (NHLE 1063082; 1359989). There are also numerous 19th century non-designated farmsteads recorded within the 1 km Section 2 Study Area, including extant (e.g. MLI41315; MLI117799; MLI117567) and demolished sites (e.g. MLI117832; MLI117101; MLI117560).
- 5.5.60 Evidence of the Civil War is present within the 1 km Section 2 Study Area, with the scheduled monument Civil War defences recorded at Castle Hill (NHLE 1019067). Whilst the castle is medieval in origin, the civil war defences were added in the 16th century and take the form of a large earthen embankment. A second scheduled monument, Civil War earthwork Fort (NHLE 1007735), is located within 3 km of the Order Limits, evidenced by a rectangular earthen rampart with projecting bastions at each of its four corners, an enclosing ditch and a counterscarp bank.
- 5.5.61 Creation of civil parks occurred in the late 19th century, with Legbourne Grange Park (MLI91684) established in this period located within the 1 km Section 2 Study Area. The Parkland to Manor House, Laceby (MNL3155), within which nine circular stands of trees are recorded on the First Edition Ordnance Survey map of 1888 (MNL305), Parkland to Little Laceby Farmhouse, Laceby (MNL3154), and Parkland at Becklands (MNL3160) all date to the late 19th century and are located within the draft Order Limits.
- 5.5.62 Four areas of parkland were established in the late 19th century and extend within the draft Order Limits. These include Eastfield Farm Park, Stewfield (MLI91686), Bowling Park, Grainsby (MLI92236), Waithe Park (MLI41237) and Historic Park, Reston (MLI92241).
- 5.5.63 A decoy pond used for agricultural purposes (MLI88681) was recorded within the 1 km Section 2 Study Area at Reston. These landscape features were used throughout the post-medieval period to lure and capture ducks without killing them, thus selling for a higher price. A post-medieval drainage ditch is identified within the draft Order Limits (MNL4272). Evidence of osier beds (MNL2459) have been identified at Aylesby, within the draft Order Limits
- 5.5.64 Throughout the post-medieval period, a number of religious sites were converted and developed into private farms. A moated grange site (MLI117092) was identified as extant earthworks at Fulstow, within the 1 km Section 2 Study Area, with Waithe Grange (MLI41236), Grimoldby Grange (MLI41304), Little Grimsby Grange (MLI41344), Yarburgh Grange (MLI41250) also identified.
- 5.5.65 Post-medieval ecclesiastical examples include the grade II listed Church of Saint Martin (NHLE 1346950), the Lychgate to Church of St John the Baptist (NHLE 1063019), vicarages (NHLE 1147093; 1379409) and memorial structures (NHLE 1346946; 1422159; 1147780; 1379881). There are also numerous 19th century methodist churches and chapels including MLI98918, MLI98944, MLI98542, MLI98889 and MLI98948.
- 5.5.66 Remains dating to the Second World War have been identified within the 1 km Section 2 Study Area, with the site of the former Royal Air Force (RAF) Manby

(MLI43396) extending into the draft Order Limits. RAF Manby opened in 1938 as an Armament Training School, built during the period of RAF expansion in the lead up to the Second World War. The remains of former perimeter track, taxiways and dispersals extend into the draft Order Limits whilst the runways and seven associated surviving grade II listed buildings are located east of the draft Order Limits. The buildings were designed by A. Bulloch in Neo-Georgian style and include the former Station Headquarters (NHLE 1392630), Officers' Mess and Quarters (NHLE 1392627), Sergeants' Mess and Quarters (NHLE 1392629), Instructional Building (NHLE 1392624), dining room and institute (NHLE 1392628) and seven barrack blocks (NHLE 1392626; 1392625).

- 5.5.67 Other non-designated Second World War remains recorded within the 1 km Section 2 Study Area include Waltham Airfield (MNL1423), and associated structures including components store at Waltham Airfield (MNL3139) and Robin aircraft hangar (MNL3141), and a searchlight battery at Stewton (MLI98747).
- 5.5.68 Heritage assets reflecting conflicts of the 20th century recorded within the 3 km Section 2 Study Area include various war memorials, all grade II listed structures (NHLE 1487236; 1469632; 1462730; 1391420; 1440860; 1379370; 1454998).
- 5.5.69 A 20th century extant structure recorded by the North East Lincolnshire HER takes the form of a historic roadside signpost (MNL4157) at the junction of Church Lane and Waithe Lane, Brigsley. A 20th century Ordnance Survey Trigonometry station (MNL4205) is also recorded in Brigsley, just outside the draft Order Limits.
- 5.5.70 Evidence for modern agricultural features is also recorded in the form of sheep washes at Brigsley (MNL1631) and at Aylesby (MNL4128).
- 5.5.71 The location of former Electricity Pylon Bases (MNL3909) have been recorded within the draft Order Limits by the North East Lincolnshire HER at Laceby.
- 5.5.72 Undated cropmarks are located widely across the 1 km Section 2 Study Area. Within the draft Order Limits, likely enclosures that have not been dated have been recorded at Barnoldby-le-Beck (MNL138), with a series of gullies ditches and pits (MNL3910 and MNL3911) were identified by a geophysical survey undertaken to the east of Laceby and are located within the draft Order Limits.
- 5.5.73 Evidence of further undated agricultural activity across Laceby is represented by ditches identified within the draft Order Limits (MNL3913) and across the 1 km Section 2 Study Area, to the south (MNL4364, MNL4365) of the draft Order Limits. Further undated settlement remains have also been recorded close to the town of Bradley (MNL3907 and MNL3908), within the 1 km Section 2 Study Area, and at Holten-Le-Clay (MLI88083).

Historic Landscape Character

- 5.5.74 Section 2 extends across two broad historic landscape regional character areas (RCAs) (RCA 3 – The Northern Marshes and RCA 8 - The Grazing Marshes) defined by the Lincolnshire Historic Landscape Characterisation project (Ref 12). Within each of the RCAs there are a number of subsidiary historic landscape character zones (HLCZ).
- 5.5.75 Within RCA 3 The Northern Marshes, HLCZ The Grimsby Commuter Belt (NOM3) encompasses an area in the landscape between Grimsby in the north down to North Thoresby in the south. Most of the settlements in this HLCZ are located to the east

and south of Grimsby and have grown in size due to the affluence and prosperity of Grimsby throughout the 19th and early 20th centuries.

- 5.5.76 The landscape was altered during the 18th and 19th centuries with many of the medieval field systems altered into long rectilinear fields, bounded by hedgerows and ditches. The expansion of Grimsby in the 20th century led to the growth of many of the nearby settlements such as Laceby and Waltham, and an increase in roads and transport links in the area.
- 5.5.77 Two HLCZs extend across Section 2 within RCA 8 The Grazing Marshes. The first, HLCZ Settlement within the Middle Marshes (GRM1) displays a pattern of nucleated settlements that have retained its character while undergoing some modern development and expansion. The larger settlements that are located in the southern area of the HLCZ, 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 HLCZ displays a high amount of planned post-medieval enclosure, which follows the underlying medieval boundaries (Ref 13).
- 5.5.78 Extending across the eastern side of the Section 2 Study Area, HLCZ 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 HLCZ was undertaken on the higher areas of land, with the primary settlement in this HLCZ being Mablethorpe. Agricultural development in this HLCZ is largely strip fields, which continues today, with a strong rectilinear pattern of fields still visible within the modern landscape (Ref 13).

Future Baseline

- 5.5.79 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.
- 5.5.80 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.
- 5.5.81 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 2. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. For Historic Environment, such measures include the avoidance of physical impacts to designated heritage assets and where practicable non-designated heritage assets, and where possible reducing potential impacts to the setting of designated heritage assets and non-designated heritage assets. Measures include:
- the use of low height pylons at the northern end of Section 2 between pylons GL19 and GL36 to reduce potential impacts to the setting of designated heritage assets notably the grade II* listed Waltham windmill the non-designated former RAF Waltham airfield; and
 - routing the proposed alignment approximately 150 m east of the Toot Hill motte and bailey castle scheduled monument to avoid impacts to the earthwork and buried remains of the monument.

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 2 include:
- GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works (EnvCoW) 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.
 - 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 2 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 6, 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 2 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 2 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**.

5.7.4 A full table summarising the preliminary assessment of likely non-significant effects on individual heritage assets is provided within **PEI Report Volume 3 Part B Section 2 Appendix 5B Preliminary Summary of Likely Non-Significant effects**.

5.7.5 Unless stated otherwise all likely significant and non-significant effects reported below are adverse in nature.

5.7.6 It 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

- 5.7.7 The preliminary assessment of the effects arising from construction of Section 2 of the Project is described in this section. The preliminary assessment considers the design, control and additional mitigation measures described in section 5.6.
- 5.7.8 Potential impacts identified during the construction phase include direct physical impacts on heritage assets within the draft Order Limits of Section 2 resulting from construction works e.g. topsoil stripping and groundworks for the construction access haul roads, pylon working areas, construction compounds and drainage.
- 5.7.9 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

- 5.7.10 The preliminary assessment has identified ten designated heritage assets within the 3 km Section 2 Study Area that have the potential to experience temporary and/or permanent significant effects. These include six scheduled monuments, one grade I listed buildings and three grade II listed buildings. Some assets may experience significant effects from construction activities and non-significant effects from the permanency of the infrastructure in the landscape, or vice versa. Where this is the case, the assessment for both effects is set out together for the asset in the Likely significant effects section, with the significant effects summarised in **PEI Report Volume 2 Part B Section 2 Chapter 13 Summary** and the non-significant effects summarised in **Table 5.5** and **PEI Report Volume 3 Part B Section 2 Appendix 5B Preliminary Summary of Likely Non-Significant effects**.

Scheduled Monuments Within the 3 km Section 2 Study Area

- 5.7.11 Round Barrow Cemetery with outlying barrow to the west of Tetney and north of the Waithe Beck (NHLE 1469975) is located approximately 800 m west of the draft Order Limits. The monument is comprised of a group of eight barrows, between 10-15 m in diameter and laid out on an approximate north east to south west alignment. Aerial photography has identified further barrows as cropmarks. Three further non-designated probable barrows (MLI125571) have been identified to the north-west of the scheduled monument and with the land to the west of the monument along the Waithe Beck form part of the wider prehistoric landscape of the scheduled monument. Construction of the Project may temporarily alter the setting of the scheduled monument, a high value heritage asset, through construction traffic and plant movement to the south and west of the monument. These temporary impacts would have a small magnitude, resulting in a moderate adverse effect which would be significant. Permanent changes to the setting of the monument arising from the presence of proposed pylons and overhead line infrastructure in the landscape would

be a small adverse impact, resulting in a moderate adverse effect which would be significant.

- 5.7.12 North Cockerington Hall moated site (NHLE 1004988) is located approximately 1.1 km east of the draft Order Limits, with the monument comprised of a rectangular enclosure, surrounded by a 10 m wide ditch. Extant structures include a small brick shed and a stone well. The setting of the monument encompasses the existing and former settlement of North Cockerington and the local medieval agricultural landscape which it would have served. This is likely to include areas of medieval ridge and furrow (MLI87883 and MLI87881) located immediately east of the draft Order Limits and which may hold an association with the monument. The Project is located within the wider agricultural setting of the monument. Construction of the Project may temporarily alter the setting of this high value heritage asset through construction traffic and plant movement and scaffolds west of the monument. These temporary impacts would be small in magnitude and result in a moderate adverse effect, which would be significant. Permanent changes to the setting of the monument arising from the presence of proposed new pylons and overhead line infrastructure within the landscape and against the skyline would be a small adverse impact, resulting in a moderate adverse effect which would be significant.
- 5.7.13 Castle Hill motte and bailey castle, Castle Carlton (NHLE 1016783) is located approximately 750 m west of the draft Order Limits. The monument comprises a motte and double bailey castle enclosed by ditches, with external banks. The motte is a circular mound, measuring 40 m in diameter and 8 m high. The bailey, where domestic buildings would have been located, is lined by internal banks along the southern and western sides and is divided in two by a broad ditch, aligned east to west. The current site of the monument is heavily wooded with the site covered by trees. The setting of the monument is the local medieval agricultural landscape from which it can be viewed from and which it controlled, this includes the surrounding remains of the Castle Carlton Deserted Medieval Village (MLI42503), and the nearby settlements of Reston, Little Carlton and Great Carlton. The Project is located within the wider agricultural setting of the monument, with existing vegetation including Carlton Wood and hedgerows provide partial screening of the Project in views east from the monument. Construction of the Project may temporarily alter the setting of this high value heritage asset through construction traffic, noise, plant movement and scaffolds to the east of the monument. These temporary impacts would have a small magnitude of impact, resulting in a moderate adverse effect, which would be significant. Permanent changes to the setting of the monument arising from the presence of proposed pylons (between GL96 and GL103) and overhead line infrastructure within the landscape and against the skyline from the time of construction and throughout its operational duration would be small in magnitude, resulting in a moderate adverse effect, which would be significant.
- 5.7.14 The scheduled Moated Site immediately west of Hall Farm (NHLE 1019070) is located immediately adjacent to the draft Order Limits. The monument comprises a sub-rectangular raised island, measuring 50 m by 30 m, enclosed by a water-filled moat. Earthworks include the remains of the manor house and ancillary domestic buildings. The setting of the monument is defined as the local agricultural medieval and post-medieval landscape that the moated site would have served and the nearby medieval settlements of Little Carlton and South Reston. The draft Order Limits are located within the wider agricultural setting of the monument. Construction of the Project may temporarily alter the setting of this high value heritage asset through construction traffic, noise and plant movement to the north and east of the monument. These temporary impacts would be small in magnitude of change,

resulting in a moderate adverse effect, which would be significant. Permanent changes to the setting of the monument arising from views of proposed new pylons (GL101 to GL104) and overhead line infrastructure within the landscape and against the skyline from the time of construction and throughout its operational duration would have a negligible magnitude, resulting in a minor adverse effect which is not significant.

- 5.7.15 Toot Hill motte and bailey castle (NHLE 1016782) is located approximately 140 m west of the draft Order Limits. The monument comprises extant earthworks and buried remains of the medieval motte and bailey castle which is enclosed by ditches and banks. A raised rectangular platform, measuring approximately 15 m by 10 m, is located at the centre of the monument. The setting of the monument comprises its strategic location on the edge of the Middle Marsh with views across the Great Eau, the local lower lying medieval agricultural landscape and the nearby settlement of Tothill. The draft Order Limits are located within the setting of the monument. Construction of the Project may temporarily alter the setting of this high value heritage asset through construction traffic, noise, plant movement and scaffolds to the east of the monument. These temporary impacts would be of medium magnitude, resulting in a major adverse effect, which would be significant. Permanent changes to the setting of the monument arising from views of proposed new pylons and overhead line infrastructure (proposed pylons GL109 to GL114) within the landscape and against the skyline from the time of construction and throughout its operational duration would be of medium magnitude, resulting in a major adverse effect, which is significant.
- 5.7.16 Located within the scheduled Toot Hill motte and bailey castle (NHLE 1016782) is the grade II listed Manor House (NHLE 1062994), situated 213 m from the draft Order Limits. The building dates from the 17th century and has undergone various modifications in later centuries comprising two floors over seven bays. The OS map of 1888 reveals that it was set in landscaped gardens with footpaths and some tree planting whilst the tithe map of 1848 shows an open landscape with no trees, with the lake to the north and an access track to the west. The tithe apportionment describes the Manor House as 'Tothill House, garden and buildings' under the ownership of Lord Willoughby de Broke. In the 13th century, Tothill and Gayton-le-Marsh formed one manor belonging to Lord Willoughby de Broke. The title of Lord Willoughby de Broke was passed from medieval times until the early 20th century, bestowing the privileges of lord of the manor and chief landowner including that of both the listed Manor House, the scheduled motte and bailey and the fields extending to the east of the Great Eau watercourse which the proposed alignment crosses. The Manor House is located within the western part of the former bailey and the land beneath the grade II listed building is included within the scheduled designation. The house may have been built on the site to take advantage of the slight elevation over the surrounding flat landscape as well as the association next to a medieval castle by the lord of the manor to demonstrate his wealth and influence. The setting of the building contributes strongly to its value, which includes its proximity to the scheduled monument, the long historical association with the same ownership of both designated assets, as well as the wider manor and surrounding landscape. Views would have once extended out across the landscape but the site is now secluded due to the presence of mature trees since the mid-20th century which surrounds the building to the south and east. However, there may be some views from the property's northern elevation towards the proposed pylons GL109 and GL110 with possible views and seasonal dependent glimpses to the east and south of proposed pylons GL111-GL113. The temporary construction works include the construction

access haul road with traffic movements 276 m to the east of the listed asset, construction of clear span bridge over the watercourse, proposed pylon work areas, scaffolds and stringing areas at GL109 and GL111. The associated noise and intervisibility would noticeably alter its setting having a medium magnitude of impact. On an asset of medium value, this would result in a moderate adverse effect that would be significant. The permanency of the infrastructure in the landscape would noticeably alter the wider setting of the Manor House, having a medium magnitude of impact which would result in a moderate adverse effect that would be significant.

- 5.7.17 Castle Hill: moated site with Civil War earthworks (NHLE 1019067) is located approximately 690 m east of the draft Order Limits. The monument is comprised of a medieval moated site which was altered by the addition of earthwork defences thought to date from the Civil War. The moated site takes the form of a large embanked trapezoidal enclosure which was raised 2 m above ground level and surrounded by a moat. The creation of ramparts and angle bastions together with the enhancement of the moat occurred in the 17th century. The setting of the monument is the local medieval and post-medieval agricultural landscape and its strategic location controlling local roads and overlooking the Great Eau watercourse. The monument is located to the west of the medieval settlement of Withern (MLI88311) and holds an association with the asset. There is some visibility between the monument and the Project with screening provided by existing tree lines and hedgerows. The Project is located within the wider setting of the monument. Construction of the Project may temporarily alter the setting of this high value heritage asset through construction traffic, noise, plant movement and scaffolds to the west of the monument. These temporary impacts would be small in magnitude, resulting in a moderate adverse effect, which would be significant. Permanent changes to the setting of the monument arising from views of proposed pylons (GL106 to GL113) and overhead line infrastructure within the landscape and against the skyline from the time of construction and throughout its operational duration would be small in magnitude, resulting in a moderate adverse effect, which would be significant.

Listed Buildings or Structures Within the 3 km Section 2 Study Area

- 5.7.18 Little Laceby Farmhouse (NHLE 1161227) is a grade II listed building located approximately 90 m north-west of the draft Order Limits and to the east of the settlement of Laceby. It is described as a farmhouse with adjoining stable/coach-house constructed in the early 19th century. The tithe apportionment of 1840 describes Little Laceby as a house with pleasure grounds and buildings. The tithe records also show the historic landholdings under the same ownership as that of Little Laceby Farmhouse which include land within the draft Order Limits to the east of the asset including the non-designated assets of MNL3154 and MNL3155. MNL3155 is described as Parkland to Manor House, Laceby with the property located to the south of Grimsby Road and the non-designation HER includes two parcels of parkland with one to the north of the road and one to the west of Manor House. However, the parcel of land to the north of Grimsby Road is under the same ownership as that of the Parkland to Little Laceby Farmhouse (MNL3154). The first edition Ordnance Survey map of 1888 shows the two parkland areas to the north of the road, under the same ownership at the time of the tithe records, with a similar pattern of designed planting with platoons of trees which are not present in the parkland to the south, further indicating that MNL3155 parkland is only associated with Manor House to the south of Grimsby Road only. By 1888, the two parkland parcels of land to the north had been separated by development of the land as fields

associated with a Stud Farm (MNL2176), which is no longer extant, although some tree platoons remained. It is through this area, between the two parkland parcels to the north of Grimsby Road, that the proposed alignment falls within with the proposed pylon GL10, and overhead line located in the centre between them. The construction activities, including a stringing position, construction access haul road with traffic and plant noise and a bellmouth, as well as the Project infrastructure with overhead line and proposed pylon GL10, are within the historic setting and designed views of the grade II listed Little Laceby Farmhouse (NHLE 1161227) and the associated parkland (MNL3154) and the north field of MNL3155. Temporary construction activities, including intervisibility, noise, dust, light and traffic movement, would have a medium magnitude of impact on the listed farmhouse of medium value noticeably altering its setting and how it is understood and appreciated. This would result in a moderate adverse effect, which would be significant. The permanent addition of the modern infrastructure into the landscape, with proposed pylon GL10 and overhead line approximately 450 m to the north-east of the farmhouse, would alter its setting and designed views but would slightly change the ability to appreciate its heritage value. This would have a small magnitude of impact which would result in a minor adverse effect which is not significant. In respect of the non-designated historic Parkland associated with Little Laceby Farmhouse (MNL3154) and the north area of parkland under the MNL3155 non-designated record, their boundaries and elements of the tree planting shown on historic mapping survive among the modern pattern of paddocks. The setting of the parkland encompasses its interrelationship with Little Laceby Farmhouse and the surrounding agrarian landscape which includes the former stud farm. Construction of the Project would temporarily alter the setting of this low value heritage asset through construction traffic, noise and plant movement west of the monument. These temporary impacts would have a medium magnitude and minor adverse effect which would not be significant. Permanent and noticeable changes of medium magnitude, arising from the introduction of the proposed pylons and overhead line infrastructure within the setting of the asset would result in a minor adverse effect which would not be significant.

- 5.7.19 The Church of St Martin (NHLE 1359965), Waithe, is a grade I listed building approximately 190 m north-east of the draft Order Limits with GL37 and GL38 the nearest proposed pylons. The church tower has three stages, topped with a plain parapet, below which are paired lancet belfry lights to the third stage. The church is set back from Church Lane and is bounded by dense mature trees and vegetation, creating a secluded enclosed setting. There are kinetic glimpses of the church tower from the west along Thoroughfare, a historic road into Waithe, with views south to and from the church possible depending on the season. The wider setting of the church includes the wider agrarian landscape and its historic relationship with Waithe Parish which the proposed alignment crosses. The construction works would have a temporary small magnitude of impact slightly altering the setting of the church and how it is understood and appreciated, due to noise, traffic movements, dust, scaffold, intervisibility and a compound proposed 680 m to the south-west. This would result in a moderate adverse effect which, on an asset of high value, is significant. The permanent addition of the modern infrastructure into the setting of the church, with pylon GL38 proposed directly south in the field opposite the church, along with interruption of views from historic routeways of the church caused by the overhead line, would have a small magnitude of impact, resulting in a moderate adverse significance of effect, which is significant.
- 5.7.20 The Louth Canal historic waterway (recorded as a non-designated heritage asset Louth Navigation MLI86587) is bisected by the draft Order Limits east of Louth. There

are four grade II listed canal locks located between Alvingham and Keddington, the two nearest to the draft Order Limits are Alvingham Lock and inverted syphon (NHLE 1063080), approximately 495 m north-east of the draft Order Limits and Salter Fen Lock (NHLE 1063081), approximately 20 m south west of the draft Order Limits. Both heritage assets are of medium value which their setting strongly contributes to, derived from their rural location on the canal, their historic relationship with the canal as integral water management features and their group association with the other locks. Construction works, including the construction access haul road with traffic movements, a stringing position at proposed pylon GL78 and proposed pylon work areas would have a small magnitude of impact on the two listed locks affecting how their setting may be experienced resulting in a temporary minor adverse, not significant, effect. The addition of proposed pylons GL76-GL78, with proposed pylon GL77 directly between the two listed locks and the overhead line within the landscape either side of the canal will diminish the rural setting of the assets although filtering vegetation screening is proposed along the west side of the canal either side of pylon GL77. For Salter Fen Lock (NHLE 1063081), the nearest lock to the works (210 m from pylon GL77), the construction activities will noticeably alter the setting of the lock temporarily affecting the ability to understand and appreciate the asset. This would have a moderate adverse effect, that would be significant. The impact on the setting of Alvingham Lock and inverted syphon (NHLE 1063080) would be less, slightly altering the setting and how the asset is appreciated temporarily. This would have a small magnitude of impact on an asset of medium value, resulting in a minor adverse significance of effect which is not significant. The permanency of the infrastructure in the landscape would have a small magnitude of impact upon both the listed locks, resulting in minor adverse effects that would not be significant. The temporary and permanent impacts upon the non-designated Louth Navigation (MLI86587) would be small having a minor adverse effect on an asset of medium value which is not significant.

Non-designated Heritage Assets

- 5.7.21 Of the total 466 non-designated heritage assets identified within the draft Order Limits and 1 km Section 2 Study Area, the preliminary assessment has identified one asset that may experience temporary or permanent significant effects.
- 5.7.22 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 2 Chapter 13 Summary** and the non-significant effects summarised in **PEI Report Volume 3 Part B Section 2 Appendix 5B Preliminary Summary of Non-Significant effects**.

Non-designated Assets within the draft Order Limits

- 5.7.23 The preliminary assessment has identified a single non-designated heritage asset within or extending into the draft Order Limits which has been assessed as potentially experiencing a significant effect as a result of the construction or operation of the Project.
- 5.7.24 RAF Manby (MLI43396) is an asset of medium value and extends within the draft Order Limits. RAF Manby was opened in 1937 as an armament and RAF training school. Many structures related to the airfield survive within the asset, including a

number of grade II listed buildings assessed separately, with several demolished ancillary structures and runways surviving as earthworks. The setting of the asset is defined as the 20th century agricultural and urban landscape within which it is situated, including the wide and open views of the skyline for the take-off and landing approaches to the airfield, and any nearby Second World War structures or assets. The Project will result in the introduction of proposed new pylons and associated overhead line infrastructure (notably between proposed pylons GL85 to GL97), into the setting of the asset towards the west and south west of the airfields runways. The topsoil stripping and groundworks associated with the construction of the construction access haul road, the working area for proposed pylons GL91 and GL92, mitigation planting and associated drainage basins have the potential to remove any surviving buried remains associated with the airfield within their footprint. This is assessed as a small magnitude of impact, resulting in a permanent minor adverse effect which would not be significant. Additional mitigation comprising a programme of archaeological investigation and recording, would reduce this to a permanent negligible adverse effect, which would not be significant. Construction of the Project may temporarily alter the setting of this medium value heritage asset through construction traffic, noise and plant movement to the west of the asset. These temporary impacts would have a medium magnitude of impact resulting in a moderate adverse effect which would be significant. Permanent changes resulting in a medium magnitude of impact, arising from the presence of proposed pylons and overhead line infrastructure, on this heritage asset of medium value would, result in a moderate adverse effect which is significant.

Operation

- 5.7.25 Impacts during the operation of the Project that may affect heritage assets would be limited to any restrictions on accessibility to heritage assets.
- 5.7.26 In accordance with the PINS Scoping Response (Ref 5; 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.
- 5.7.27 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

- 5.7.28 For completeness, **Table 5.6** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Historic Environment effects.

Construction

Designated Heritage Assets

- 5.7.29 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 2 Appendix 5B Preliminary Summary of Likely Non-Significant effects**.

Scheduled monuments within the 3 km Section 2 Study Area

- 5.7.30 Civil War earthwork fort 350 m north-east of Walk Farm (NHLE 1007735), is located approximately 1.6 km west of the draft Order Limits, with the monument comprising a 17th century Civil War earthwork fort. The fort is comprised of a rectangular shaped rampart with four bastions at each corner. A second rampart encloses the internal rampart, with a waterlogged external ditch, 8 m wide and up to 2 m deep surrounding the fort. The setting of the fort is the wider agricultural landscape, the nearby roads and the settlements that the fort would have overlooked. The asset is located on an area of higher ground although views eastward are partially screened by existing vegetation and belts of trees. Whilst the Project does not form part of the immediate setting of the asset and is not in a direct area for which the fort was built to monitor, the Project is located within the wider agricultural setting of the asset as an area from which it would have defended. Given the distance of the asset from the draft Order Limits and intervening screening it is unlikely that there would be any temporary impacts to the setting of the monument arising from construction. This would result in no change to the asset and a neutral effect which would not be significant. Permanent changes to the setting of the monument arising from the presence of proposed new pylons and overhead line infrastructure to the east of the monument would be a negligible impact, resulting in a minor adverse effect which is not significant.
- 5.7.31 The scheduled monument, Louth Park Abbey (NHLE 1005002), is located to the east of Louth and south-west of the Louth Canal/River Lud, approximately 560 m west of the draft Order Limits and 860 m west of the proposed pylons and overhead line. Situated approximately in the centre of the scheduled monument, on slightly elevated ground, are the grade I listed Louth Abbey Ruins (NHLE 1063050). Both designated assets are located within the larger non-designated asset, Louth Park Abbey (MLI43579), which extends further to the north-west and south-east. Founded in 1139 AD, the site represents the first colonisation from Fountains Abbey in Yorkshire which was the first Cistercian Foundation in the country. The land was provided by Bishop Alexander of Lincoln in his parkland near Louth. Water was supplied to the Abbey via a channel known as Monk's Dyke (MLI41384) which extends approximately three kilometres to the west sourced from Aswell and St Helen's Springs, which fed into a water management system around the Abbey and fishponds. The built ruins of the once substantial Abbey comprise remaining fragments of the north and south walls of the chancel, dating to the late 12th century, with earthworks and buried remains extant across the site. The abbey prospered through the wool trade with summer grazing for sheep extending to the coastal marshlands, which benefitted the town of Louth contributing to its expansion. The immediate setting of the monument and listed abbey remains makes a strong contribution to their high value in respect of their direct historic associations and relationship, set within an enclosed, secluded area bounded by dense mature trees and hedges to the north, east and south. Their wider setting includes their historical association with the non-designated Louth Park Abbey (MLI43579), Monk's Dyke (MLI41384) and the non-designated asset (MLI125478) recording a probable late medieval field system and enclosures which may be associated with the Abbey to the immediate south. The parishes of Louth and Keddington also form part of the wider

setting of the Abbey heritage assets, including the land within the draft Order Limits. Construction of the Project may temporarily alter the setting of this high value heritage asset through construction traffic and noise, though intervisibility with the construction activities would be very limited due to the density of the screening surrounding the Abbey site. These temporary impacts would hardly affect the setting or value of the assets, with no real change in the ability to understand or appreciate them. This would have a negligible magnitude of impact which on the two designated assets of high value would have a minor adverse effect and on the non-designated assets of low value would have a negligible adverse effect, which are not significant. The permanency of the infrastructure in the landscape with the proposed pylons GL80 – GL84 and the overhead line would also have a negligible magnitude of impact on the setting resulting in a minor adverse effect for the two high value designated assets and a negligible adverse effect for the non-designated assets, which is not significant.

- 5.7.32 The Manor moated site and fishpond complex (NHLE 1019979) is located approximately 2.1 km west of the draft Order Limits. The monument is comprised of a moated island linked to a series of three fishponds situated immediately east of the moat. The moated island measures approximately 100 m by 80 m, and contains internal divisions, including a rectangular enclosure which is likely the remains of the manor house, marked by a bank and ditch at the north western corner of the island. The setting of the monument is the wider medieval agricultural landscape in which it is situated. This includes the earthworks and buried archaeological remains of the medieval settlement of Ludborough (MLI43161), and the surrounding agricultural fields that would have supported the village which are evidenced by the remains of medieval ridge and furrow (MLI125503). The Project is located within the wider agricultural landscape of the monument. Views towards the open agricultural landscape east of the monument towards the Project are screened by existing mature hedgerows and tree planting, particularly along the A16 Ludborough By-pass. Given the distance of the asset from the draft Order Limits and intervening screening it is unlikely that there would be any temporary impacts to the setting of the monument arising from construction. This would result in no change to the asset and a neutral effect which would not be significant. Permanent changes to the setting of the monument arising from views of proposed new pylons and overhead line infrastructure against the skyline would be a negligible adverse impact, resulting in a minor adverse effect which would not be significant.

Conservation Areas Within the 3 km Section 2 Study Area

- 5.7.33 Cottagers Plot Conservation Area is located approximately 320 m east of the proposed alignment. The conservation area consists of a number of properties, gardens and plots either side of a lane recorded on 18th and 19th century mapping. The current layout retains its historic character, with field boundaries retained and post-medieval buildings extant. The buildings are mostly two storey, brick buildings with tile roofs, built alongside the lane. The character of the conservation area is defined by the lane and the buildings along it with the green spaces associated with the properties to the east and west. The wider setting of the conservation area includes the agricultural fields to the south which contribute to the historic landscape character framing the rural location of this small conservation area. Mature trees in the south west of the conservation area screen views into and out from this asset across the landscape. Construction activities, including the proposed compound near proposed pylon GL12, about 400 m to the south-west, and stringing positions at proposed pylon GL14, approximately 710 m to the south, may give rise to a small

magnitude of impact which, on an asset of medium value, would have a minor significance of effect which is not significant. The permanent addition of the proposed pylons in the landscape would have a negligible magnitude of impact resulting in a negligible adverse effect upon the conservation area which is not significant.

Listed Buildings or Structures Within the 3 km Section 2 Study Area

- 5.7.34 There are two listed buildings in the village of Bradley which may be affected by the Project. The most notable is the grade II* listed Church of St George (NHLE 1346948) located approximately 980 m to the north-east of proposed pylon GL14. The immediate setting of the church includes its surrounding grounds and position in the village. The church is heavily screened by mature trees and vegetation with limited intervisibility across the wider landscape, although Bradley Parish which it serves extends across the proposed alignment which is within the wider setting of the church. There would be temporary setting changes during construction due to increased noise and traffic associated with the construction of the Project. This would have a negligible magnitude of impact on this asset of high value, resulting in a temporary minor adverse significance of effect for the high value grade II* listed Church of St George (NHLE 1346948) which is not significant. The permanency of the infrastructure with proposed pylons and overhead line within the wider setting of the church would have little change to the setting or how the church is understood or appreciated. This would have a negligible impact resulting in a minor adverse effect that is not significant. The grade II listed Manor House (NHLE 1346949) is located approximately 870 m north east of proposed pylon GL14. The immediate setting of the house includes its grounds and the surrounding rural countryside that is shown to be associated with the Manor House in the 1839 tithe apportionment. This comprises land parcels to the west of the Manor House, including land within the draft Order Limits such as proposed pylon GL14 and its associated stringing position. The grounds of the house are bordered by a band of mature trees to the south and west however, this historic association between the Manor House and land within the draft Order Limits would result in a temporary setting change due to increased noise and traffic during the construction of the Project. This would have a negligible magnitude of impact on an asset of medium value, resulting in a negligible adverse significance of effect which is not significant. Proposed pylon GL14 would be located within the land historically associated with the Manor House and therefore there is potential for the Project to permanently alter the setting of the Manor House for the duration of the Project, although this would hardly affect its value or how it is experienced or understood. This would result in a negligible magnitude of impact on an asset of medium value, resulting in a negligible adverse effect which is not significant.
- 5.7.35 The grade I listed Church of Saint Helen (NHLE 1103486) is located in the settlement of Barnoldby le Beck, approximately 330 m south west of the draft Order Limits and approximately 830 m south west of proposed pylon GL21. The parish church has medieval origins and is located within a churchyard surrounded by mature trees. Its setting is informed by its location within the village and historic relationship with the settlement but has been diminished by modern housing development within close proximity. Temporary construction activities have the potential to temporarily impact the setting of the church through noise, dust and traffic movement. This would have a temporary negligible magnitude of impact which would result in a minor adverse significance of effect to this high value asset, which is not significant. In respect of the proposed pylons GL18 – GL25 and associated overhead line, these fall within the parish which the church serves which forms part of its wider setting although the change would have little effect on the asset's value or how it is understood and

appreciated. The impact would be negligible resulting in a minor adverse effect which is not significant.

- 5.7.36 Also located within the settlement of Barnoldby le Beck is the grade II listed Huntsman's Obelisk and Railed Enclosure approximately 30 m north east of the Church of Saint Helen (NHLE 1346946), located approximately 390 m south west of the draft Order Limits. The monument was erected in 1861 as a memorial to William Smith, Huntsman to the Earl of Yarborough, and stands at approximately four metres in height. It is located within a square enclosure with cast iron railings overlooking the surrounding rural countryside. The setting of the obelisk is defined by its location within the settlement of Barnoldby le Beck and the rural countryside to the north east of the asset. Construction activities have the potential to temporarily impact upon the setting of the obelisk through noise, dust and traffic movement. This would have a temporary negligible magnitude of impact which would result in a negligible adverse effect which is not significant. The permanency of the new infrastructure in the landscape would not result in a change to the setting of the obelisk and would therefore result in a neutral effect which is not significant.
- 5.7.37 The grade II* listed Waltham Windmill (NHLE 1161256) is located approximately 840 m north of the draft Order Limits. The building is a tower mill, built in 1880, of six storeys with original iron casements and a wooden ogee cap with ball finial, fantail and six sails. The mill is situated at the southern end of Waltham, overlooking the agricultural fields to the south. The land within the draft Order Limits forms part of the wider agricultural setting of the windmill. Views of the windmill from the south from the approach roads to Waltham, along Waltham Road and Cheapside as well as Waithe Lane to the south of the village, are limited due to the topography, which rises in the fields to the south of the mill and from intervening trees bordering the road. Due to this, the presence of the Project to the south, including proposed pylons GL28 and GL29, and temporary construction activities including noise, lighting and traffic movement, in any views of the windmill within the wider landscape may be altered but these are limited by the screening to the south of the asset. As such, there would be a negligible magnitude of impact on an asset of high value, resulting in both a permanent and temporary minor adverse effect, which is not significant.
- 5.7.38 The Church of St Helen (NHLE 1103490) is located within the settlement of Brigsley and approximately 140 m south west of the draft Order Limits. This grade II* listed church has origins in the medieval period with later alterations. Its setting is informed by its historic relationship with its church yard and within the rural settlement of Brigsley, with its wider setting including the parish of Brigsley which it serves and within which the Project's proposed alignment falls. The temporary construction activities have the potential to temporarily impact the setting of this church through noise, dust and traffic movement from the proposed construction trackway located approximately 140 m to the north east. This would have a temporary negligible magnitude of impact on the church which would hardly affect its value or how it is appreciated or understood. This would result in a minor adverse effect which is not significant. There would be a negligible impact upon the wider setting of the church from the permanency of the infrastructure within its parish, with the proposed pylon GL28 located approximately 570 m to the north east. This would hardly alter the setting of the church or how it is appreciated and understood, resulting in a minor adverse effect that is not significant.
- 5.7.39 The grade II* listed Church of St Nicholas (NHLE 1063111) is located in the hamlet of Grainsby, approximately 480 m south west of a proposed construction compound. The grade II listed Old Rectory (NHLE 1359936) is located just to the west of the

church. Their setting is their immediate surroundings and historic relationship and proximity to one another which includes the mature trees in their grounds providing a secluded setting to the east, south and west. To the north, there may be glimpsed views and intervisibility with the church across open fields. The permanency of the Project in the landscape would not affect their setting as the proposed alignment does not fall within the parish which the church serves. However, the construction works including the compound area and bellmouth to allow construction traffic movements do fall within the church parish. This would temporarily alter how these assets are experienced having a temporary negligible magnitude of impact on assets of high and medium value, with a resultant minor adverse significance of effect for the high value asset and negligible adverse significance of effect for the medium value asset, which are not significant. The introduction of the Project in the landscape would result in no change to the setting of the assets, resulting in a neutral effect that is not significant.

- 5.7.40 Church of St Mary (NHLE 1063109) is a grade II* listed building within the village of Covenham St Mary, located 560 m from the draft Order Limits. The church dates to the 14th century and includes a two stage chalk tower with plinth, parapet and pinnacles which faces west. The church is bounded by mature trees and hedges which are less dense to the west across the lane and glimpses of the tower may be possible across fields though possibly seasonally dependent. The setting of the church includes its position and historic relationship with the settlement, with its wider setting extending to the parish of Covenham St Mary which the proposed alignment crosses, extending from proposed pylons GL63 – GL65. The construction activities would have a negligible magnitude of impact on the setting of the church hardly affecting how it is understood or appreciated. On an asset of high value, this would result in a minor adverse effect that would not be significant. The permanency of the infrastructure in the landscape with proposed pylons and associated overhead line would also have a negligible magnitude of impact resulting in a minor adverse effect that would not be significant.
- 5.7.41 Westfield House (NHLE 1168234) is a grade II listed building located to the south west of the settlement of Yarburgh, approximately 170 m south of the draft Order Limits and approximately 690 m north east of proposed pylon GL69. The house was constructed in approximately 1830 and forms a group with its grade II listed Coach House (NHLE 1359966) which is contemporary with the house and located within the grounds, slightly to the north. The principal elevation of the house appears to be facing south with fenestration affording views over the surrounding countryside which contributes to its setting. The house is set within a garden bounded by mature trees on its northern and eastern perimeters with additional trees planted to the west of the house. The temporary construction activities, including noise, dust and traffic movement may have a negligible magnitude of impact on the setting of these heritage assets, which would result in a negligible adverse effect which is not significant. The permanency of the new infrastructure in the landscape would not result in a change to the setting of Westfield House (NHLE 1168234) or the Coach House (NHLE 1359966), with a resultant neutral effect which would not be significant.
- 5.7.42 The grade I listed Church of St John the Baptist (NHLE 1063089), Yarburgh, is located approximately 900 m to the north-east of the nearest proposed pylons, GL68 and GL69. The proposed alignment of the Project falls within the parish of Yarburgh which the church serves and which forms its wider setting. The church is surrounded by mature trees, situated in the centre of the settlement accessed via footpaths off the roads. An extant historic footpath, shown on the 1889 OS map, extends to Main Road across fields from the south-west with the footpath continuing across the road

to the church. This footpath extends within the draft Order Limits near proposed pylon GL70. The construction activities will alter temporarily the wider setting of the church but these will hardly affect how the asset is understood or appreciated. This would have a negligible magnitude of impact, on an asset of high value, resulting in a temporary minor adverse effect which is not significant. The introduction of the infrastructure into the landscape would result in a permanent negligible magnitude of impact with a negligible adverse effect, which is not significant.

- 5.7.43 The grade I listed Church of St Mary (NHLE 1261895) and Church of St Adelwold (NHLE 1063076) are located to the east of the settlement of Alvingham, approximately 650 m east of the draft Order Limits and 1.1 km east of the proposed pylons and overhead line. Both designated assets are located within the larger non-designated asset of The Priory of St Mary at Alvingham (MLI41255) which also encompasses the grade II* Watermill (NHLE 1063077) and associated grade II Mill Owners House (NHLE 1253253), located towards the north of the Priory, and the grade II Abbey Farmhouse and Garden Wall (NHLE 1063075), located near to the centre of the Priory. Founded as a double house for both monks and nuns between 1148 and 1154 by Hugh de Scotney, or one of his tenants, the Priory site is now marked by mounds and moats to the west of the churches. By 1155, tithes and customary offerings of St Mary's (NHLE 1261895), St Adelwold's (NHLE 1063076) and St Leonard's (NHLE 1309123) churches were made out to the Priory. By this time the convent also held lands in Alvingham, Cockerington, and Calthorpe and by 1251 it held granges at Alvingham, Cockerington, Grainthorpe, Keddington, Newton, Cabourne, Coningsby and Swinfleet. Although its landholdings span over much of north-east Lincolnshire, the majority of the Priory's property was located to the east of Louth. The Church of St Mary (NHLE 1261895) is the parish church of North Cockerington, although it was originally the 11th century chapel for the Priory (MLI41255). The Church of St Adlewold (NHLE 1063076) was built on the site of a Saxon Church of the same dedication and whilst little remains of the Norman fabric, it has retained its 13th century west tower. The church underwent major restoration work in the 19th and 20th centuries. The Watermill (NHLE 1063077) stands on the site of an earlier water mill that was given to the Priory in 1155 which provided a source of income to the Priory. The immediate setting of the grade I churches and grade II* watermill make a strong contribution to their high value and the immediate setting of the non-designated Priory. The setting of the grade II Mill Owners House and Abbey Farmhouse make a strong contribution to their medium value in respect of their historic associations and relationship with the ecclesiastical assets, which despite some modern agricultural structures located between the Watermill and the churches, has remained relatively intact although the large modern barns have diminished the setting of the heritage assets. The assets wider setting includes their historical association with the non-designated Settlement of Alvingham (MLI41254), which has been assessed separately, and the known association with the parishes of Alvingham, North Cockerington, South Cockerington, and Keddington which include land within the draft Order Limits. Construction of the Project may temporarily alter the setting of these high and medium value heritage assets due to construction traffic, noise and intervisibility with the construction activities, although this would be limited due to the density of screening and the intervening structures within the settlement of Alvingham. These temporary impacts would alter the setting but would have little effect on the assets value with no real change on how they are understood or appreciated. This would have a negligible magnitude of impact, which on assets of high value would have a minor adverse effect which is not significant. On the assets of medium value, this would have a negligible adverse effect, which is not significant. The permanency of the infrastructure in the landscape, with the proposed pylons

GL72 – GL77 and the overhead line, would have a negligible magnitude of impact on the setting, resulting in a minor adverse effect for the high value designated assets and a negligible adverse effect for the designated grade II and non-designated heritage assets, which is not significant.

- 5.7.44 The village of South Cockerington includes the grade I listed Church of St Leonard (NHLE 1309123), located approximately 600 m north west of the draft Order Limits and 1.3 km from the proposed pylons, GL84 and GL85, to the west. The church dates to the early 14th century and includes a tall west tower of perpendicular style comprising three stages with pinnacles. Its churchyard is a non-designated asset (MLI98598) which forms the church's immediate setting, with mature trees bounding the churchyard with a wooded area to the south east. To the west, the church tower is visible across the surrounding landscape although there are farm buildings (MLI117805) opposite with large modern barns to the north-west which have diminished the setting of the church. The wider setting of the church includes its historic relationship with the medieval Settlement of South Cockerington (MLI43243) which dates to the Anglo-Saxon period. The church's wider setting includes its historic relationship with The Priory of St Mary at Alvingham (MLI41255) and the parish of South Cockerington where the proposed pylons GL82-GL85 would be located, and the overhead line would cross. Temporary construction activities and the permanency of the infrastructure in the landscape would alter the setting of the church but this would have little effect upon its value with no real change on how it is understood or appreciated. These would have negligible magnitude of impacts, resulting in minor adverse effects on an asset of high value which is not significant.
- 5.7.45 The grade II* listed Church of St Andrew (NHLE 1359976) in Stewton is located approximately 1 km to the west of the nearest proposed pylon, GL86. The church has origins dating to the Norman period in the 11th century but also has evidence for Saxon work. Later modifications include the 19th century gable bellcote. The immediate setting of the church consists of the surrounding churchyard bounded by trees to the west and south and its historic relationship with the settlement of Stewton, including the medieval Shrunken Village Remains of Stewton (MLI88733). The parish of Stewton, which the church serves, extends to land which the proposed alignment crosses including GL86-GL89 forming part of the wider setting of the church. There is potential for a temporary setting change due to increased noise and traffic during construction of the Project, with possible intervisibility, including a proposed stringing position located at proposed pylon GL86. This would have a negligible magnitude of impact on an asset of high value, resulting in a temporary minor adverse significance of effect, which is not significant. The introduction of the Project infrastructure in the landscape would alter the wider setting of the asset but this would have no real change on how the church is understood or experienced. This would have a negligible magnitude of impact, resulting in a minor adverse effect which is not significant.
- 5.7.46 The former RAF Manby site includes a group of grade II listed buildings, which were constructed during the 1930s to the design of Air Ministry architect, A. Bulloch, located approximately 1.2 km to the north-east of the draft Order Limits. The buildings include Guy Gibson Hall (former Station Headquarters) (NHLE 1392630), Beech Grove Hall (former Officers' Mess and Quarters) (NHLE 1392627), The Charterhouse (former Sergeants' Mess and Quarters) (NHLE 1392629), Tedder Hall (former Instructional Building) (NHLE 1392624), Centurion House, Buildings 21 and 21A (Dining Room and Institute) (NHLE 1392628) and seven barrack blocks (NHLE 1392626; 1392625). Noted as a key aviation site representing one of the most complete and architecturally unified of the first generation (Scheme A) RAF

expansion stations, the buildings are located within the wider RAF Manby site which is a non-designated asset (MLI43396) and assessed separately. The value of the buildings is derived from their group value, historic relationship, proximity and architectural design which comprises their immediate setting. Their wider setting includes the RAF site and land which the proposed alignment crosses which would include the proposed pylons GL90 and GL91 at the RAF site's western extent. The former airfield and associated views with the skyline make a substantial contribution to the setting of the associated listed RAF buildings, although views directly westwards from the listed buildings may be restricted by other buildings and trees. Temporary construction activities, with possible intervisibility of the works, along with construction noise, lighting and traffic would slightly alter the assets wider setting and have a small magnitude of impact, resulting in a temporary minor adverse effect which is not significant. The addition of the modern infrastructure into the skyline of the former airfield to the south-west may affect views of the skyline and diminish the historic airfield setting of the listed buildings, having a small magnitude of impact. On assets of medium value, this would result in a minor adverse effect which is not significant.

- 5.7.47 The grade II listed Watermill and wheel at Little Carlton Mill House (NHLE 1063021) is located approximately 370 m north east of the draft Order Limits. The setting of the watermill is formed by its relationship with the Beck watercourse and surrounding rural countryside. Construction works including stringing positions and the construction access haul road would have a small magnitude of impact on an asset of medium value, resulting in a temporary minor significance of effect which is not significant. The permanency of the infrastructure in the landscape would be restricted by intervening vegetation and the presence of the non-designated farmstead The Firs (MLI118201), although proposed pylon GL98 may be visible to the south. This would have a negligible magnitude of impact resulting in a negligible adverse effect, which is not significant.
- 5.7.48 The Hall (NHLE 1062987) is a grade II listed building to the north-east of the hamlet of South Reston and is located approximately 20 m east of the draft Order Limits, with the proposed infrastructure within the proposed alignment approximately 450 m to the north-east. The Hall is a farmhouse dating to the late 17th century, located within the non-designated historic parkland (MLI92241) and forms a group with a number of non-designated farm buildings including a Stable Range (MLI126986) and a complex of outbuildings (MLI126987) which are curtilage listed buildings. The scheduled monument, Moated Site immediately west of Hall Farm (NHLE 1019070), is located opposite and is assessed separately. The principal elevation of the Hall (NHLE 1062987) faces west, with gardens to the rear bordered by mature planting. A number of large modern sheds are situated to the north-east of the farm complex which have diminished the immediate setting of the farmstead. Construction activities, including noise and traffic movement along with a construction compound approximately 910 m to the south-east, would have a small magnitude of impact slightly altering the setting of the medium value farmstead and how it is understood and appreciated. This would result in a temporary minor adverse effect which would not be significant. The overhead line and nearest proposed pylons, GL103 and GL104, would be located approximately 500 m to the north-east of the group of heritage assets within the wider agricultural landscape that forms part of their setting. Intervisibility with the presence of new infrastructure in the landscape would be limited due to screening by the modern farm buildings and vegetation, with little effect upon the wider setting of the assets. The permanency of the new infrastructure in the

landscape would have a negligible magnitude of impact, resulting in a negligible adverse effect which would not be significant.

- 5.7.49 Greenways (NHLE 1360011) is a grade II listed building located approximately 220 m east of the draft Order Limits. This medium value asset was formerly a rectory, constructed in 1834, that has since been converted into a house. The tithe map of 1839 apportionment shows the rectory to be under the ownership of Reverend Glebe, along with associated land parcels to the north east, The grade II listed Church of St Margaret (NHLE 1308600) to the south east was also under the ownership of the Reverend in 1839, which forms part of the wider setting of the listed building within the parish of Withern with Stain which the proposed alignment crosses. The property is set back from the road within a landscaped garden which includes dense screening by mature trees restricting views towards and from the property in the surrounding landscape. The proximity of temporary construction activities, including noise, dust and traffic movement, would alter the setting of the asset but would have no real change on how it is understood or appreciated. This would have a negligible magnitude of impact, resulting in a negligible adverse effect which would not be significant. The permanency of the new infrastructure in the landscape would alter the setting of the building due to the presence of the proposed pylon GL106 and the overhead line in the landscape. This would have a negligible magnitude of impact, resulting in a negligible adverse effect that would not be significant.
- 5.7.50 Aby Grange Cottage (NHLE 1359712) is a grade II listed building located approximately 50 m north of the draft Order Limits and approximately 330 m west of proposed pylon GL115. The cottage was constructed in the 19th century and the first edition Ordnance Survey map shows the cottage to be set within a plot of land containing outbuildings, a moat and the Grange Plantation. A number of modern agricultural sheds have been constructed to the south of the cottage and its boundary includes areas of dense planting to the north east and south west. The cottage's wider setting extends to the surrounding agricultural landscape with the cottage benefiting from views to the south west from its principal elevation. The temporary construction activities, including noise, dust, traffic movement and construction access haul road and a stringing position located approximately 540 m south east, would have a negligible magnitude of impact on the setting of the cottage. This would result in a negligible adverse effect which would not be significant. The permanency of the new infrastructure in the landscape would have a negligible magnitude of impact, resulting in a negligible adverse effect which would not be significant.

High Value Designated Heritage Assets within the 3 - 5 km Section 2 Study Area

- 5.7.51 There are 13 scheduled monuments, three grade I listed buildings and 17 grade II* listed buildings identified within the 3-5 km Section 2 Study Area none of which are considered likely to experience significant effects.
- 5.7.52 The Deserted medieval village of Beesby (NHLE 1003553) is located approximately 3.2 km west of the draft Order Limits. The monument comprises ridge and furrow agricultural earthworks, foundations for buildings, toft and a hollow way. The setting of the monument is defined as the wider medieval agricultural landscape in which it is situated, the nearby medieval settlements of Deserted village of North Cadeby (NHLE 1003611), Grainsby (MLI41222), and North Thoresby (MLI88927). The Project lies within the wider agricultural landscape of the monument, however, due to the distance and intervening hedgerows, incidental views of the Project from the monument would be limited. Construction of the Project is not considered likely to

result in temporary impacts to the setting of the scheduled monument. This would result in no change to the asset and a neutral effect which would not be significant. Construction of the Project will introduce permanent changes to the setting of this high value scheduled monument, arising from the presence of the proposed pylons (GL47 - GL50) and overhead line infrastructure to the east of the monument. This impact would have a negligible magnitude of impact, resulting in a minor adverse effect which would not be significant.

- 5.7.53 The Deserted medieval village of North Cadeby (NHLE 1003611) is located approximately 3.8 km west of the draft Order Limits. The monument comprises earthworks that include a pattern of regularly spaced roads, raised house platforms, ridge and furrow and the likely foundations of a church. The setting of the monument is defined as the wider medieval agricultural landscape in which it is situated, the nearby medieval settlements, such as The Deserted medieval village of Beesby (NHLE 1003553), Grainsby (MLI41222) and North Thoresby (MLI88927). The Project lies within the wider agricultural landscape of the monument, however, due to the distance and intervening vegetation, views between the Project and the monument are limited. Construction of the Project is not considered likely to result in temporary impacts to the setting of the scheduled monument. This would result in no change to the setting or value of the asset having a neutral effect which would not be significant. Construction of the Project may introduce permanent changes to the setting of this high value scheduled monument, arising from views of the proposed pylons (GL47 - GL50) and overhead line infrastructure to the north-east and east of the monument, which would have a negligible magnitude of impact resulting in a minor adverse effect which would not be significant.

High Value Designated Assets Beyond the 5 km Section 2 Study Area

- 5.7.54 A group of Neolithic funerary barrow monuments are located beyond the 5 km Section 2 Study Area along the higher, ridge line along the eastern edge of the Lincolnshire Wolds, west of the draft Order Limits.
- 5.7.55 The group of seven funerary barrows include Ash Holt Long Barrow (NHLE1013890), Neolithic long barrow 300 m north-west of Lake Farm (NHLE1016736), Long barrow in Valley Plantation (NHLE 1015874), Neolithic long barrow 380 m south-west of Thorganby House (NHLE 1020359), Cromwell's Grave, a Neolithic long barrow 300 m west of Hoe Hill Farm and associated mortuary enclosure 165 m south-west of Hoe Hill Farm (NHLE 1013885), Ash Hill long barrow in Swinhope Park (NHLE 1013886), and Neolithic long barrow, Iron Age hut circles and a Romano-British settlement, 380 m south-east of Swinhope Lodge (NHLE 1462756). These scheduled monuments are assets of high value and are located between 5.2 km and 6.4 km west of the draft Order Limits.
- 5.7.56 The barrows all date to the Neolithic period, and are a mixture of surviving extant mounds (Ash Holt Long Barrow (NHLE1013890 and Neolithic long barrow 300 m north-west of Lake Farm (NHLE1016736)), and buried archaeological remains, visible as cropmarks through aerial photography (Long barrow in Valley Plantation (NHLE 1015874, Neolithic long barrow 380 m south-west of Thorganby House (NHLE 1020359), and Neolithic long barrow, Iron Age hut circles and a Romano-British settlement, 380 m south-east of Swinhope Lodge (NHLE 1462756). All of the barrows extend from between 25 m and 32 m in length, and between 5 and 10 m in width. The extant mounds display a flat top to the mound, with a shallow slope. There is potential for burials to still be present within these monuments.

- 5.7.57 These funerary monuments form a distinct regional group known as the Lincolnshire Wolds long barrows, the setting of which includes the Waithe Beck Valley to the east, which the Project extends across and Neolithic funerary landscape along the edge for Wolds overlooking the valley. Whilst the setting of these monuments includes the Waithe Beck Valley, there are no views between these assets and the draft Order Limits, due to development of woodland and the undulating landscape which has screened the assets from the draft Order Limits.
- 5.7.58 Due to the lack of inter-visibility between the asset and Project and the distance from the draft Order Limits, construction of the Project is not considered likely to result in temporary impacts to the setting of the scheduled monument. This would result in no change to the setting or value this group of assets and a neutral effect which would not be significant.
- 5.7.59 Due to the lack of inter-visibility between the assets, the fact that the Project does not alter the interrelationships between the monuments and the funerary landscape in which they are located and the distance from the draft Order Limits, permanent changes to the setting of the monument arising from the presence of new overhead line infrastructure in the landscape would be negligible, resulting in a minor adverse effect which is not significant.

Non-designated Heritage Assets

- 5.7.60 The preliminary assessment has identified non-designated heritage assets within the draft Order Limits and the 1 km Section 2 Study Area that have the potential to experience temporary or permanent non-significant effects. A number of these heritage assets are described below with 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. For transparency the preliminary assessment for all non-designated heritage assets identified as experiencing likely non-significant effects is provided in **PEI Report Volume 3 Part B Section 2 Appendix 5B Preliminary Summary of Likely Non-Significant effects**.

Non-designated Assets Within the draft Order Limits

- 5.7.61 Stud Farm (MNL2176), which is no longer extant is a heritage asset of low value, recorded within the draft Order Limits. The layout of paddocks and stud farm buildings are shown on 19th and 20th century OS maps and include a former rectangular building, possibly stables, in close proximity to proposed pylon GL10. Topsoil stripping and groundworks associated with the installation of the working area for proposed pylon GL10, construction access haul road and associated SUDS drainage basin is assessed as a small magnitude of impact, resulting in a permanent negligible adverse effect, which would not be significant prior to the implementation of additional mitigation measures. Additional mitigation comprising a programme of archaeological investigation and recording, would offset the partial loss of any buried archaeological remains to a permanent negligible adverse effect, which would not be significant.
- 5.7.62 Possible late Medieval cropmark enclosure and boundary, Waithe (MLI88656) is an asset of medium value located within the draft Order limits. The asset is comprised of enclosures and linear field boundaries that have been identified on aerial photographs. The asset is comprised solely of buried archaeological remains with no extant earthworks visible above ground. Topsoil stripping and groundworks associated with, installation of the construction access haul road and associated

SUDS drainage, the working area for proposed pylon GL35, and areas included within the draft Order Limits for water vole mitigation and areas included for 3rd party utility diversions is assessed as a medium magnitude of impact, resulting in a permanent moderate adverse effect, which would be significant prior to the implementation of additional mitigation measures. Additional mitigation comprising a programme of archaeological investigation and recording, would reduce this to a permanent minor adverse effect, which would not be significant.

- 5.7.63 Waithe deserted medieval village (MLI41233) is a heritage asset of medium value and has been recorded extending across the draft Order Limits. Extant earthworks have been identified within the deserted medieval village in fields to the north of the Project which comprise several tofts, enclosures, ponds, a hollow way and a potential mill site. The asset is part of a wider medieval landscape, with nearby possible late medieval cropmark enclosure and boundary (MLI88656), and the shrunken medieval village of Grainsby (MLI41222) located close to the asset. Waithe House Park (MLI41237) is located partially within the extent of the asset. Topsoil stripping and groundworks associated with the installation of the construction access haul road, working area for proposed pylon GL38 and associated drainage have the potential to remove or truncate a small section of a possible medieval enclosure. This would have a small magnitude of impact resulting in a permanent minor adverse effect, which would not be significant prior to the implementation of additional mitigation measures. Additional mitigation comprising a programme of archaeological investigation and recording, would reduce this to a permanent negligible adverse effect, which would not be significant. In addition to potential physical impacts to the archaeological remains that comprise the asset, the Project is located within its setting. 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 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 pylons and overhead line infrastructure within the deserted medieval village and landscape to the east and west of the asset, and whilst the Project would result in the introduction of a new overhead line infrastructure into the setting of the asset, the relationship between the asset and the wider agricultural setting would still be legible and would still be able to be interpreted within the landscape. Therefore, the impact to the asset would be small, resulting in a minor adverse effect which is not significant.
- 5.7.64 Waithe House Park (MLI41237) is heritage asset of low value which extends across the draft Order Limits. The park is recorded on 19th and 20th century OS maps, although the former parkland trees and paths which formed the designed landscape have since been lost and the field ploughed. The former limits of the park do however survive within the modern agricultural landscape which forms the setting of the asset. The Project extends through the former parkland and its setting. Topsoil stripping and groundworks associated with the installation of the construction access haul road, working area for proposed pylon GL38 and associated drainage have the potential to truncate or disturb a small section of the former parkland. This would have a negligible magnitude of impact resulting in a permanent negligible adverse effect, which would not be significant. Construction of the Project would also alter the setting of the asset, however, the introduction of a new overhead line infrastructure into the setting of the asset, the relationship between the asset and the wider agricultural setting would still be legible and would still be able to be interpreted within the landscape. Temporary changes to the setting of the former parkland would arise from construction traffic, noise, plant movement and scaffolds. These temporary and

reversible impacts would have a small magnitude of impact and negligible 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 overhead line infrastructure within the former and surrounding rural landscape, resulting in a small magnitude of impact and a negligible adverse effect which is not significant.

- 5.7.65 Bowlings Park, Grainsby (MLI92236) is heritage asset of low value which extends into the draft Order Limits. The park is recorded on 19th and 20th century OS maps, although the southern boundary of the park and many of the former parkland trees, ponds and paths which formed the designed landscape have since been lost and the field ploughed for agriculture. The former limits of the park and three of the larger stands of trees do however survive within the modern agricultural landscape which forms the setting of the asset. The Project extends through the south west corner of the former parkland and its setting. Topsoil stripping and groundworks associated with the installation of the construction access haul road and associated drainage, the working area for proposed pylon GL44 and areas included within the draft Order Limits for possible habitat creation for Great Crested Newts have the potential to truncate or disturb a small section of the former parkland. This would have a negligible magnitude of impact resulting in a permanent negligible adverse effect, which would not be significant. Construction of the Project would also alter the setting of the asset, however, despite the introduction of a new overhead line infrastructure into the setting of the asset, the relationship between the surviving parkland features and the wider agricultural setting would still be legible and would still be able to be interpreted within the landscape. Temporary changes to the setting of the former parkland would arise from construction traffic, noise, plant movement and scaffolds. These temporary and reversible impacts would have a small magnitude of impact and negligible 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 overhead line infrastructure within the former and surrounding rural landscape, resulting in a small magnitude of impact and a negligible adverse effect which is not significant.
- 5.7.66 Probable Iron Age farmstead and field system cropmarks east of North Thoresby (MLI87670) is a heritage asset of medium value, with potential to contribute to regional research objectives, which has been recorded within the draft Order Limits. The asset has been identified through aerial photography, with a small farmstead and associated field system recorded. Topsoil stripping and groundworks associated with the construction of the construction access haul road, the working area for proposed pylon GL46, the SUDS drainage basin, and an area included within the draft Order Limits for woodland replacement mitigation planting is assessed as a medium magnitude of impact, resulting in a permanent moderate adverse effect, which would be significant prior to the implementation of additional mitigation measures. Additional mitigation comprising a programme of archaeological investigation and recording, would reduce this to a permanent minor adverse effect, which would not be significant.
- 5.7.67 The Settlement of Grimoldby (MLI88070) is an asset of medium value and is located partially within the draft Order Limits but lies approximately 1.8 km from proposed pylon GL86. Extant earthworks and buried remains have been identified through aerial photography and archaeological investigations, and comprise, tofts, crofts, a hollow way, ridge and furrow, ponds and boundary ditches. Archaeological investigations have been undertaken within the settlement between 1997 and 2016, and have identified medieval gullies, ditches, several ponds and earthworks that are likely to be medieval tofts. The asset is part of a wider medieval agricultural

landscape, with nearby ridge and furrow (MLI88045 and MLI88043), and the Shrunk settlement of Stewton (MLI88733) and the settlement of North Cockerington (MLI83365) located close to the asset. The Project is located within the setting of the asset with existing trees, vegetation and properties along Tinker Street providing some screening. Given the distance of the asset from the draft Order Limits and intervening vegetation it is unlikely that there would be any temporary impacts to the setting of the asset arising from construction of the Project. This would result in no change to the asset and a neutral 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 overhead line infrastructure in the landscape west of the medieval village. Whilst the Project would result in the introduction of overhead line infrastructure into partially screened, incidental views to the west, the relationship between the asset and its wider agricultural setting would remain legible and would still be able to be interpreted within the landscape. Therefore, the impact to the asset would be small, resulting in a minor adverse effect which is not significant.

- 5.7.68 Second World War Searchlight Battery, Eastfield Farm, Stewton (MLI98747) is an asset of low value, located within the draft Order Limits. The asset is comprised of buried archaeological remains relating to the searchlight battery. Aerial photography has identified several circular cropmarks which likely relate to this asset. Topsoil stripping and groundworks associated with installation of the construction access haul road and the working area for tower GL89 is assessed as a medium magnitude of impact, resulting in a permanent minor adverse effect, which would not be significant prior to the implementation of additional mitigation measures. Additional mitigation comprising a programme of archaeological investigation and recording, would reduce this to a permanent negligible adverse effect, which would not be significant.

Non-designated Assets Within the 1 km Section 2 Study Area

- 5.7.69 Pyewipe Farm (MNL117) is located approximately 50 m from the draft Order Limits. An earlier farmstead was demolished with the farm redeveloped in the 19th century. The farmhouse is the only surviving element of the post-medieval farm, a two storey building with principal fenestration to the south-west. Large modern barns are located to the north of the farmstead, forming part of the present farm plan. The setting of the farm is formed by the relationship between the farm buildings and the surrounding agricultural fields, including the land within the draft Order Limits. The removal of the outbuildings and addition of modern sheds has diminished the immediate historic setting of the farm. Proposed construction works would be undertaken to the west of the farm, including a stringing position and construction access haul road located approximately 150 m west of the farm. Three compounds within Section 1 are proposed between 380 m and 500 m to the north of the farm. This would result in temporary impacts including noise, light and traffic as well as possible intervisibility with the works. This would result in a change to the setting of the asset during construction activities which would have a medium magnitude of impact on an asset of low value, resulting in a minor adverse effect, which is not significant. The presence of proposed pylons GL5 and GL6 approximately 210 m north-west and 370 m south-west of the farm would partially diminish the wider agricultural setting of the farmhouse. Proposed pylon GL5 would be partially screened by the modern sheds to the north, although proposed pylon GL6 to the south-west would be visible from the farmhouse's principal fenestration. The permanency of the infrastructure in the landscape would have a small magnitude of impact on an asset of low value, slightly

altering its setting and ability to appreciate it. For an asset of low value, this would result in a negligible adverse effect which is not significant.

- 5.7.70 The Grange, Barnoldby le Beck (MNL1586) and Sunk Farm (MNL1585) (only the farmhouse survives), are both situated approximately 20 m from the draft Order Limits, either side of Waltham Road. The Grange farm to the south of the road consists of a farmhouse to the west and a range of outbuildings to the east, including modern sheds. The principal fenestration of the farmhouse is to the east and west elevations and there are views to the east across the agricultural fields. Sunk Farm, to the north of Waltham Road, comprises the surviving traditional farmhouse. Its grounds are bordered by mature hedges to the south, east and west, although there are views to the north across the fields. The setting of the farms are formed by the relationship between the farm buildings and the surrounding agricultural land, although the setting of Sunk Farm has been diminished by the removal of associated outbuildings and The Grange by the addition of modern sheds. The land within the draft Order Limits forms part of these agricultural settings. Proposed construction works include bellmouths to the west and east along Waltham Road to facilitate the movement of construction traffic that would go past both properties. This would result in temporary impacts including noise, light and traffic as well as intervisibility with the works. This would result in a noticeable change to the setting of the assets during construction activities which would have a medium impact on assets of low value, resulting in a minor adverse effect which is not significant. The overhead line would be visible within the views to the east of The Grange (GL23) and to the north of Sunk Farm (proposed pylon GL22), resulting in a visual intrusion partially diminishing the wider agricultural setting of the farmhouses. The permanency of the infrastructure in the landscape would have a small magnitude of impact slightly altering the setting and ability to appreciate the assets. On assets of low value, this would result in a negligible adverse effect which is not significant.
- 5.7.71 Holme Farm, Waithe (MLI117112) is a 19th century farmstead located approximately 240 m north-east of the draft Order Limits. The farm consists of a detached farmhouse to the west and a complex of working buildings to the east including modern sheds. The principal fenestration of the farmhouse is to the south, with views of the surrounding fields. The land within the draft Order Limits forms part of the agricultural setting and would be visible within these views, resulting in a visual intrusion. The proposed construction work would include the construction of the overhead line and a proposed stringing position approximately 560 m south-east of the farm. These construction activities would result in a temporary setting change of the farm due to increased noise, light and traffic as well as intervisibility with the works. The construction works would have a small magnitude of impact slightly altering the setting and ability to understand the asset. On an asset of low value, this would result in a negligible adverse effect which is not significant. The presence of the proposed pylons and overhead line within the landscape would also affect the setting of the farm, particularly to the south of the farm with proposed pylons GL43 – GL45 visible from the principal fenestration of the farmhouse. Views of proposed pylon GL43 would be partially screened by the proposed woodland replacement mitigation to the north of the proposed pylon. The presence of the infrastructure in the landscape would have a small magnitude of impact, slightly altering its setting and ability to understand the asset. On an asset of low value, this would result in a negligible adverse effect which is not significant.
- 5.7.72 Maranatha, Fulstow (MLI117081) is a 19th century farmstead located approximately 620 m east of the draft Order Limits. The farmhouse is located at the western end with working buildings to the east. The principal fenestration of the farmhouse is to

the west with views across the fields. The setting of the farm is formed by the relationship between the farm buildings and the surrounding agricultural fields and the land within the draft Order Limits forms part of this agricultural setting. The proposed construction works include a stringing position located approximately 630 m west of the farm, which would be visible within the views from the principal fenestration of the farmhouse. The works would result in a temporary setting change of the farmhouse due to increased noise and light. This change would have a small magnitude of impact altering the farmhouse's setting and ability to understand it. On an asset of low value, this would result in a negligible adverse effect which is not significant. The presence of the proposed pylons and overhead line introduced in the landscape would also alter the setting of the farmstead. Proposed pylon GL48 is proposed approximately 700 m south-west of the farm and would be visible in views from the principal fenestration of the farmhouse. The permanency of the infrastructure in the landscape would have a small magnitude of impact slightly altering the farmhouse's setting and ability to understand it. On an asset of low value, this would result in a negligible adverse effect which is not significant.

5.7.73 Top Farm, Fulstow (MLI117082) is a non-designated 19th century farmstead located approximately 420 m north-east of the draft Order Limits. The farm consists of a detached farmhouse to the east and a range of working buildings to the west, with the addition of modern sheds. The farm is approached by a drive to the east, lined with trees and there are mature trees and hedges around the northern boundary of the farm. The principal fenestration of the farmhouse is to the south-east and north-west with views over the surrounding agricultural fields, although views are partially screened by trees around the farmhouse. The setting of the farm is formed by the relationship between the farm buildings and the surrounding agricultural fields. The proposed pylons and overhead line would be approximately 630 m to the west of the farm, with the land within the draft Order Limits forming part of the wider agricultural setting of the farm. Proposed construction works would be undertaken to the west of the farm, including a construction access haul road and a stringing position located approximately 420 m west and 880 m north-west of the farm. This would result in temporary impacts including noise, light and traffic from the construction activities. This 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 effect which is not significant. The presence of proposed pylons GL48 and GL52 to the west and south-west of the farm would hardly alter the wider setting of the farm, with views being limited by screening from trees around the farmhouse. The permanency of the infrastructure in the landscape would have a negligible magnitude of impact, hardly affecting its setting or the ability to appreciate it. For an asset of low value, this would result in a negligible adverse effect which is not significant.

5.7.74 Monks Farm (MLI117799) is a 19th century farmstead located on Louth Road, South Cockerington approximately 190 m east of the draft Order Limits. The farm consists of a farmhouse to the west with outbuildings to the south and east including a large modern shed. The principal fenestration of the farmhouse is to the east and west, with views over the surrounding fields. The setting of the farm is formed by the relationship with the farm buildings and the surrounding agricultural fields, although this has been partially diminished by the addition of modern buildings within the farm complex. The proposed construction works to the west may alter the wider setting of the farm. A proposed stringing position is located approximately 300 m north-west of the farm and a bellmouth approximately 240 m west. These construction activities would lead to increased noise, light and traffic causing a slight temporary change to the setting of the farm. These construction works would have a small magnitude of

impact on an asset of low value, resulting in a negligible adverse effect which is not significant. The addition of the modern infrastructure may also slightly alter the wider setting of the farm. Proposed pylons GL80 and GL81 would be located approximately 440 m north-west and 280 m south-west of the farm and would be partially visible within views from the western fenestration of the farmhouse. This would have a small magnitude of impact, slightly altering the setting and ability to understand the asset. On an asset of low value, this would result in a negligible adverse effect which is not significant.

- 5.7.75 The village of Stewton includes a number of non-designated historic farmsteads. To the north of Stewton Lane is Northfield Farm (MLI118218), Manor Farm (MLI41315) and Lapwing Farm (MLI118216) and to the south is Willow Farm (MLI118218). The draft Order Limits extend along Stewton Lane into the village with the nearest proposed infrastructure within the proposed alignment, proposed pylons GL85-GL88 and overhead line, approximately 1 km and 1.2 km to the east. The farmsteads date at least to the early 19th century with the three to the north of the lane under the same ownership at the time of the 1840 tithe map which extended to land parcels to the east which the proposed alignment crosses. The farmsteads have experienced various redevelopment and are bounded by trees and hedges, with views possible to the east across the fields. The setting of the buildings comprises their relationship to the rural village and each other, as well as the surrounding agricultural fields. The proposed construction works may be visible in the views to the east, including a stringing position to the north-east of Manor Farm, proposed pylon working areas and the construction access haul road. These temporary works, with noise, traffic, dust and possible intervisibility with the construction activities, would have a negligible magnitude of impact that would hardly alter their setting or how the properties are understood or experienced. On assets of low value, this would result in a negligible adverse effect which is not significant. The introduction of the proposed pylons and overhead line into the landscape would alter the wider setting of the farmsteads but this would have no real change on how they are understood or appreciated with a negligible magnitude of impact. On assets of low value, this would result in negligible adverse effects which are not significant.
- 5.7.76 Eastfield House (MLI118220) is a 19th century farmstead located approximately 100 m west of the draft Order Limits, with the nearest proposed pylons GL88 and GL89 approximately 330 m to the east. The farmstead has been redeveloped with the traditional farmhouse surviving within landscaped grounds. The principal elevation of the farmhouse faces south-east with views across surrounding fields. The 1840 tithe apportionments show the fields to the east of the property, which the proposed alignment crosses, within the same ownership of the property and these fields form part of its wider setting. The construction works with noise, light, dust traffic and intervisibility with the construction activities would have a medium magnitude of impact creating a temporary noticeable change to the setting of the asset and how it is understood and appreciated. On an asset of low value this would result in a minor adverse effect which is not significant. The permanency of the infrastructure in the landscape would have a small impact, slightly altering the setting and ability to understand and appreciate the asset. On an asset of low value this would result in a negligible adverse effect, which is not significant.
- 5.7.77 The Firs, Little Carlton (MLI118201), is a 19th century farmstead located approximately 130 m north-east of the draft Order Limits. The farm is located in an isolated position to the south of Little Carlton, consisting of a farmhouse to the north and L-shaped plan outbuildings to the south. The principal fenestration of the farmhouse is to the north-east and south-west elevations, although views to the

south-west may be partially screened by the outbuildings. The proposed alignment within the draft Order Limits passes through the fields to the south of the farm which form part of the wider agricultural setting of the asset. A proposed stringing position is located approximately 170 m south-east of the farm and a proposed pylon working area approximately 160 m south-west of the farm. These works would cause an increase in noise, light and traffic within the rural setting of the farm and would have a medium impact on the low value asset, noticeably altering the setting and ability to understand the asset. This would have a minor adverse effect, which is not significant. The presence of the proposed pylons and overhead line in the landscape would slightly alter the wider setting of the farm, which may be partially screened from the farmhouse by the outbuildings. This would have a small magnitude of impact which, on an asset of low value, would result in a negligible adverse effect which is not significant.

- 5.7.78 Waingrove Farm (MLI117093), Fulstow is a 19th century farmstead located approximately 80 m west of the draft Order Limits. The farm complex consists of a farmhouse to the east and outbuildings to the west, as well as modern sheds to the north. The principal fenestration of the farmhouse is to the south-east overlooking the surrounding fields. The setting of the farm is formed by the relationship between the buildings and the associated agricultural fields, and the land within the draft Order Limits forms part of the agricultural setting. Proposed construction works include a stringing position approximately 240 m east of the farm. This would result in temporary impacts including noise, dust, light and traffic as well as possible intervisibility with the works. The construction works would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse effect, which is not significant. The proposed overhead line and proposed pylons GL54 and GL55 to the south-east of the farm would be visible from the principal fenestration of the farmhouse, although partially screened by vegetation around the farm. This would have a small magnitude of impact, slightly altering the building's setting and the ability to understand it. On an asset of low value, this would have a negligible adverse effect which is not significant.
- 5.7.79 Moated Grange (MLI117092), Fulstow is a 19th century farmstead located approximately 140 m east of the draft Order Limits. There has been a partial loss of historic buildings from the farm complex, with the addition of a modern farmhouse to the east and modern sheds to the west. The surviving historic buildings are single storey outbuildings. The setting of the farm is formed by the relationship between the farm buildings and the surrounding agricultural fields, although it has been partially diminished by the removal of historic buildings and addition of modern structures. The land within the draft Order Limits also forms part of the agricultural setting. The proposed construction works include the construction access haul road, bellmouth, string position and proposed pylon work area approximately 250 m west of the farm. This would result in temporary impacts including noise, dust, light and traffic as well as possible intervisibility with the works. The construction work would have a small magnitude of impact on an asset of low value, resulting in a negligible adverse effect, which is not significant. The presence of the overhead line and proposed pylon GL53 to the west of the farm may be visible and would alter the wider agricultural setting of the asset. The permanency of the infrastructure in the landscape would have a small magnitude of impact, slightly altering the setting of the farmhouse. On an asset of low value this would result in a negligible adverse effect, which is not significant.
- 5.7.80 Little Beck Farm (MLI117567) and Grove Farm (MLI117568), Yarburgh are located approximately 280 m south-west of the draft Order Limits. The farms are located to the north and south of Westfield Road and both have detached farmhouses and

outbuildings, with the addition of modern sheds to the east. The setting of the farms is formed by their relationship between the farm buildings and the surrounding agricultural fields, although it has been partially diminished by the removal of historic buildings and addition of modern structures. The land within the draft Order Limits also forms part of their wider agricultural setting although views are screened to the east by the modern sheds. The proposed construction works to the east of the farms include the construction access haul road, a proposed bellmouth and proposed pylon construction area approximately 260 m and 310 m east of the farms. This would result in temporary impacts including noise, light, dust and traffic. The construction work would have a small magnitude of impact on the setting of the assets of low value, resulting in a negligible adverse effect, which is not significant. The presence of the overhead line and proposed pylons GL70 and GL71 to the east of the farms may be visible and would alter the agricultural setting of the farmhouse, although views would be limited by the intervening sheds and mature hedges to the east. The permanency of the infrastructure in the landscape would have a negligible magnitude of impact, hardly altering the setting of the farmhouses. On assets of low value this would result in negligible adverse effects, which are not significant.

- 5.7.81 Southfield Farm, Fulstow (MLI117095) is a 19th century farmstead located approximately 10 m west of the draft Order Limits. The farmhouse lies at the southern end of the complex with modern sheds to the north. The principal fenestration of the farmhouse is to the north-west and south-east, the latter of which overlooks the surrounding fields. The setting of the farm is formed by the relationship between the farm buildings and the surrounding agricultural fields. The proposed construction works include the construction access haul road, proposed pylon working areas and bellmouths approximately 130 m east of the farm. This would result in temporary impacts including noise, dust, light and traffic as well as possible intervisibility with the works. Due to the proximity, these changes would result in a noticeable temporary change to the setting of the low value asset during the construction activities which would have a medium magnitude of impact, resulting in a minor adverse effect which is not significant. The proposed overhead line is located approximately 80 m east of the farm and the presence of proposed pylons GL57 to the north-east and GL58 to the south-east would alter the wider agricultural setting of the farm, the latter proposed pylon visible in views from the south-east elevation of the farmhouse. The permanency of the infrastructure in the landscape would have a small magnitude of impact, slightly affecting the setting and ability to understand the asset. On an asset of low value this would result in a negligible adverse effect, which is not significant.
- 5.7.82 Chequers Farm, Utterby (MLI117569) is a 19th century farmstead located approximately 30 m east of the draft Order Limits. The farm complex consists of multiple courtyards with various sheds and working buildings including large modern sheds. The setting of the farm is formed by the relationship between the buildings and the surrounding agricultural fields, although the farm has lost several of its historic structures, which has partially diminished its setting. The Project is aligned north to south east within the fields directly to the west of the farm, which forms part of the setting of the farm. The proposed construction works would be carried out close to the west of the farm, with a proposed stringing position and construction access track approximately 70 m west of the farm. This would result in temporary impacts including noise, dust, light and traffic as well as possible intervisibility with the works. Due to the proximity, these changes would result in a temporary noticeable change to the wider setting of the low value asset during the construction activities which would have a medium magnitude of impact, resulting in a minor

adverse effect which is not significant. The proposed overhead line and proposed pylons are located approximately 380 m south-west of the farm, aligned north-west to south-east. The position of proposed pylon GL60 is approximately 680 m west of the farm, and the presence of the modern infrastructure would alter the wider agricultural setting of the farm. The permanency of the infrastructure within the landscape would have a negligible impact hardly altering the setting and ability to understand the asset. On an asset of low value this would have a negligible adverse effect which is not significant.

- 5.7.83 An unnamed Farmstead (MLI117566) on Westfield Road in Yarburgh is located approximately 60 m east of the draft Order Limits. The farmhouse lies at the south-western end of the farm complex with single storey outbuildings to the north-east. The principal fenestration of the farmhouse is to the east and west, with views of the surrounding fields with views to the south and west screened by dense mature trees and hedges. The setting of the farm is formed by the relationship between the farm buildings and the surrounding agricultural fields. Two fields, either side of the farmstead, retain good surviving earthworks of ridge and furrow (MLI87846). The wider agricultural setting of the farm has been diminished due to the addition of a small solar farm located two fields to the west. The proposed construction works include a proposed pylon working area approximately 124 m west of the farm, a bellmouth for the construction access haul road approximately 54 m south-west of the farm on Westfield Road. This would result in temporary impacts including noise, dust, light and traffic as well as possible intervisibility with the works. Due to the proximity, these changes would result in a noticeable temporary change to the setting of the low value asset during the construction activities which would have a medium magnitude of impact, resulting in a minor adverse impact which is not significant. The introduction of the overhead line and proposed pylon GL70 into the landscape may be visible in views from the farmhouse to the west and south, though this would be seasonally dependent. The permanency of the infrastructure in the landscape would have a small magnitude of impact slightly altering the wider setting and ability to understand the asset. On an asset of low value this would result in a negligible adverse effect, which is not significant.
- 5.7.84 The historic parkland of Manor House, Laceby (MNL3155), is situated immediately to the east of the draft Order Limits to the south of the A46 Grimsby Road. The land parcel to the north of the road has been identified from historic research as belonging to the same parkland as that for MNL3154 associated with Little Laceby Farmhouse (NHLE 1161227), which is set out further in the narrative for that asset. The parkland is recorded on the First Edition OS map of 1888. In the field west of the Manor House, possible earthwork remains of ridge and furrow cultivation survive with elements of the historic tree planting. The setting of the parkland encompasses its interrelationship with Manor House and the surrounding agrarian landscape and historic parkland at Little Laceby Farmhouse (MNL3154) to the north of the road. The draft Order Limits extend partially through the heritage asset at its south west extent which the overhead line would cross. Construction of the Project would noticeably alter the setting of this low value heritage asset through construction traffic, noise and plant movement, with a compound located to its immediate south. These temporary impacts would have a medium magnitude and minor adverse effect which would not be significant. Permanent and noticeable changes of medium magnitude, arising from the presence of the proposed pylons and overhead line infrastructure within the setting of the asset would result in a minor adverse effect which would not be significant.

- 5.7.85 RAF Waltham (MLI88745) is an asset of medium value located approximately 120 m north-east of the draft Order Limits. RAF Waltham (Grimsby), Holton le Clay is a military airfield that was first established in 1933. The airfield extends across an area of approximately 2.5 km by 1.5 km and encompasses a mixture of buried archaeological remains, earthworks and surviving extant buildings. Remains of the airfield (MNL1423) are visible through aerial photography, with remnants of demolished ancillary airfield structures also identified through aerial photography surrounding the main runway and to the south-west of the airfield. The setting of the asset is defined by the former extent of the Second World War airfield remains and surrounding agricultural and urban landscape within which it is situated, including the wide and open views of the skyline for the take-off and landing approaches to the airfield. The Project is located within the setting of the asset, with existing vegetation along Cheapside Road providing some screening of views of proposed pylons and associated overhead line infrastructure (notably between proposed pylons GL29 to GL39) to the south west and south of the airfield. Construction of the Project may temporarily alter the setting of this medium value heritage asset through construction traffic, noise and plant movement to the west of the asset. These temporary impacts would have a small magnitude of impact resulting in a minor adverse effect which would not be significant. Permanent changes resulting in a small magnitude of impact, arising from the presence of the proposed pylons and overhead line infrastructure, on this heritage asset of medium value would, result in a minor adverse effect which would not be significant.
- 5.7.86 The Settlement of Yarburgh (MLI41248) is an asset of medium value and has been recorded approximately 70 m east of the draft Order Limits. Extant earthworks have been identified within the medieval settlement which comprise enclosures, trackways, tofts and a potential moat. The setting of the asset is the local medieval agricultural landscape in which it is situated. This includes the remains of the former medieval open field system evidenced by ridge and furrow (MLI87851, MLI87846, and MLI115864) to the west of the village. The Project is located within the agricultural setting of the asset with existing trees, vegetation and properties along Tinker Street providing some screening. Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds in views west from the asset. These temporary impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset arising from the presence of proposed new pylons and overhead line infrastructure in the landscape west of the medieval village would be small, resulting in a minor adverse effect which is not significant.
- 5.7.87 The Settlement of North End, Alvingham (MLI87878) is an asset of medium value and is recorded approximately 20 m east of the draft Order Limits. Extant earthworks have been identified within the medieval settlement which comprise enclosures, boundary ditches, ponds and field boundaries. The setting of the asset is the local medieval agricultural landscape in which it is situated and includes the medieval settlements of Yarburgh (MLI41248), Alvingham (MLI41254) and associated ridge and furrow earthworks. The Project is located within the setting of the asset. Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds in views west from the asset. These temporary impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset arising from the presence of proposed

pylons and overhead line infrastructure in the landscape west of the medieval village would be small, resulting in a minor adverse effect which is not significant.

- 5.7.88 The Settlement of Alvingham (MLI41254) is an asset of medium value and is located approximately 10 m east of the draft Order Limits. Extant earthworks have been identified within the medieval settlement which comprise enclosures, tofts, crofts, ponds and strip fields. The setting of the asset is the local medieval agricultural landscape in which it is situated. This includes the remains of the former medieval open field system evidenced by ridge and furrow (MLI87867, MLI116055, MLI115866, MLI42793). The setting of the asset is the local medieval agricultural landscape in which it is situated and the Project forms part of that setting. Due to the close proximity of the asset to the Project, there would be intervisibility between the extant earthworks and the overhead line infrastructure. Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic, noise, plant movement and scaffolds in views west from the asset. These temporary impacts would have a small magnitude and minor adverse effect which would not be significant. Permanent changes to the setting of this heritage asset arising from the presence of proposed new pylons and overhead line infrastructure in the landscape west of the medieval village would be small, resulting in a minor adverse effect which is not significant.
- 5.7.89 The settlement of South Cockerington (MLI43243) is an asset of medium value and is located approximately 620 m north east of the draft Order Limits. A mixture of extant earthworks and buried archaeological remains have been identified within the settlement. Earthworks associated with the settlement include ridge and furrow, crofts and trackways. These earthworks were identified through analysis of aerial photography. A watching brief undertaken within the settlement identified a ditch containing pottery dating to between the 12th and 14th centuries. The setting of the asset is the local medieval agricultural landscape in which it is situated. This includes the remains of the former medieval open field systems evidenced by ridge and furrow (MLI99468 and MLI88027) and extends to the nearby medieval settlements which includes North Cockerington (MLI83365) and shrunken medieval village of Stewton (MLI88733). The Project is located within the agricultural setting of the asset with existing trees, and vegetation to the south providing some screening. Construction of the Project may temporarily alter the setting of the medieval settlement remains through construction traffic and plant movement to the west and south of the asset. These temporary 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 overhead line infrastructure in the landscape west and south of the medieval village. Whilst the Project would result in the introduction of overhead line infrastructure into partially screened, incidental views to the west, the relationship between the asset and its wider agricultural setting would remain legible and would still be able to be interpreted within the landscape. Therefore, the impact to the asset would be small, resulting in a minor adverse effect which is not significant.

Operation

- 5.7.90 Although 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 summary of non-significant Historic Environment effects - Section 2

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.	Negligible or no change	2	0	13	Temporary changes to the setting of scheduled monuments 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 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	5	0	10	The permanency of the infrastructure in the landscape within the wider setting of the scheduled monuments 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 I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible or no change	6	1	9	Temporary changes to the setting of grade I listed buildings arising from construction of the project have 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 and negligible adverse effects or neutral effects to these assets of high value. These effects would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	Negligible or no change	6	1	9	The permanency of the infrastructure in the landscape within the wider setting of the grade I listed buildings 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 and negligible adverse effects or neutral effects to these assets of high value. These effects would not be significant.
Grade II* listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible or no change	7	0	17	Temporary changes to the setting of grade II* listed buildings arising from construction of the project have the potential to either have a slight change, or to result in no change to the value of these assets or how

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)	
							they are appreciated, resulting in minor adverse or neutral effects to these assets of high value. This would result in minor adverse or neutral effects that 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	6	0	18	The permanency of the infrastructure in the landscape within the wider setting of the grade II* listed buildings has the potential to either have a slight 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.	Small or no change	1	0	5	Temporary changes to the setting of the conservation areas arising from construction of the project have the potential to either have slight change, or to result in no change to the value of these assets or how they are appreciated. The resulting minor 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 construction of the Project and throughout its operational duration.	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 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 listed buildings	Medium	Potential temporary change to setting or value of the assets arising from construction of the Project.	Small, negligible or no change	21	7	131	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 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	19	6	134	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

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)	
							minor adverse, negligible adverse and neutral effect to these assets of medium value. These effects would not be significant.
High Value Designated Assets within the 3-5 km Study Area							
Scheduled Monuments	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No change	0	0	12	Temporary effects arising from construction of the Project will not alter the value of these scheduled monuments or the way in which they are appreciated or understood. This would result in a neutral effect that 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	10	The permanency of the infrastructure in the landscape within the wider setting of the scheduled monuments 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 I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No change	0	0	3	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 neutral effects that would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No change	0	0	3	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 neutral effects that 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	16	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 neutral effects that would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No change	0	0	16	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 neutral effects that would not be significant.

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)	
High Value Designated Assets beyond the 5 km Study Area							
Scheduled Monuments (7 in total)	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No change	0	0	7	Temporary effects arising from construction of the Project will not alter the value of these scheduled monuments or the way in which they are appreciated or understood. This would result in neutral effects that 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	7	0	0	The permanency of the infrastructure in the landscape within the wider setting of the scheduled monuments has the potential to have little change to the value of these assets or the way in which they are appreciated, resulting in minor adverse effects to these assets of high value. The permanent minor adverse effects would not be 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.	Medium, small, negligible or no change	3	27	13	The partial loss or disturbance of non-designated heritage assets of medium or low value, resulting in minor adverse, negligible adverse or neutral effects that are not significant. Archaeological mitigation measures i.e. appropriate archaeological investigation and recording would further off-set or reduce the significance of the effects to not significant.
	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	Medium, small, negligible or no change	8	28	11	Temporary changes to the setting of the non-designated heritage assets arising from construction of the Project have the potential to have noticeable, slight or little change, or would result in no change, to the value of these assets or the way in which 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.
	Medium or Low	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	Medium, small, negligible or no change	8	28	11	The permanency of the infrastructure in the landscape within the wider setting of these non-designated heritage assets has the potential to have noticeable, slight or little change, or would result in no change, to the value of these assets or the way in which they are appreciated. This would result in minor adverse, negligible adverse, or neutral

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)	
							effects to these assets of medium and low value. These effects would not be significant.
Non-designated Heritage Assets within 1 km Study Area							
	Medium or Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	Medium, small, negligible or no change	14	31	126	Temporary changes to the setting of the non-designated heritage assets arising from construction of the Project have the potential to have noticeable, slight or little change, or to result in no change, to the value of these assets or the way in which they are appreciated. This would result in minor adverse, negligible adverse, or neutral effects to these assets of medium and low value. These effects would not be significant.
	Medium or Low	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	Medium, small, negligible or no change	5	40	126	The permanency of the infrastructure in the landscape within the wider setting of these non-designated heritage assets has the potential to either have noticeable, slight or little change, or to result in no change, to the value of these assets or how they are appreciated, resulting in a negligible adverse or neutral effect to these assets of medium or low value. The negligible adverse or neutral 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.

References

- Ref 1 North East Lincolnshire District Council (2018). The North East Lincolnshire Local Plan 2013 to 2032 [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed February 2025].
- Ref 2 Central Lincolnshire Joint Strategic Planning Committee (2023). Central Lincolnshire Local Plan [online]. Available at: <https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf> [Accessed February 2025].
- Ref 3 East Lindsey District Council (2018). East Lindsey Local Plan Core Strategy [online]. Available at: <https://www.e-lindsey.gov.uk/localplan2018> [Accessed February 2025].
- Ref 4 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 February 2025].
- 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 February 2025].
- Ref 6 Department for Energy and Net Zero (November 2023). Overarching National Policy Statement Energy (EN-1) [online]. Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [Accessed February 2025]
- Ref 7 Department for Levelling Up Homes and Communities (2023). National Planning Policy Framework [online]. Available at: <https://www.gov.uk/guidance/national-planning-policy-framework> [Accessed February 2025]
- Ref 8 Natural England (2024). National Character Area 42 Lincolnshire Coast and Marshes. [online]. Available at: <https://publications.naturalengland.org.uk/publication/6596660822016000#:~:text=This%20area%20is%20characterised%20by,Lincolnshire%20Wolds%20to%20the%20west> [Accessed February 2025].
- Ref 9 British Geological Survey geology viewer [online]. Available at: <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/> [Accessed February 2025].
- Ref 10 Willis, S. 2014. Updated Period Resource Assessment: The Later Bronze Age and Iron Age. In the East Midlands Historic Environment Research Framework. Available online at: <https://researchframeworks.org/emherf/updated-period-resource-assessment-the-later-bronze-age-and-iron-age/> [Accessed February 2025].
- Ref 11 Green, C. 2023. Land on the Edge. The Landscape Evolution of the Lincolnshire Coastline. Available online at: https://www.academia.edu/117152900/LAND_ON_THE_EDGE_THE_LANDSCAPE_

EVOLUTION_OF_THE_LINCOLNSHIRE_COASTLINE_2023_ [Accessed February 2025].

- Ref 12 Lincolnshire County Council (2011a). The Historic Character of The County of Lincolnshire English Heritage Project No. 4661 Main Report. Available at: <https://www.lincolnshire.gov.uk/downloads/file/2205/the-historic-character-of-lincolnshire-pdf> [Accessed March 2025].
- Ref 13 Lincolnshire County Council (2011b). The Historic Character of The County of Lincolnshire English Heritage Project No. 4661 The Historic Landscape Character Zones. Available at: <https://www.lincolnshire.gov.uk/downloads/file/2206/the-historic-landscape-character-zones-pdf> [Accessed March 2025].
- Ref 14 National Grid; Holford Rules [online]. Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 3 June 2024].
- Ref 15 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
- Ref 16 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 12 April 2024].

6. Water Environment and Flood Risk

Contents

6.	Water Environment and Flood Risk	6-1
6.1	Introduction	6-1
6.2	Legislation and policy framework	6-4
	Legislation and National Policy	6-4
	Regional and Local Policy	6-4
6.3	Scope of Assessment	6-5
	Aquatic Environment Receptors	6-7
	Water Resource Receptors	6-7
	Flood Risk Receptors	6-7
6.4	Assessment Methodology	6-7
	Assessment Assumptions and Limitations	6-8
6.5	Baseline Conditions	6-9
	Study Area	6-9
	Data collection	6-9
	Existing baseline	6-11
	Future Baseline	6-24
6.6	Design, Control and Additional Mitigation Measures	6-27
	Design Mitigation Measures	6-27
	Control Mitigation Measures	6-28
	Additional Mitigation Measures	6-32
6.7	Preliminary Assessment of Effects	6-33
	Infrastructure Overview	6-33
	Likely Significant Effects	6-34
	Non-Significant Effects	6-34
6.8	Monitoring	6-47
Table 6.1	Supporting documentation	6-2
Table 6.2	Water Environment and Flood Risk effects scoped in for further assessment	6-5
Table 6.3	Data sources used to inform baseline conditions	6-10
Table 6.4	Identified surface water receptors and associated value	6-14
Table 6.5	Summary of river flows - Data from the UK National River Flow Archive (Ref 30)	6-17
Table 6.6	WFD water bodies in direct connectivity with Section 2	6-18
Table 6.7	Identified potential drinking water receptors and associated value/sensitivity – water resource protection designations	6-20
Table 6.9	Identified flood risk receptors and associated value/sensitivity	6-23
Table 6.10	Peak river flow climate change allowances (Ref 42)	6-25
Table 6.11	3.3 per cent Annual Exceedance Probability (AEP) peak rainfall climate change allowances (Ref 42)	6-25
Table 6.12	1 per cent AEP peak rainfall climate change allowances (Ref 42)	6-26
Table 6.13	Preliminary summary of non-significance Water Environment and Flood Risk effects – Section 2	6-35

6. Water Environment and Flood Risk

6.1 Introduction

- 6.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Water Environment and Flood Risk assessment of the New Grimsby West Substation to New Lincolnshire Connection Substation (LCS) A Section (Section 2) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 6.1);
 - ii. Identification of key local and regional policy relevant to the assessment (section 6.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy 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 2 (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 2 Study Area relevant to the Water Environment and Flood Risk assessment (section 6.5);
 - vi. A description of mitigation measures included for the purposes of the Water Environment and Flood Risk assessment reported within the PEI Report (section 6.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
 - vii. The likely significant and non-significant Water Environment and Flood Risk effects arising during construction and operation of the Project within the Section 2 Study Area, based upon the assessment completed to date (section 6.7); and
 - viii. An outline of the proposed monitoring requirements in relation to Water Environment and Flood Risk effects (section 6.8).
- 6.1.2 Further supporting information is set out in **Table 6.1** below, including supporting figures and technical appendices.

Table 6.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 2 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 Screening 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 2 assessment.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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.

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.

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

6.2 Legislation and policy framework

Legislation and National Policy

- 6.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices, the details of which are set out in **Table 6.1**.

Regional and Local Policy

- 6.2.2 Regional and local plans or policies 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. North East Lincolnshire Local Plan 2013-2032 (Adopted 2018) (Ref 3):
 - Policy 33 Flood Risk: states that development proposals should adhere to the requirements of the flood risk sequential test and, if necessary, the exception test. The regeneration benefits of development in areas of high flood risk should also be considered.
 - Policy 34 Water Management: states that development proposals that have potential to impact on surface and ground water should consider the objectives and programme of measures set out in the *Humber River Basin Management Plan*. Where development is proposed within a Source Protection Zone, the potential for any risk to groundwater resources and groundwater quality must be assessed.
- iv. East Lindsey Local Plan Core Strategy (Adopted 2018) (Ref 4):
 - 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.
- v. Lindsey Marsh Drainage Board Byelaws (2018) (Ref 5) and North East Lindsey Internal Drainage Board Byelaws (Ref 6):
 - These documents set out local byelaws governing watercourse maintenance and water level management within the IDB districts.

6.3 Scope of Assessment

- 6.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 7) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 8). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Water Environment and Flood Risk chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 6.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 6.3.3 Aspects of the Water Environment and Flood Risk which are included within the scope of the assessment are summarised in **Table 6.2**.
- 6.3.4 It should be noted that operational phase impacts on aquatic environment and water resources receptors arising from overhead line aspects of the project were scoped out of the assessment at scoping stage and are therefore not considered further in this chapter, in accordance with the Scoping Opinion.

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

Receptor	Relevant Assessment Criteria	Potential Effects Considered
Construction Phase		
Aquatic environment receptors , comprising: <ul style="list-style-type: none">- Main rivers- WFD river and transitional water bodies- IDB-maintained watercourses- Ordinary watercourses	WFD and WFD (Standards and Classification) Directions (England and Wales) 2015 (Ref 9).	<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.• Potential effects on the hydromorphology and flow conveyance as a result of increased sediment inputs or direct watercourse disturbance (including from new watercourse crossings).
Water resource receptors , comprising: <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">• 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.

Receptor	Relevant Assessment Criteria	Potential Effects Considered
		<ul style="list-style-type: none"> 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 10)	<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 result of physical impingement of Project infrastructure.
Operational Phase		
Flood risk receptors (property and infrastructure at risk of flooding)	NPPF (Ref 10)	<ul style="list-style-type: none"> Changes to surface water flood risk due to changes in runoff rates resulting from 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 2 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 11) 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 2 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 12) that supports the NPPF (Ref 10). 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 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 in 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 generally consistent with guidance set out in LA113 from the Design Manual for Roads and Bridges (DMRB) (Ref 13). 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. The assessment methodology, particularly in respect to the value assigned to 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 Framework Directive (Ref 14) 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 Screening 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 2.
- 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 Section 2 Study Area for the Water Environment and Flood Risk assessment includes the area within the draft Order Limits and extends to a 500 m buffer around the draft Order Limits. This is in accordance with the Scoping Report (Ref 8) and is considered an appropriate Study Area based on the nature of the Project construction and operation (and maintenance) activities, technical knowledge of similar schemes, and an understanding of source-pathway-receptor linkages for Water Environment and Flood Risk. Beyond the 500 m buffer, effects resulting from the Project are unlikely and have therefore been scoped out. This was accepted by the Planning Inspectorate (PINS) in their Scoping Opinion (Ref 7). The Section 2 Study Area is presented in **PEI Report Volume 2 Part B Section 2 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 2 Study Area.

Data collection

- 6.5.3 At this stage, the Water Environment and Flood Risk baseline has been developed on the basis of a desk-based assessment of existing data, 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 be supplemented by ongoing consultation with relevant water and flood risk stakeholders. The baseline characterisation will therefore be refined where appropriate as data becomes available and as the details of the design are developed.
- 6.5.4 Environment Agency flood model outputs (including flood extent and flood depth data) for the floodplains that are proposed to be crossed by the Project infrastructure for Section 2 include:
- i. Saltfleet and Great Eau Fluvial Model and Report (Ref 15);
 - ii. Main East Coast Breach Model and Report (Ref 16); and
 - iii. Northern Area Tidal Modelling (NTM) East Coast Overtopping Model and Report (Ref 17).
- 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 26). 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 Manby (Ref 19)
Topography	Ordnance Survey Mapping (Ref 20)
Geology	British Geological Survey (BGS) Geology of Britain Viewer (Ref 21)
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 22); National Soil Research Institute Soilscales map viewer (Ref 23)
Hydrology	Environment Agency Statutory Main River Map for England (Ref 24) Flood Estimation Handbook Web Service (Ref 25)
Flood risk	Environment Agency Flood Map for Planning (Ref 26) Environment Agency Risk of Flooding from Surface Water (RoFSW) (Ref 27) National Flood Risk Assessment (NAFRA) Dataset (Ref 18) Environment Agency Risk of Flooding from Reservoirs (Ref 28) Environment Agency Flood Defence Asset database (Ref 26) National River Flow Archive (NRFA) (Ref 30)
Water quality and Water Framework Directive status	Catchment Data Explorer database (Ref 31) of Cycle 2 and 3 WFD information
Water abstractions and discharge consents	Environment Agency abstraction and discharge consent data including active discharge locations, abstraction licence strategies and local authority private water supply datasets (Ref 32) (Ref 33) (Ref 34)

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 were not available at the time of writing this PEI Report but will be available to inform the ES:
- i. Field notes and photographs collected during watercourse surveys; and
 - ii. Aquatic ecology surveys, including:
 - General characteristics of watercourses to be crossed, including physical features such as length, depth, width, flow, water level, bed and bank substrate and bankside and in-channel vegetation cover;

- Aquatic habitat appraisal surveys and assessments; and
- Appraisal of potential presence of protected and notable species typically associated with watercourse habitats.

Further Data Requests

- 6.5.9 To inform the 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:
- Baseline flood risk data, including available modelled flood data and local flood risk data from commissioned studies;
 - Further information on the location and characteristics of IDB-maintained watercourses and operation of water level management assets; and
 - 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:
- PEI Report Volume 2 Part B Section 2 Figure 6.1 Water Environment Receptors and Study Area;**
 - PEI Report Volume 2 Part B Section 2 Figure 6.2 Principal Local Water Environment Regulators;**
 - PEI Report Volume 2 Part B Section 2 Figure 6.3 Surface Water Flood Risk;**
 - PEI Report Volume 2 Part B Section 2 Figure 6.4 Water Framework Directive Surface Water Body Status;**
 - PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment;** and
 - PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Screening Assessment.**
- 6.5.11 Section 2 comprises overhead line spanning approximately 40 km between the proposed New Grimsby West Substation (Section 1) and LCS A. The overhead line route in Section 2 commences north-east of Laceby and runs in a south westerly direction, passing west of the town of Louth and connecting with Section 3 to the east of the village of Claythorpe. There are a total of 115 pylons within Section 2, generally positioned at approximately 350 m spacing. Infrastructure included within the Section 2 Study Area is further discussed in **Chapter 1 Overview of the Section and Description of the Project**.
- 6.5.12 The Section 2 draft Order Limits are located within the Lincolnshire County Council area and transect the North East Lincolnshire Council and East Lindsey District Council areas. These local authorities constitute the LLFAs within Section 2. The draft Order Limits also cross the North East Lindsey and Lindsey Marsh IDB districts,

as shown on **PEI Report Volume 2 Part B Section 2 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 19). This demonstrates the average annual total rainfall in the locality of Section 2 was approximately 635 mm, based on the Manby station record (NGR TF397869) located approximately 5 km from the Section 2 Study Area. 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 Manby 1991-2020 record. The highest monthly average precipitation was recorded during June (97 mm) followed by November (88 mm). The driest months were March (51 mm) and February (52 mm).
- 6.5.16 Average monthly maximum and minimum temperature estimates for the period of 1991-2020 demonstrate that the summer months (June - August) featured the highest monthly maximum temperatures, and the winter months (December - February) featured the lowest monthly minimum temperatures. The temperature profile is consistent with the range to be expected for the East of England.
- 6.5.17 Across the Eastern and Northeastern England districts there has been minimal increase in annual rainfall between 1991-2020. The average annual maximum temperatures and average annual minimum temperatures both exhibit an increasing trend for the same period.

Topography and Land Use

- 6.5.18 A review of Ordnance Survey (OS) mapping shows the Section 2 Study Area to be generally flat lying throughout, with no steeply sloping ground identified. The north of Section 2 is noted to be at a slightly higher topographic elevation than the south, although given the extent of the Section, this does not represent a significant elevation change. Elevations range from approximately 25 metres above ordnance datum (mAOD) in the vicinity of Aylesby, falling to approximately 3 mAOD to the south of the Study Area.
- 6.5.19 The land within the Section 2 Study Area is primarily used for agricultural purposes and the draft Order Limits have been located to avoid large settlements. In the north of the Study Area, the draft Order Limits are located between the village of Laceby and the western fringe of Grimsby. South of Grimsby the Study Area is of a rural nature and therefore properties within the Study Area are those located in small settlements (such as Fulstow, Covenham St Mary, Yarburgh, Alvingham and Great Carlton), isolated residential properties and farm buildings.
- 6.5.20 Existing overhead lines are present in many locations, shown on historical mapping and aerial imagery. Three solar farms are located within the draft Order Limits and Study Area, two of which are located southwest of Bradley and within the far north of Section 2, adjacent to pylons GL15 to GL18. The third is located to the south of

Yarbugh, off Westfield Road, directly west of the draft Order Limits and approximately 220 m southeast of pylon GL70.

- 6.5.21 The draft Order Limits cross a number of key highway links (including the A46, B1203, A16, B1201, B1200 and the A157) and several minor/local roads. A railway line (Lincolnshire Wolds Railway) is also present within the Section 2 Study Area, which starts at North Thoresby and runs south to Ludborough Station. Evidence from OS mapping and aerial imagery suggests this line formerly extended to the north through the draft Order Limits, where a historical land use of cuttings (dated 1887) and an overgrown linear feature is present. This feature was formerly named the East Lincolnshire Line.

Hydrology and Surface Water Features

- 6.5.22 Surface water features identified within the Section 2 Study Area are shown in **PEI Report Volume 2 Part B Section 2 Figure 6.1 Water Environment Receptors and Study Area** and include a network of main rivers, ditches and small watercourses, some of which fall within the district of North East Lindsey IDB or Lindsey Marsh IDB. IDB districts are shown in **PEI Report Volume 2 Part B Section 2 Figure 6.2 Principal Local Water Environment Regulators**. The Section 2 Study Area is located within the Humber River Basin District (RBD) in the north and the Anglian RBD in central and southern regions.
- 6.5.23 Within Section 2 there are 11 main rivers that will be crossed by the draft Order Limits, namely:
- i. Laceby Beck – to the east of Laceby;
 - ii. Waithe Beck – to the east of Ashby cum Fenby;
 - iii. Old Fleet Drain – to the southeast of Grainsby;
 - iv. Black Leg Drain – to the east of North Thoresby;
 - v. Poulton Drain – to the southwest of Covenham St Mary;
 - vi. Louth Canal – to the east of Louth;
 - vii. River Lud – to the east of Louth;
 - viii. Stewton Beck – to the southeast of Louth;
 - ix. Grayfleet Drain – to the west of South Cockerington;
 - x. Long Eau – to the south of Little Carlton; and
 - xi. Great Eau – to the west of Withern.
- 6.5.24 Additionally, New Dike is also a main river and is located within the Section 2 Study Area, to the west of North Thoresby, but is not crossed by the draft Order Limits.
- 6.5.25 There are also numerous tributaries of these rivers, classified as ordinary watercourses. The watercourses in Section 2 generally flow in a north-easterly direction towards the Humber Estuary. Their catchments can be categorised as generally rural in their land use, with relatively flat topography.
- 6.5.26 The Section 2 draft Order Limits transect the southern extents of the North East Lindsey IDB to the east of Laceby and further south to the west of Waltham, crossing named IDB-maintained watercourses such as the Little Beck east of Laceby and the

Team Gate Drain northwest of Waltham. Neither IDB-maintained watercourses crossed by the Section 2 draft Order Limits are attached to pumping stations, indicating that this region of the IDB catchment is reliant on gravity to maintain water levels in the area. Further consultation with North East Linsey IDB will allow for improved understanding of the workings of IDB-maintained watercourses and any infrastructure intersected by the draft Order Limits.

- 6.5.27 Further south, the Section 2 Study Area traverses Lindsey Marsh IDB at irregular intervals from North Thoresby village on the B1201 to the village of Withern on the A157. Further consultation is required to understand the workings of IDB infrastructure in the Lindsey Marsh IDB district.
- 6.5.28 **Table 6.4** summarises the surface water 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
Mawnbridge Drain (GB104029067540)	High	<ul style="list-style-type: none"> A WFD designated 'blue line' river water body supporting moderate status in the Cycle 3 classifications. The WFD catchment intersects the Section 2 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. Supports RAMSAR and Humber Estuary SSSI 4 km downstream. No licensed abstractions.
Laceby Beck (GB104029067530)	High	<ul style="list-style-type: none"> Main River. A WFD designated surface water body, supporting poor status in the Cycle 3 classifications. Intersected by the Project at one instance near Grimsby town. High certainty chalk stream No watercourse crossings (temporary or permanent) proposed for Laceby Beck.
Waithe Beck lower catchment (to Tetney Lock) (GB104029062100)	High	<ul style="list-style-type: none"> Large main river – Waithe Beck A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project near to Ashby Cum Fenby. Supports a nationally designated site (Tetney Blow Wells SSSI), located approximately 4.5 km downstream from the draft Order Limits High certainty chalk stream

Receptor	Value	Rationale
		<ul style="list-style-type: none"> Two temporary single span bridges will cross Waithe Beck.
Buck Beck from Source to N Sea (GB104029062110)	High	<ul style="list-style-type: none"> A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project southwest of Waltham. No watercourse crossings (temporary or permanent) proposed for Buck Beck from Source to N Sea
Old Fleet Drain	High	<ul style="list-style-type: none"> Main River No watercourse crossings (temporary or permanent) proposed for Old Fleet Drain, so no potential for direct effects from Section 2 works.
Black Leg Drain	High	<ul style="list-style-type: none"> Main River A temporary single span bridge will cross Black Leg Drain.
New Dike (tributary of Louth Canal) (GB104029062030)	High	<ul style="list-style-type: none"> Main River - New Dike (within 500 m buffer zone) A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project near to Fulstow. Supports Priority River Habitat – Rivers: New Dike within the 500 m buffer zone. No watercourse crossings (temporary or permanent) proposed for New Dike, so no potential for direct effects from Section 2 works.
Poulton Drain (GB104029062010)	High	<ul style="list-style-type: none"> Main River A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project near to Utterby. No watercourse crossings (temporary or permanent) proposed for Poulton Drain, so no potential for direct effects from Section 2 works.
Black Dyke Catchment (trib of Louth Canal) (GB104029062000)	High	<ul style="list-style-type: none"> A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project north of Louth. One temporary watercourse crossing proposed for Yarburgh Beck
Louth Canal (GB104029061990)	High	<ul style="list-style-type: none"> Main River A WFD designated surface water body, supporting poor status in the Cycle 3 classifications. Intersected by the Project near to Louth. High certainty chalk stream

Receptor	Value	Rationale
		<ul style="list-style-type: none"> No watercourse crossings (temporary or permanent) proposed for the Louth Canal, so no potential for direct effects from Section 2 works.
River Lud	High	<ul style="list-style-type: none"> Main River No watercourse crossings (temporary or permanent) proposed for the River Lud.
Land Dike Drain to Louth Canal (West) (GB104029062162)	High	<ul style="list-style-type: none"> A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project near to Fulstow. Supports Priority River Habitat – Rivers: New Dike within the 500 m buffer zone. WFD blue line watercourse outside the Section 2 Study Area. No watercourse crossings (temporary or permanent) proposed Land Dike Drain.
South Dike and Grayfleet Drain (GB105029061680)	High	<ul style="list-style-type: none"> Main River – Grayfleet Drain A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project near to Louth. A temporary single span bridge will cross Grayfleet Drain.
Long Eau (GB105029061670)	High	<ul style="list-style-type: none"> Main River A WFD designated surface water body, supporting moderate status in the Cycle 3, classifications. Intersected by the Project south of Little Carlton. A temporary single span bridge will cross The Beck.
Great Eau (downstream of South Thoresby) (GB105029061660)	High	<ul style="list-style-type: none"> Main River - Great Eau A WFD designated surface water body, supporting poor status in the Cycle 3 classifications. Intersected by the Project near to Withern. Supports Priority River Habitat – Rivers: Great Eau within the draft Order Limits and 500 m buffer zone. High certainty chalk stream A temporary single span bridge will cross Great Eau.
Trusthorpe Pump Drain (GB105029061641)	High	<ul style="list-style-type: none"> A WFD designated surface water body, supporting moderate status in the Cycle 3 classifications. Intersected by the Project Study Area north of Withern. No watercourse crossings (temporary or permanent) proposed for Withern Highland Drain, so no potential for direct effects from Section 2 works.

Receptor	Value	Rationale
Woldgrift Drain (GB105029061750)	High	<ul style="list-style-type: none"> A WFD designated surface water body, supporting moderate status on the Cycle 3 classifications. Intersected by Section 2 of the Project north of Mother Wood. No watercourse crossings (temporary or permanent) proposed for Wold Grift Drain within Section 2 of the Project, so no potential for direct effects from Section 2 works.
IDB-maintained watercourses	Medium	<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 under control and management of the IDB. Low certainty chalk streams
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. A temporary single span bridge will cross Yarburgh Beck.

*Not recorded under any other designations

6.5.29 There are three Environment Agency gauging stations on watercourses traversing Section 2. The closest flow gauges to Section 2 are shown in **Table 6.5** below. The high baseflow index (BFI), is indicative of a major contribution to flow from groundwater sources flowing off the underlying chalk aquifer.

Table 6.5 Summary of river flows - Data from the UK National River Flow Archive (Ref 30)

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
29001: Waithe Beck at Brigsley, TA252016	Waithe Beck	108.3	0.303	0.677	0.062	0.85	1960-2022
29003: Lud at Louth, TF337879	River Lud	55.2	0.456	0.887	0.127	0.9	1968-2022
29002: Great Eau at Claythorpe Mill, TF416793	Great Eau	77.4	0.64	1.15	0.25	0.88	1962-2022

*Q10: the flow that is equalled or exceeded 10 per cent of the time – an index of high flow

**Q95: the flow that is equalled or exceeded 95 per cent 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

- 6.5.30 The Section 2 Study Area passes through the Humber RBD and Anglian RBD, two Operational Catchments and 14 Water Bodies, as shown in **PEI Report Volume 2 Part B Section 2 Figure 6.4 Water Framework Directive Surface Water Body Status**.
- 6.5.31 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. 11 of the 14 surface water bodies currently achieve moderate status with the remaining three only achieving poor status. Generally, water bodies in Section 2 do not achieve good status due to reasons such as sewage discharge, poor soil and nutrient management, poor livestock management, land drainage modification and urban development. All water bodies in Section 2 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).
- 6.5.32 Summary details of the current status for the WFD water bodies relevant to Section 2 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 2 Chapter 7 Geology and Hydrogeology**.

Table 6.6 WFD water bodies in direct connectivity with Section 2

Water Body (ID)	Water Body Type	Water Body Type (Cycle 3)	Overall Water Body status (Cycle 3) (2022) ¹
Mawnbridge Drain Water Body (GB104029067540)	River	Heavily modified	Moderate
Lacey Beck/River Freshney Catchment (to N Sea) (GB104029067530)	River	Heavily modified	Poor
Buck Beck from Source to N Sea (GB104029062110)	River	Heavily modified	Moderate
Waith Beck lower catchment (to Tetney Lock) (GB104029062100)	River	Heavily modified	Moderate
New Dike Catchment (trib of Louth Canal) (GB104029062030)	River	Heavily modified	Moderate

Water Body (ID)	Water Body Type	Water Body Type (Cycle 3)	Overall Water Body status (Cycle 3) (2022) ¹
Land Dike Drain to Louth Canal (West) (GB104029062162)	River	Heavily modified	Moderate
Poultton Drain Catchment (GB104029062010)	River	Heavily modified	Moderate
Black Dyke Catchment (trib of Louth Canal) (GB104029062000)	River	Heavily modified	Moderate
Louth Canal (GB104029061990)	River	Heavily modified	Poor
South Dike and Greyfleet Drain (GB105029061680)	River	Heavily modified	Moderate
Long Eau (GB105029061670)	River	Heavily modified	Moderate
Great Eau (downstream of South Thoresby) (GB105029061660)	River	Heavily modified	Poor
Trusthorpe Pump Drain (GB105029061641)	River	Artificial	Moderate
Woldgrift Drain (GB105029061750)	River	Artificial	Moderate

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

- 6.5.33 Two Drinking Water Protection Areas (surface Water) and two Drinking Water Safeguard Zones (surface Water) are present within the Section 2 Study Area. The water resources which are likely to interact with the proposed works within Section 2 are summarised in **Table 6.7**.
- 6.5.34 The Section 2 Study Area is located within the Anglian and Humber (SWSGZ1001,1002), Louth Canal, Great Eau and Covenham Reservoir Drinking Water Safeguard Zone. This is associated with the Louth Canal (surface water). Sporadic areas located within Drinking Water Protected Areas (SWSGZ1001) (surface water) include the Louth Canal water body (ID GB104029061990) which is at risk. Additionally, the Great Eau downstream of South Thoresby (GB105029061660) lies within a Drinking Water Protected Area (surface water) (SWSGZ1002).
- 6.5.35 Information on groundwater Safeguard Zones is included in **PEI Report Volume 2 Part B Section 2 Chapter 7 Geology and Hydrogeology**.

Table 6.7 Identified potential drinking water receptors and associated value/sensitivity – water resource protection designations

Receptor	Value	Rationale
Waithe Beck (Lower catchment of Tetney Lock)	High	Regionally important designated surface water Drinking Water Safeguard Zone (Louth Canal SWSGZ1001).
New Dike Catchment (trib of Louth Canal)	High	Regionally important designated surface water Drinking Water Safeguard Zone (Louth Canal SWSGZ1001).
Land Dike Drain to Louth Canal (West)	High	Regionally important designated surface water Drinking Water Safeguard Zone (Louth Canal SWSGZ1001).
Poulton Drain Catchment (trib of Louth Canal)	High	Regionally important designated surface water Drinking Water Safeguard Zone (Louth Canal SWSGZ1001).
Black Dyke Catchment (trib of Louth Canal)	High	Regionally important designated surface water Drinking Water Safeguard Zone (Louth Canal SWSGZ1001).
Louth Canal	Very High - High	Regionally important designated surface water Drinking Water Safeguard Zone (Louth Canal SWSGZ1001) and surface water Drinking Water Protected Area
Long Eau	High	Regionally important designated surface water Drinking Water Safeguard Zone (Great Eau SWSGZ1002).
Great Eau (downstream of South Thoresby)	Very High - High	Regionally important designated surface water Drinking Water Safeguard Zone (Great Eau SWSGZ1002) and surface water Drinking Water Protected Area.
South Dike and Grayfleet Drain	Very High	Designated surface water Drinking Water Protection Area.

Surface Water-Dependent Nature Conservation Sites

- 6.5.36 Five non-statutory nature conservation sites that are dependent on surface water have been identified within the Section 2 Study Area for Water Environment and Flood Risk. This is shown in **PEI Report Volume 2 Part B Section 2 Figure 4.3 Sites Statutorily designated for their County Biodiversity Importance**, and listed below:
- River Freshney Headwaters Local Wildlife Site (LWS) – River corridor bordered by areas of deciduous woodland and wet woodland;
 - Laceby Carr Plantation and Pond (Laceby Beck) LWS – Lowland mixed deciduous woodland and wet woodland with several small ponds that is located next to the river Freshney;

- iii. Waithe Beck East LWS – Small chalk stream with deciduous woodland in places;
- iv. Withern Ings LWS – Area comprises lowland fen habitat; and
- v. Great Eau LWS – River habitat with lowland meadows and coastal and floodplain grazing marsh along its banks. Runs next to Withern Ings LWS which comprises lowland fen habitat.

6.5.37 Two Habitats of Principal Importance have been identified within the Section 2 Study Area which are surface water dependent pending further investigation and review of supplementary information. These include New Dike and Great Eau.

6.5.38 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 2 Chapter 4 Ecology and Biodiversity**. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) will be addressed separately in the ES.

Water Resources

6.5.39 Data to characterise existing water interests has been collected from the Environment Agency, which indicates there are three surface water abstractions within the Section 2 Study Area, downstream of the Section 2 draft Order Limits, and four consented surface water discharges within the Section 2 Study Area, all of which are outside the draft Order Limits.

6.5.40 The three abstractions, downstream of the Section 2 draft Order Limits, are located on the Great Eau (NGR TF424820, TF424820 and TF423819) and used by Withern Mill Trout Farm for fish farming and cress pond throughflow.

6.5.41 Two discharges are from sewage treatment works owned by AWS Services Ltd and are located on the Laceby Beck (NGR TA221070) and the Louth Canal (NGR TF358901) respectively. One discharge is from a pumping station on the sewerage network managed by AWS Services Ltd and is located on the Waithe Beck (NGR TA253015). The fourth discharge permit is held by Withern Mill Trout Farm (NGR TF423820), which discharges to the Great Eau.

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

6.5.43 The Section 2 Study Area crosses two Abstraction Licensing Strategy (ALS) regions, namely the Grimsby, Ancholme and Louth ALS (Ref 33) in the northern part of Section 2 and the Steeping, Great Eau and Long Eau ALS (Ref 34) in the south. There are two assessment points (APs) on watercourses traversing the Section 2 Study Area within the Grimsby, Ancholme and Louth ALS, including:

- i. AP 12 which is located on Laceby Beck and may be available for licensing for 94 days per annum; and,
- ii. AP 14 which is located on the River Ludd and may be available for licensing for 80 days per annum.

6.5.44 From the Steeping, Great Eau and Long Eau ALS, the Section 2 Study Area is crossed by two rivers with assessment points upstream, including an assessment point at Little Carlton on the Long Eau (AP 1) and at Claythorpe on the Great Eau (AP 2). Both assessment points have restricted water resource availability with abstraction available for up to 160 days per annum.

- 6.5.45 The identified water resource receptors within the Section 2 Study Area and their associated values are listed in **Table 6.8** below.

Table 6.8 Water resource receptors within the Section 2 Study Area

Receptor	Value	Rationale
Three licensed abstractions from Great Eau at Withern Mill Trout Farm (4/29/14/*S/0131)	Low	<p>Within the Section 2 Study Area downstream of the draft Order Limits.</p> <p>The Great Eau is a main river and flows in a north easterly direction to discharge to the North Sea at Saltfleet.</p>
Licensed discharge to Laceby Beck by AWS services Ltd (ANNNF1490)	Low	<p>Discharges 732 m³ of water a day from a Sewage Treatment Works.</p> <p>Laceby Beck is a main river flowing in a north easterly direction to the River Freshney at Yarborough.</p>
Licensed discharge to Waithe Beck by AWS services Ltd (ANNNF10299)	Low	<p>Discharges only during emergency sewer overflow.</p> <p>Waithe Beck is a main river flowing in a south easterly direction to the Tetney Drain at Tetney.</p>
Licensed discharge to Louth Canal by AWS services Ltd (ANNNF1131)	Low	<p>Discharges 6000 m³ of water a day from a Sewage Treatment Works.</p> <p>Louth Canal travels in a north easterly direction to discharge to the Mouth of the Humber at Humberston.</p>
Licensed discharge to a tributary of the Great Eau by Withern Mill Trout Farm (PR3NF539)	Low	<p>Discharges 18347 m³ of water a day from a fish, aquaculture and cress farm.</p> <p>The tributary of the Great Eau flows northwards to discharge to the Great Eau</p>

Flood Risk and Land Drainage

- 6.5.46 The Environment Agency Flood Map for Planning (Ref 26) 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 26) likelihood of flooding respectively. Flood Zone 2 and 3 extents are shown on **PEI Report Volume 2 Part B Section 2 Figure 6.1 Water Environment Receptors and Study Area**.
- 6.5.47 According to the Environment Agency Flood Map for Planning (Ref 26), the Section 2 Study Area is located almost entirely in 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). Parts of the Section 2 Study Area are in Flood Zone 2 and 3 (high risk), equivalent to an annual chance of flooding from rivers of 1 in 100 (1 per cent) or

greater, associated with various main rivers and several of their tributaries flowing north east across Section 2.

- 6.5.48 According to the Environment Agency Asset Information and Maintenance (AIMS) database (Ref 35), there are nine sections of flood defence structures associated with watercourses in the Section 2 Study Area. The defences encompass predominately high ground on Laceby Beck, Waithe Beck, Old Fleet Drain, Black Leg Drain, Poulton Drain, Louth Canal, unnamed watercourse, The Beck, Great Eau, and maintained privately or by the EA.
- 6.5.49 The majority of Section 2 is classified as being at low risk of surface water flooding, according to the EA's surface water flood risk mapping (Ref 27). There are a number of areas classed as being at high to low risk of surface water flooding within Section 2, as illustrated in **PEI Report Volume 2 Part B Section 2 Figure 6.3 Surface Water Flood Risk**. These are generally associated with low lying areas or land drains crossing the draft Order Limits.
- 6.5.50 Risk of flooding from sewers is not considered as a significant source of flooding in Section 2 due to the predominantly rural setting of the Project.
- 6.5.51 The EA's on-line flood risk mapping for reservoirs (Ref 28) 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 2 Study Area associated with Laceby Beck and Kiln Close Reservoir (TF1370098100) and Louth Canal, Grayfleet Drain and Louth Southern Reservoir (TF3123885582) for Section 2. This risk is assessed in further detail within the **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**.
- 6.5.52 A number of external receptors for flood risk effects from the Project have been identified within the Section 2 Study Area. The receptors and their associated values are listed in **Table 6.9** below.

Table 6.9 Identified flood risk receptors and associated value/sensitivity

Receptor	Value	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 Laceby, Waltham, Brigsley, Fulstow, Yarburgh, North End, Alvingham, Little Carlton, plus rural residential properties and solar farms.	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.	Very High	Essential infrastructure or highly vulnerable development.

Future Baseline

- 6.5.53 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 can be assessed. Specifically, it accounts for anticipated changes including: those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 6.5.54 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

- 6.5.55 Climate change is likely to lead to significant changes in hydrological conditions within the Section 2 Study Area over the lifetime of the Project. Outputs from UKCP18 (Ref 36) and the Future Flows and Groundwater Levels Project (Ref 37) have been used to assess likely changes in ambient conditions for the purposes of the future baseline.
- 6.5.56 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 38). For the upstream catchment of the River Lud that is crossed by the Section 2 draft Order Limits, transient flows are predicted to decrease at all flow percentiles across all models. For the Q30 flow percentile, a decrease of up to 20 per cent by 2080 is predicted by most models. At the Q90 flow percentile, decrease in transient flows range between 10 and 30 per cent by 2080, depending on the model used (Ref 39). The datapoint for Lud at Louth (29003) is the only point on a watercourse that traverses the Section 2 Study Area. An assessment of seasonal average changes within the region of the Section 2 Study Area indicates that in the 2050s, winter flows will increase up to 20 per cent or even 40 per cent in some scenarios, spring flows will decrease by up to 20 % in most scenarios, summer flows will decrease up to 40 per cent in most scenarios and autumn flows will decrease by up to 20 per cent in most scenarios (Ref 40).
- 6.5.57 For the FRA, to be completed in support of the ES, the impacts of climate change on future flood risk will be assessed in line with current Environment Agency guidance (Ref 41). Current Environment Agency recommendations for climate change factors to be applied to extreme rainfall and river flows for the Project area are summarised in **Table 6.10**, **Table 6.11**, and **Table 6.12** below. These factors are based on analysis of UKCP18 climate model outputs for rainfall and from hydrological models driven by UKCP18 rainfall outputs.

Table 6.10 Peak river flow climate change allowances (Ref 42)

Allowance Category	Potential Change Anticipated for the 2020s	Potential Change Anticipated for the 2050s	Potential Change Anticipated for 2080s
Louth Grimsby and Ancholme Management Catchment			
Upper	21%	19%	33%
Higher	9%	5%	12%
Central	4%	-1%	4%
Witham Management Catchment			
Upper	27%	32%	57%
Higher	14%	15%	32%
Central	9%	8%	21%

Table 6.11 3.3 per cent Annual Exceedance Probability (AEP) peak rainfall climate change allowances (Ref 42)

Allowance Category	Potential Change Anticipated for the 2050s	Potential Change Anticipated for the 2070s
Louth Grimsby and Ancholme Management Catchment		
Upper	35%	35%
Central	20%	25%
Witham Management Catchment		
Upper	35%	35%
Central	20%	25%

Table 6.12 1 per cent AEP peak rainfall climate change allowances (Ref 42)

Allowance Category	Potential Change Anticipated for the 2050s (per cent)	Potential Change Anticipated for the 2070s (per cent)
Louth Grimsby and Ancholme Management Catchment		
Upper	40%	40%
Central	20%	25%
Witham Management Catchment		
Upper	40%	40%
Central	20%	25%

6.5.58 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 41). 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 41).

Topography and Land Use

6.5.59 Land use change can affect the permeability of the ground, which can affect surface water run-off. Given that most of the land within the Section 2 Study Area is productive agricultural land outside of established settlement boundaries, it is unlikely that the run-off regime will change significantly within and surrounding the Section 2 Study Area in the immediate future. The southern extents of Section 2 impinge on suburban fringes of Louth, Manby, Legbourne and Alford which could make urban creep a factor in the future. However, developers will be obliged by the requirements of the NPPF to ensure that surface runoff is managed within developments so as not to increase flood risk to others.

Water Quality and Water Framework Directive Status

6.5.60 Given the general current status of the WFD water bodies within the Section 2 Study Area is moderate or poor, 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

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.

waterbodies is not determined by their status, this does not influence the assessment relative to the existing or future baseline.

- 6.5.61 The WFD reasons for not achieving good status for waterbodies within the Section 2 Study Area are included in **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Screening Assessment**.

Water Resources

- 6.5.62 The location and rate of surface water abstractions in the area could vary over time. The Grimsby, Ancholme and Louth ALS (Ref 33) and the Steeping, Great Eau and Long Eau ALS (Ref 34) suggest water is available for new abstractions during parts of the year, but any new licences would be subject to volume, hands-off flow and/or minimum residual flow restrictions, to ensure sufficient flow remains for environmental purposes.

6.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 6.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 44) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 45) 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 46) 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 2 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 43); and NPPF (Ref 10).
- 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:
- iii. 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;
 - iv. Pylons would not be located within the relevant permitting stand-off distances around watercourses;

- v. Flood protection design measures are to be designed in accordance with National Grid's best practice requirements.
- vi. 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 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

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

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

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

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

- x. 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).
- xi. W02: For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will include but not be limited to, where practicable:
- reducing the working width for open cut crossings of a main or ordinary watercourse whilst still providing safe working;
 - installation of a pollution boom downstream of open cut works;
 - the use and maintenance of temporary lagoons, tanks, bunds, silt fences or silt screens as required;
 - have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident;
 - the use of all static plant such as pumps in appropriately sized spill trays;
 - prevent refuelling of any plant or vehicle within 15 m of a watercourse;
 - prevent storing of soil stockpiles within 15 m of a main river;
 - inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and
 - reinstating the riparian vegetation and natural bed of the watercourse, using the material removed when appropriate, on completion of the works and compacting as necessary. If additional material is required, appropriately sized material of similar composition will be used.
- iii. W03: Riverbank and in-channel vegetation will be retained where not directly affected by installation works. As far as possible, natural substrate will be provided through temporary watercourse crossing culverts.

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

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

Additional Mitigation Measures

- 6.6.7 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 6.6.8 Based upon the preliminary assessment, additional mitigation measures are not anticipated to be required within Section 2 in relation to Water Environment and Flood Risk effects. However, this will remain under review during the completion of further assessment and development of the ES.
- 6.6.9 No additional mitigation measures have been assumed within the Preliminary Assessment of Effects reported in the following sections.

6.7 Preliminary Assessment of Effects

- 6.7.1 The following section presents the findings of the preliminary assessment of effects upon Water Environment and Flood Risk receptors identified within the Section 2 Study Area, as a result of construction, maintenance and/or operational activities.
- 6.7.2 The preliminary assessment of effects reported below take into account the Design and Control mitigation measures, as previously described.
- 6.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 2 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 6.13**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 6.7.4 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

Infrastructure Overview

- 6.7.5 The receptors listed 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 2, including associated temporary haul roads and construction compounds.
- 6.7.6 The proposed temporary and permanent features within Section 6 are illustrated on the following figures:
- PEI Report Volume 2 Part B Section 2 Figure 1.2 Permanent and Operational Features;** and
 - PEI Report Volume 2 Part B Section 2 Figure 1.3 Temporary and Construction Features.**
- 6.7.7 Temporary watercourse crossing would be required to facilitate access during construction of new overhead line. As set out within **PEI Report Volume 3 Part A Appendix 5C Indicative Bridge and Culvert Schedule**, a total of 82 temporary crossings are currently assumed to be required within Section 2. These would result in direct impacts on the receptors including those listed below, through the installation of either single span bridges and closed culverts.
- Waithe Beck (GL-WCX-30A and GL-WCX-32);
 - Black Leg Drain (GL-WCX-38);
 - Grayfleet Drain (GL-WCX-65);
 - The Beck (GL-WCX-76);
 - Great Eau (GL-WCX-87);
 - IDB-maintained watercourses; and,
 - Ordinary watercourses.
- 6.7.8 No permanent watercourse access crossings are proposed within Section 2.

- 6.7.9 Of the 115 pylons proposed in Section 2, six are located in floodplains associated with the following watercourses:
- i. One pylon (GL18) is located in the floodplain of Team Gate Drain - a tributary of Laceby Beck;
 - ii. One pylon (GL44) is located in the floodplain of Old Fleet Drain;
 - iii. One pylon (GL98) is located in the floodplain of Old Eau; and
 - iv. Three pylons (GL110, GL111 and GL112) are located in the floodplain associated with Great Eau.

Likely Significant Effects

Construction

- 6.7.10 Based upon the preliminary assessment, no significant effects are predicted upon Water Environment and Flood Risk receptors within the Section 2 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.

Operation and Maintenance

- 6.7.11 Based upon the preliminary assessment, no significant effects are predicted for Water Environment and Flood Risk receptors within Section 2 Study Area, as a result of the 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.

Non-Significant Effects

- 6.7.12 For completeness, **Table 6.13** 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 6.13 Preliminary summary of non-significance Water Environment and Flood Risk effects – Section 2

Impact	Receptor	Value of Receptor(s) 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 water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not Significant (Negligible)	<p>During the construction of the 115 new 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. <p>The assignment of suspended sediment-related effects is considered</p>
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium - Low	Small adverse	Not Significant (Minor)	

precautionary, given that the watercourses across the Section 2 Study Area are likely to experience baseline variation in suspended sediment due to agricultural practice in the area.

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.

Potential impacts on hydro-morphology and flow conveyance as a result of increased sediment inputs from watercourse disturbance (including from new watercourse crossings).	Main Rivers and WFD river water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not Significant (Negligible)	<p>Works directly affecting watercourses, such as crossings and diversions, could result in a direct impact on their hydromorphology. The potential 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, predicted effects are not significant.</p> <p>Where there is a requirement to undertake works in and around the watercourses, including installation of temporary access crossings (assumed to be culverts for most watercourses), the footprint of these would be kept to a</p>
---	--	------	------------	------------------------------	---

	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium - Low	Small adverse	Not Significant (Minor)	<p>practicable minimum and ensure minimal change to existing morphology and flow conveyance, by adhering to embedded environmental measure W02.</p> <p>Excess sediment ingress via runoff from working areas could indirectly influence channel 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.</p>
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 water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not Significant (Negligible)	<p>The construction works have the potential to affect water quality conditions within surface water features via:</p> <ul style="list-style-type: none"> • accidental spillage of fuel, oil, concrete or other chemicals used during construction; • mobilisation/leaching of contaminants from historical soil contamination during excavation works; and • contaminated water pumped from excavations. <p>The proposed embedded measures to prevent surface water pollution are set out in the Preliminary CoCP and include</p>
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium - Low	Small adverse	Not Significant (Minor)	

GG03, GG15, GG23, W02, W05, W09 and W11.

Assuming the implementation of these measures, predicted effects on surface water receptors and water resource/WFD receptors due to potential mobilisation and release of pollutants are not significant.

Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants in groundwater and subsequently surface water	Main Rivers and WFD river water bodies (referred to in Table 6.4 and Table 6.6)	High	Negligible	Not Significant (Negligible)	The risk of pollution of groundwater as a result of project construction activities would be controlled through preparation of a Foundation Works Risk Assessment (FWRA), in accordance with measure GH02 of the Preliminary CoCP. This would specify the use of suitable piling methods to prevent the creation of pathways for vertical groundwater movement between superficial and deeper aquifers.
	IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Medium - Low	Small adverse	Not Significant (Minor)	Therefore, in this preliminary assessment, predicted effects upon surface water receptors resulting from 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 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.

IDB maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Low-Medium	Small adverse	Not Significant (Minor)	<p>There is generally a sufficient cover of superficial deposits so it is not proposed to investigate the underlying chalk bedrock strata. The majority of construction work would be in the superficial deposits and not within the bedrock, so there would be no requirement for dewatering of the bedrock aquifers and therefore, no significant effects.</p> <p>The risk of mobilisation of pre-existing contamination would be managed through control measures within the Preliminary CoCP, including GH02 and GH11.</p> <p>For the superficial deposits, limited groundwater level information is available at this stage of the assessment. It is assumed dewatering within the superficial deposits will be required to facilitate construction. Where dewatering is required, temporary measures will be undertaken in accordance with Environment Agency guidance and in line with control measures.</p> <p>Groundwater effects on flows and levels are predicted to be limited and as a result, there is a limited scope for groundwater dependent surface water flows to be affected.</p> <p>Therefore, predicted effects upon surface water receptors due to dewatering of temporary works areas are not significant.</p>
--	------------	---------------	-------------------------	---

Water Resource Receptors

<p>The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.</p>	<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>Three licensed surface water abstractions, downstream of the draft Order Limits, and four consented discharges were identified within the Section 2 Study Area outside the draft Order Limits. There is therefore no scope for a direct effect on the abstraction or discharge infrastructure as a result of the Project. Indirect effects on the quantity and quality of water available for abstraction downstream of the draft Order Limits would be controlled by control measures secured via the CEMP.</p> <p>It is therefore concluded that predicted effects on water resource receptors within the Section 2 Study Area are not significant.</p>
--	---	-----	------------	------------------------------	--

Flood Risk Receptors

<p>Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance, and</p> <p>Changes to fluvial flood risk associated with compartmentalisation of the floodplain.</p>	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not Significant (Negligible to Minor)	<p>The land within the Section 2 draft Order Limit is primarily within Flood Zone 1. However, of the 115 pylons to be constructed in Section 2, six are located in floodplains associated with watercourses listed in paragraph 6.7.9. Lattice pylons, used in the Project, minimally obstruct water flow and do not significantly affect floodplain storage or conveyance. The construction of access routes, presence of stockpiles, watercourse crossings and working areas has limited potential to compartmentalise the floodplain. As a</p>
---	---	-----------------	------------	---------------------------------------	---

result, the construction of infrastructure within this zone has limited potential to reduce or displace floodplain storage and subsequently adversely impact flood risk.

The proposed embedded measures to prevent an increase in flood risk due to changes in existing watercourse flow conveyance are set out in the Preliminary CoCP and include W01 and W10.

Based upon the implementation of these embedded measures, effects on flood risk receptors due to changes in flow conveyance during the construction phase are predicted to be negligible, and therefore not significant.

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)	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 will be used, which has a lower permeability than the soils present across the majority of the Section 2 Study Area. However, this finish is not as impermeable as tarmac or concrete. Changes to surfacing resulting from temporary works could reduce rainfall infiltration rates, increase runoff rates, and induce overland flow during
---	---	-----------------	------------	---------------------------------------	---

construction. This could contribute to localised changes to the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes. Any potential watercourse diversions may also disrupt or server existing field drainage systems, dependent on the alignment of any diversions.

The proposed embedded measures to prevent an increase in surface water flood risk during construction are set out in the Preliminary CoCP, and include W06 and W10.

Based upon the implementation of these embedded measures, effects on flood risk receptors due to changes in run-off rates and pathways during the construction phase are predicted to be negligible, and therefore not significant.

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 82 new temporary watercourse crossings proposed within the Section 2 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</p>
--	---	-----------------	------------	---------------------------------------	--

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.

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 will only impact watercourses which have flood defence embankments present such as the main rivers in Section 2. The Section 2 Study Area is largely Flood Zone 1 with small areas of defended and undefended Flood Zone 2 and 3 as it crosses the various main rivers. Therefore, existing flood management assets protect for events up to the standard of protection. The proposed embedded measures to maintain the integrity of the flood defence during construction are set out in the Preliminary CoCP and include W04.</p> <p>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;
- If invasive works are required to a flood defence which would lead to a loss of standard of protection (i.e. through temporary breach or partial removal) design of alternative flood protection, through realignment around works would be required.

Based upon the implementation of embedded measures, effects on flood risk receptors due to impacts upon existing flood defences and drainage infrastructure during the construction phase are predicted to be negligible, and therefore not significant.

Operational 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	Property and infrastructure at risk of flooding	Low – Very High	Negligible	Not Significant (Negligible to Minor)	There would 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. Overhead line maintenance would involve light vehicles using existing agricultural access and will not involve
--	---	-----------------	------------	---------------------------------------	--

to changes in ground surface levels.					significant ground disturbance. Therefore, the impacts of the operation of Section 2 project infrastructure on flood risk receptors are considered negligible and predicted effects are not significant.
Changes to fluvial flood risk associated with loss of floodplain storage and/or change in floodplain flow conveyance.	Property and infrastructure at risk of flooding	Low – Very High	Negligible	Not Significant (Negligible to Minor)	<p>The effects on flood risk receptors from the operation of the Project have been scoped into the assessment for the overhead line. There are six new overhead line pylons located within Flood Zone 2 and 3 within the Section 2 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 would not result in significant loss of floodplain. Therefore, the impacts of the operation of Section 2 project infrastructure on flood risk receptors is considered negligible and predicted effects are not significant.</p>

- ¹ The value of receptor is defined using the criteria set out in PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope and is defined as Low, Medium, High and Very High.
- ² The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in Appendix 4A EIA Technical Assessment Methodologies and Scope and is defined as negligible, small, medium, large adverse and beneficial.
- ³ The significance of the environmental effects is based on the combination of the value of a receptor and the magnitude of change and is expressed as major (significant), moderate (potentially significant) or minor/negligible (not significant), subject to the evaluation methodology outlined PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope.

6.8 Monitoring

- 6.8.1 Although no significant effects have been identified within this assessment, given the hydrological sensitivity within Section 2, 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.

References

- Ref 1 Lincolnshire County Council (2016) Lincolnshire Minerals and Waste Local Plan: Core Strategy and Development Management. [online] Available at: <https://www.lincolnshire.gov.uk/downloads/file/2361/core-strategy-and-development-management-policies> [Accessed 02 October 2024]
- Ref 2 Lincolnshire County Council (2019) Joint Lincolnshire Flood Risk and Water Management Strategy 2019-2050. [online] Available at: <https://www.lincolnshire.gov.uk/downloads/file/2365/joint-lincolnshire-flood-risk-and-water-management-partnership-framework-draft-strategy-2019-2050-pdf> [Accessed 02 October 2024]
- Ref 3 North East Lincolnshire Council (2018) Local Plan 2013 to 2032 (Adopted 2018) [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 02 October 2024]
- Ref 4 East Lindsey District Council (2018) East Lindsey Local Plan Core Strategy Adopted July 2018 [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230 [Accessed 02 October 2024]
- Ref 5 Water Management Consortium (2018) Lindsey Marsh Drainage Board Byelaws [online]. Available at: https://www.wmc-idbs.org.uk/_files/ugd/ecef50_0610974d55f04f39afc40eb7411255da.pdf [Accessed 16 October 2024]
- Ref 6 Witham & Humber Drainage Boards (2021) North East Lindsey Drainage Board Byelaws [online]. Available at: <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwitham3idb.gov.uk%2Fwp-content%2Fuploads%2F2021%2F09%2Finternal-drainage-board-NEL-land-drainage-byelaws-2.docx&wdOrigin=BROWSELINK> [Accessed 07 March 2025]
- Ref 7 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 23 October 2024]
- Ref 8 Planning Inspectorate (2024) Grimsby to Walpole, Volume 1 – 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 23 October 2024]
- Ref 9 UK Government. The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015. 2015. [online] Available at: <https://www.legislation.gov.uk/uksi/2015/1623/contents> [Accessed 26 November 2024]
- Ref 10 Department for Levelling Up, Housing and Communities (2025). National Planning Policy Framework, Chapter 14: Meeting the challenge of climate change, flooding and coastal change [online] Available at: <https://www.gov.uk/guidance/national->

planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change [Accessed 07 February 2025]

- Ref 11 Environment Agency (2022) Anglian river basin district river basin management plan: updated 2022 [online] Available at: <https://www.gov.uk/guidance/anglian-river-basin-district-river-basin-management-plan-updated-2022> [Accessed 10 January 2024]
- Ref 12 Department for Levelling Up, Housing and Communities (2022). Flood Risk and Coastal Change [online] Available at: <https://www.gov.uk/guidance/flood-risk-and-coastal-change> [Accessed 25 November 2024]
- Ref 13 Highways England, Transport Scotland, Welsh Government and Department for Infrastructure (2020). Design Manual for Roads and Bridges. LA 113 Road Drainage and the Water Environment. [online]. Available at: <https://www.standardsforhighways.co.uk/search/d6388f5f-2694-4986-ac46-b17b62c21727> [Accessed 23 October 2024]
- Ref 14 Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive. [online] Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive> [Accessed 13 November 2024]
- Ref 15 CH2M (2017) M+F Q2 Fluvial Package Modelling: Saltfleet and Great Eau Model Report – Information received from Environment Agency 2024
- Ref 16 Mott MacDonald (2010) Northern Area Tidal Modelling, Volume 1-5: Breach Flood Mapping – Information received from Environment Agency 2024
- Ref 17 Mott MacDonald (2010) Northern Area Tidal Modelling, Volume 3: Overtopping Flood Mapping – Information received from Environment Agency 2024
- Ref 18 NAFRA Dataset (2020) [online]. Available at: <https://www.arcgis.com/home/item.html?id=f8488c24a34f4456a69abd894a2ba180> [Accessed 21 October 2024]
- Ref 19 Met Office (2024) UK Climate Averages at Manby [online]. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/u12pd4pfg> [Accessed: 21 October 2024]
- Ref 20 Microsoft (2024) Bing Maps. Images courtesy of OS [online]. Available at: <https://www.bing.com/maps?cp=52.391106%7E-1.477661&lvl=11.0> [Accessed 21 October 2024]
- Ref 21 British Geological Survey (2024) Geology of Britain Viewer [online]. Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.214071191.1293546165.1715951454-3653579.1715951454 [Accessed: 21 October 2024]
- Ref 22 Department for Environment, Food and Rural Affairs (DEFRA) (2024). MAGIC Maps.
- Ref 23 Cranfield Soil and AgriFood Institute (2024) Soils Map [online]. Available at: <https://www.landis.org.uk/soilsmap/> [Accessed: 21 October 2024]
- Ref 24 Environment Agency (2019). Environment Agency Statutory Main River Map [online]. Available at:

<https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386> [Accessed: 21 October 2024]

- Ref 25 UK Centre of Ecology & Hydrology Flood Estimation Handbook Web Service. [online]. Available at: <https://fehweb.ceh.ac.uk/> [Accessed: 21 October 2024]
- Ref 26 UK Government (2025). Flood Map for Planning [online]. Available at: <https://flood-map-for-planning.service.gov.uk/> [Accessed 21 January 2025]
- Ref 27 Environment Agency (2025) Long Term Flood Risk [online]. Available at: <https://www.gov.uk/check-long-term-flood-risk> [Accessed 21 January 2025]
- Ref 28 Environment Agency Risk of Flooding from Reservoirs (2025) [online]. Available at: See flood risk on a map - Check your long term flood risk - GOV.UK (check-long-term-flood-risk.service.gov.uk) [Accessed: 21 January 2025]
- Ref 29 Environment Agency Flood Defence Asset Database (2025) [online]. Available at: <https://www.data.gov.uk/dataset/76828b72-3c9c-4700-83c7-d7c36047d322/flood-map-for-planning-rivers-and-sea-spatial-flood-defences-without-standardised-attributes> [Accessed 21 January 2025]
- Ref 30 UK Centre for Ecology & Hydrology National River Flow Archive [online]. Available at: <https://www.data.gov.uk/dataset/76828b72-3c9c-4700-83c7-d7c36047d322/flood-map-for-planning-rivers-and-sea-spatial-flood-defences-without-standardised-attributes> [Accessed 21 October 2024]
- Ref 31 Environment Agency (2025). Catchment data explorer database [online]. <https://environment.data.gov.uk/catchment-planning/> [Accessed 21 January 2025]
- Ref 32 Data request – Information received from Environment Agency August 2024
- Ref 33 Environment Agency (2020) Grimsby, Ancholme & Louth Abstraction Licensing Strategy [online]. Available at: <https://assets.publishing.service.gov.uk/media/5e74df9ed3bf7f46801a3539/The-Grimsby-Ancholme-and-Louth-abstraction-management-strategy.pdf> [Accessed 28 February 2025]
- Ref 34 Environment Agency (2020) Steeping, Great Eau & Long Eau Abstraction Licensing Strategy [online]. Available at: <https://assets.publishing.service.gov.uk/media/5e74e07886650c296f6eda49/The-Steeping-Great-Eau-and-Long-Eau-abstraction-management-strategy.pdf> [Accessed 28 February 2025]
- Ref 35 Department for Environment Food and Rural Affairs (2018) Environment Agency Asset Information and Maintenance (AIMS) database [online]. Available at: <https://environment.data.gov.uk/asset-management/index.html> [Accessed 23 October 2024]
- Ref 36 Met Office (2024). UKCP18 Summaries and Headline Findings [online]. Available at: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/summaries/index> [Accessed 23 October 2024]

- Ref 37 UK Centre for Ecology & Hydrology (2024). Future Flows and Groundwater Levels [online]. Available at: <https://www.ceh.ac.uk/our-science/projects/future-flows-and-groundwater-levels> [Accessed 23 October 2024]
- Ref 38 UK Centre for Ecology & Hydrology (2024). National Changes in River Flow [online]. Available at: <https://www.ceh.ac.uk/national-changes-river-flow-overview> [Accessed 08 January 2025]
- Ref 39 UK Centre for Ecology & Hydrology (2024). Enhanced Future Flows and Groundwater (eFLaG) Portal [online]. Available at: <https://eip.ceh.ac.uk/hydrology/eflag/> [Accessed 14 February 2025]
- Ref 40 UK Centre for Ecology & Hydrology (2024). Future Flows: Changes By Season [online]. Available at: <https://www.ceh.ac.uk/future-flows-river-flow-changes-season> [Accessed 14 February 2025]
- Ref 41 Environment Agency (2022). Flood Risk Assessments: Climate Change Allowances [online] Available at: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> [Accessed 25 November 2024]
- Ref 42 Department for Environment Food & Rural Affairs (2024) Climate change allowances for peak river flow in England [online] Available at: <https://environment.data.gov.uk/hydrology/climate-change-allowances/river-flow> [Accessed 25 November 2024]
- Ref 43 Department for Energy Security and Net Zero (2024) Overarching National Policy Statement for energy (EN-1) [online] Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [Accessed 25 November 2024]
- Ref 44 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 13 March 2025].
- Ref 45 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 13 March 2025].
- Ref 46 Grimsby to Walpole Corridor Preliminary Routeing and Siting Study. January 2024 [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 18 September 2024].

7. Geology and Hydrogeology

Contents

7.	Geology and Hydrogeology	7-1
7.1	Introduction	7-1
7.2	Legislation and Policy Framework	7-4
	Legislation and National Policy	7-4
	Regional and Local Policy	7-4
7.3	Scope of Assessment	7-5
7.4	Assessment Methodology	7-6
	Assessment Assumptions and Limitations	7-6
7.5	Baseline Conditions	7-6
	Study Area	7-6
	Data collection	7-7
	Existing Baseline	7-8
	Future Baseline	7-20
7.6	Design, Control and Additional Mitigation Measures	7-21
	Design Mitigation Measures	7-21
	Control Mitigation Measures	7-22
	Additional Mitigation Measures	7-23
7.7	Preliminary Assessment of Effects	7-24
	Likely Significant Effects	7-24
	Likely Non-Significant Effects	7-24
7.8	Monitoring	7-53
	Table 7.1 Supporting documentation	7-2
	Table 7.2 Summary of British geological survey boreholes within the draft Order Limits for Section 2	7-12
	Table 7.3 Summary of aquifer designations	7-15
	Table 7.4 Preliminary summary of non-significant Geology and Hydrogeology effects – Section 2	7-31
	References	7-54

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 Grimsby West Substation to New Lincolnshire Connection Substation Section (LCS) A Section (Section 2) 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 2 (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 2 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 2 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 2 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 2 Appendix 7A Initial Contamination Risk Classification	A list of identified sites with potentially contaminative uses within the Section 2 Study Area, a table identifying the risk classification criteria and an initial risk classification for each feature, to allow a proportionate assessment of potential effects within the PEI Report.
PEI Report Volume 3 Part B Sections 1 to 7 Appendix 7B Minerals Safeguarding Report	A report for the full Study Area across the Project which identifies any safeguarded minerals and provides an appraisal of the effects of the Project against relevant minerals policy.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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	Provides a summary of the main alternatives considered in relation to the Project during the

Supporting Information	Description
	design development process, including the main reasons for selecting the chosen option.
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 also interrelationships related to 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 2 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 quality, 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 2 Chapter 6 Water Environment** should be consulted in relation to the effects on groundwater, including impacts on groundwater quality and quantity, identified by the Geology and Hydrogeology assessment that may affect hydrological receptors, such as surface water receptors;
 - iii. **PEI Report Volume 2 Part B Section 2 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 2 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment; and
 - v. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

7.2 Legislation and Policy Framework

Legislation and National Policy

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

Regional and Local Policy

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

- i. North East Lincolnshire Local Plan, 2018 (Ref 1):
 - Policy 5 Development Boundaries and Policy 31 Renewable and Low Carbon Infrastructure: specify that land contamination is a relevant consideration for all development proposals;
 - Policy 34 Water Management: sets out considerations for development proposals to minimise effects on groundwater resources and quality, including source protection zones;
 - Policy 41 Biodiversity and Geodiversity: sets out considerations for development proposals to minimise or mitigate impacts on designated sites, including Local Geological Sites; and
 - Policy 44 Safeguarding Minerals and Related Infrastructure: details the safeguarded minerals within the council area and sets out requirements for development proposals within areas of safeguarded minerals to ensure resources within the area are not needlessly sterilised;
- ii. East Lindsey District Local Plan, 2018 (Ref 2):
 - Strategic Policy 10 (SP10) Design: this policy includes requirements for the use of and developments on brownfield land and protection of water resources. The corresponding supporting text in the Local Plan (Paragraphs 4.10 and 4.11) notes that any assessment of brownfield land should be undertaken in accordance with Environment Agency (EA) guidance document CLR11 'Model Procedures for the Management of Land Contamination' (now Land Contamination Risk Management) and development within areas of high sensitivity groundwater, including source protection zones and drinking water abstractions, will be expected to comply with the EA's Groundwater Protection guidance. This text also notes that the district area is under serious water stress and developments that will unacceptably deplete water resources or pose a risk to quality of groundwater will not be supported.
 - Strategic Policy 24 (SP24) Biodiversity and Geodiversity: sets out considerations for development proposals with regard to minimising impacts on features of geodiversity value;
 - Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy: sets out considerations for developments for the transmission and interconnection of electricity, for sites or features of biodiversity or geodiversity importance;
- iii. Greater Lincolnshire Nature Partnership, 2021. Geodiversity Strategy 2022 – 26 (Ref 3): this document sets out the Geodiversity Action Plan (GAP) and a

summary of geodiversity sites within Lincolnshire, along with planning and conservation advice for sites of geodiversity value; and

- 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. This includes a meeting held on 19 September 2024 with Anglian Water and the EA, discussing the proposed development within Section 2, particularly in relation to works within source protection zones and in proximity to groundwater abstractions. This engagement was undertaken specifically for Section 2, due to the absence of proposed infrastructure (pylons or substations) within Source Protection Zone (SPZ) 1 areas within other Sections of the Project. 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 Scoping Opinion Responses and Stakeholder Engagement Summary**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 7.3.2 Non statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 7.3.3 The scope of the construction assessment covers the following receptor groups:
 - i. Human health (construction workers, adjacent land users) – only in the context of land contamination assessments (various other aspects of human health are addressed in **PEI Report Volume 2 Part C Chapter 8 Health and Wellbeing**);
 - ii. Groundwater aquifers;
 - iii. Groundwater abstractions;
 - iv. Soil/land quality – only in the context of land contamination assessments (other aspects being addressed in **PEI Report Volume 2 Part B Section 2 Chapter 8 Agriculture and Soils**);
 - v. Structures; and
 - vi. Designated geological conservation sites (none present within the Section 2 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 2).

7.4 Assessment Methodology

- 7.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Geology and Hydrogeology assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all defined and assigned to the assessment. A summary of the key components 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 EA's Approach to Groundwater Protection (Ref 8) including the requirements noted in that guidance in relation to Nationally Significant Infrastructure Projects (NSIP). 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 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 2.
- 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:

- i. 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 Sites of Special Scientific Interest (SSSI) (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 3 December 2024; and
- xi. 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 hectares in a 100 m wide swathe), originally obtained relative to earlier provisional engineering design

alignment options. This dataset covers approximately 70 per cent of the draft Order Limits for Section 2.

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

Topography and Current Land Use

- 7.5.5 Section 2 covers the overhead line from the New Grimsby West substation near Aylesby in the north west of the Section, to the New LCS A near Alford in the south east. Section 2 includes approximately 40 km of overhead line with pylons at regular intervals (approximately 350 m spacing), including pylons GL4 to GL118.
- 7.5.6 The land within this Section is primarily used for agricultural purposes with several major roads (including the A46, B1203, A16, B1201, B1200 and the A157) and several minor/local roads along its length. A review of Ordnance Survey (OS) mapping shows Section 2 Study Area to be generally flat lying throughout, with no steeply sloping ground identified. The north of Section 2 is noted to be at a slightly higher topographic elevation than the south, although given the extent of the Section this does not represent a significant elevation change. Surface water features including ponds, drains and streams are present within Section 2. Occasional residential properties and farm buildings, along with areas of woodland, are located within the Section 2 Study Area but not within the draft Order Limits.
- 7.5.7 Existing 132 kV overhead lines are currently present in two locations, one line orientated north to south between pylons GL13 and GL14 and the second orientated east to west and located directly north of pylon GL18. Lower voltage (e.g. 11 kV and 33 kV) overhead lines are also present in multiple locations throughout the Section 2 Study Area.

- 7.5.8 Three existing solar farms are located within the draft Order Limits and Section 2 Study Area, two of which are located south west of Bradley and within the far north of Section 2, adjacent to pylons GL15 to GL18. The third is located to the south of Yarbugh, off Westfield Road, directly west of the draft Order Limits and approximately 220 m south east of pylon GL70.
- 7.5.9 A railway (Lincolnshire Wolds Railway) is present within the Section 2 Study Area and west of the draft Order Limits, which starts at North Thoresby (to the west of pylon GL47) and runs south to Ludborough Station (to the west of pylon GL55). This railway formerly extended to the north through the draft Order Limits (between pylons GL43 and GL44 in a cutting, the route of which appears to currently be overgrown), recorded as the East Lincolnshire Line.
- 7.5.10 A sewage works is shown on historical maps and present day aerial imagery between Aylesby Road and the A46, approximately 140 m south west of the draft Order Limits and 290 m south west of pylon GL9.
- 7.5.11 A second sewage works is located directly adjacent to and outside of the draft Order Limits to the south of Alvingham and approximately 180 m south west of pylon GL77. This sewage treatment works is recorded on historical mapping from the 1950's through to present day, shown on aerial imagery. Historical surface ground workings are also recorded in proximity to this feature directly south east of pylon GL77.
- 7.5.12 Keddington Oil Well is located approximately 230 m west of pylon GL84. The oil well is outside the draft Order Limits, with the associated hard surface storage areas around the well coming adjacent to the draft Order Limits boundary. The storage area is recorded to have been approved in 1999 for Wingas Storage UK and to be associated with petroleum processes. There are also various other historical licence records associated with petroleum processes at this site.
- 7.5.13 Aerial imagery indicates other commercial built development within the Section 2 Study Area, all of which is located outside of the draft Order Limits, to include vehicle garages and repair centres, building and engineering contractors, and fisheries. 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 2 Appendix 7A Initial Contamination Risk Classification**.

Historical Land Use

- 7.5.14 A historical airfield (Royal Air Force (RAF) Manby) is located within the Section 2 Study Area west of Manby, with runways historically present within the draft Order Limits to the north and south of pylon GL90. Present day aerial imagery shows the land within and east of the draft Order Limits to have been restored to agriculture.
- 7.5.15 An unspecified heap is located within the draft Order Limits in the very north of Section 2, north of Aylesbury Road and approximately 120 m south west of pylon GL5, with no details on materials but dated 1938. This feature is shown on historical mapping up to 1973, but is not apparent from current aerial imagery.
- 7.5.16 An area of surface ground workings dated 1992 is recorded within the draft Order Limits, located approximately 100 m east of pylon GL26, recorded to be associated with a pond and current OS mapping shows the void to be water filled. An area of surface ground workings is also recorded within the draft Order Limits and approximately 130 m east of pylon GL64, dated 1976 and 1986. Current OS mapping shows the void to be water filled.

- 7.5.17 A historical railway (Mablethorpe Branch – Great Northern Railway) is recorded within the draft Order Limits at Stewton between pylons GL86 and GL87 orientated south west to north east. This feature is shown on historical mapping from the 1880's through to the 1950's, before being recorded as dismantled. Aerial imagery suggests the land has been restored entirely to agriculture.
- 7.5.18 A number of historical features outside of the draft Order Limits but within the Section 2 Study Area have been identified within this assessment. These include two brick works, a brick and tile works, an industrial works, a refuse tip and sand and gravel pit, a plant nursery, a tank, a disused mill, a site with use of animal by-products, vehicle repair garages/auto centres, a textile manufacturer and military land. 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 2 Appendix 7A Initial Contamination Risk Classification**.
- 7.5.19 The current and historical features identified within this Section are show on **PEI Report Volume 2 Part B Section 2 Figure 7.5 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

Geology

Made Ground

- 7.5.20 There are no recorded artificial deposits on published geological mapping (Ref 11) within the draft Order Limits for Section 2. Three areas of artificial deposits are recorded within the Section 2 Study Area (outside the draft Order Limits), to the east of Laceby, underlying existing residential and commercial developments. Isolated Made Ground deposits are expected throughout the draft Order Limits and Section 2 Study Area adjacent to access tracks and roads and in areas of historical and current land uses, as noted within the 'Historical Land Use' and 'Topography and Current Land Use' sections above.

Superficial Deposits

- 7.5.21 The Section 2 Study Area is underlain entirely by various superficial deposits, the majority of which consists of Devensian Till (Glacial Till), typically described as heterogeneous clay, sand, gravel and boulders.
- 7.5.22 There are also less prevalent, and generally isolated, occurrences of the following superficial deposits recorded within the Section 2 Study Area:
- Lacustrine deposits – comprising sand, silt and clay, present in isolated areas within the northern third of Section 2 up to North Thoresby, not underlying any pylons but adjacent to pylons GL7, GL12, GL13 and GL28;
 - Glaciofluvial deposits – comprising sand and gravel, generally present surrounding alluvium deposits adjacent to surface watercourses and in other isolated areas throughout Section 2, underlying pylons GL4 and adjacent to pylons GL8, GL9, GL18, GL30, GL31, GL110 and GL111;
 - Alluvium – comprising clay, silt, sand and gravel, generally in linear orientations along surface watercourses throughout Section 2, underlying pylons GL9, GL18, GL20, GL33, GL35, GL77, GL98 and GL110 to GL112, and adjacent to pylons GL34, GL36, GL44, GL48, GL59 and GL60;

- iv. Peat – located in two localised areas immediately east of the draft Order Limits and within the Section 2 Study Area between Aylesby Road and the A46 in the north of Section 2, east of pylon GL8 and north east of pylon GL9 (where it encroaches very slightly into the Order Limits, around 60 m north east of the pylon);
- v. Tidal Flat deposits – comprising clay and silt, linearly distributed along surface watercourses entering the Section 2 Study Area from the east. These deposits enter the draft Order Limits and Study Area in isolated areas from North Thoresby to the south, through Section 2 (from the north), but not underlying any pylon locations; and
- vi. River Terrace deposits – comprising sand and gravel, not located within the draft Order Limits, but present within the Section 2 Study Area east and south of Tothill, adjacent to the alluvium deposits in the far south of Section 2.

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

Bedrock

7.5.24 The bedrock within the Section 2 Study Area is recorded to comprise:

- i. Burnham Chalk Formation in the north from pylon GL4 to GL52 – generally described as thinly bedded chalk with common and discontinuous flint bands and sporadic marl seams;
- ii. Welton Chalk Formation in the centre, east and south of the Section 2 Study Area from pylon GL53 to GL79 and pylon GL95 to GL111 – generally described as massive or thickly bedded chalk with occasional, but well-developed flint bands. This lithology is generally recorded to be softer than the overlying Burnham Chalk;
- iii. Ferriby Chalk Formation in the west of the Section 2 Study Area, east of Louth from pylon GL80 to GL94 and pylon GL112 to GL118 – generally described as soft, marly, flint-free chalk;
- iv. Hunstanton Formation only present to the east of Louth in the south west of the Section 2 Study Area – generally described as rubbly to massive chalks with marl bands and typically only approximately 3 m in thickness;
- v. Carstone Formation which is only present to the east of Louth in the south west of the Section 2 Study Area – generally described as coarse grained, cross-bedded, oolitic, ferruginous sandstone and typically up to approximately 10 m in thickness.

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

Geological Setting

7.5.26 No linear geological features (e.g. faults, breaklines, etc.) are recorded within the Section 2 Study Area. Published geological mapping (Ref 11) shows the bedrock strata as being generally horizontal across the Section 2 Study Area, with no indication of strata dip.

7.5.27 Borehole records published by the BGS within the draft Order Limits have been reviewed as part of this assessment to help confirm the anticipated geological sequence in line with the published geological mapping. Eight BGS boreholes (Ref 11) are located within the draft Order Limits and these have been summarised in **Table 7.2** below:

Table 7.2 Summary of British geological survey boreholes within the draft Order Limits for Section 2

Borehole ID	Location (Easting, Northing)	Location Description	Stratigraphy
TA20NW18	521670, 407400	Southwest of pylon GL8, north of Laceby, off Little Beck	<ul style="list-style-type: none"> • 0 – 0.91 m: Soil • 0.91 – 1.52 m: Gravel • 1.52 – 6.71 m: Marl clay • 6.71 – 15.54 m: Chalk gravel • 15.54 – 15.85 m: Yellow Clay • 15.85 – 19.20 m: Gravel • 19.20 – 21.34 m: Chalk
TA20SE114	528700, 400010	South of pylon GL39, at Waithe House Farm, northeast of Grainsby	<ul style="list-style-type: none"> • 0 – 0.30 m: Soil • 0.30 – 25.30 m: Clay • 25.30 – 28.04 m: Sand • 28.04 – 38.71 m: Chalk
TF29NE45	529650, 399680	Southeast of pylon GL42, east of Grainsby along Grainsby Lane	<ul style="list-style-type: none"> • 0 – 21.30 m: Sandy clay • 21.30 – 22.50 m: Sand • 22.50 – 29.45 m: Chalk bearing strata • 29.45 – 32 m: Firm Chalk
TF29NE44	529650, 399680	South east of pylon GL42, east of Grainsby along Grainsby Lane	<ul style="list-style-type: none"> • 0 – 7.00 m: Very sandy clay.
TF29NE37	529650, 399680	Southeast of pylon GL42, east of Grainsby along Grainsby Lane	<ul style="list-style-type: none"> • 0 – 20.90 m: Sandy clay • 20.90 – 22.90 m: Clayey sand • 22.90 – 23.70 m: Flint beds • 23.70 – 33.00 m: Chalk and flints • 33.00 – 122.00 m: Very strong chalk with flint bands
TF39NW93	532100, 395400	South of pylon GL57, west of Covenham St Bartholomew along Pear Tree Lane	<ul style="list-style-type: none"> • 0 – 0.20 m: Topsoil • 0.20 – 5.45 m: Clay

Borehole ID	Location (Easting, Northing)	Location Description	Stratigraphy
TF39NW92	532040, 395360	South of pylon GL57, west of Covenham St Bartholomew along Pear Tree Lane	<ul style="list-style-type: none"> 0 – 0.30 m: Topsoil 0.30 – 2.00 m: Silty clay
TF39SW93	533580, 393890	Northeast of pylon GL64, south of Covenham St Mary, off Ings Lane	<ul style="list-style-type: none"> 0 – 0.50 m: Topsoil 0.50 – 4.45 m: Silty clay
TF48SW29	542100, 381200	West of pylon GL111, south of Tothill, adjacent to the Great Eau	<ul style="list-style-type: none"> 0 – 0.50 m: Topsoil 0.50 – 3.20 m: Silty clay and sand 3.20 – 17.80 m: Sand and gravel 17.80 – 38.00 m: Chalk 38.00 – 49.50 m: Clay (shale) 49.50 – 64.20 m: Sandstone 64.20 – 103.50 m: Clay 103.50 – 104.80 m: Sandstone

- 7.5.28 The boreholes listed in **Table 7.2** that record primarily granular superficial deposits (TF48SW29 and TA20NW18) are within localised areas mapped to be underlain by alluvium. The remaining boreholes, which recorded primarily cohesive superficial deposits, are within areas mapped to be underlain by Glacial Till, which is the predominant superficial deposit within the Section 2 Study Area.
- 7.5.29 The boreholes listed in **Table 7.2** are those within the draft Order Limits. There is also a substantial number of borehole records (approximately 180) held by the BGS that are outside the draft Order Limits but within the Section 2 Study Area. For brevity, the details of these logs are not presented. However, where specifically relevant to the assessment relevant information from these logs is discussed in the assessment section (section 7.7).
- 7.5.30 No Local Geological Sites or sites nationally designated for their geological importance (e.g. SSSI) are located within the Section 2 Study Area.
- 7.5.31 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 2 Figure 7.2 Superficial Geology** should be made for the areas affected by the classifications described.
- 7.5.32 Areas of Alluvium and Lacustrine deposits are classified as Class D in relation to compressibility, meaning that compressibility and uneven settlement hazards are

probably present. One area of Class E compressibility hazard is present around 60 m north east of pylon GL9, where an area of peat encroaches marginally into the draft Order Limits. Class E is defined as 'highly compressible strata are present'.

- 7.5.33 One area of Class C landslide classification, defined as 'slope instability problems may be present or anticipated', is present 260 m north east of pylon GL15. This encroaches very marginally into the draft Order Limits, and the remainder of the draft Order Limits are Class A with respect to landslides ('landslides are not likely to occur').
- 7.5.34 Localised areas of medium plasticity clays (Class C with respect to shrink-swell hazards) and Class C or D running sand hazards (defined as running sand hazards 'may be' or are 'probably present') are associated with areas underlain by Lacustrine and Tidal Flat deposits (medium plasticity clays) and Alluvium (Class C running sands) and Tidal Flat deposits (Class D running sands).
- 7.5.35 The bedrock geology in Section 2 generally consists of chalk. Whilst this is a soluble rock that is prone to dissolution, this is not reflected in the available BGS geohazards data, which is assumed to be due to presence of superficial deposits over the chalk across the Section 2 Study Area.

Hydrogeology

- 7.5.36 The superficial deposits within the Section 2 Study Area are designated as follows:
- i. Secondary A Aquifer:
 - Glaciofluvial deposits – present surrounding alluvium deposits adjacent to surface watercourses and in other isolated areas throughout Section 2, underlying pylon GL4 and adjacent to pylons GL8, GL9, GL18, GL30, GL31, GL110 and GL111;
 - Alluvium – in linear orientations along surface watercourses throughout Section 2, underlying pylons GL9, GL18, GL20, GL33, GL35, GL77, GL98 and GL110 to GL112, and adjacent to pylons GL34, GL36, GL44, GL48, GL59 and GL60; and
 - River Terrace deposits – not located within the draft Order Limits, but present within the far south of the Section 2 Study Area.
 - ii. Secondary B Aquifer:
 - Lacustrine deposits – present in isolated areas within the northern third of Section 2, not underlying any pylons but adjacent to pylons GL7, GL12, GL13 and GL28.
 - iii. Secondary Undifferentiated Aquifer:
 - Glacial Till – present beneath the majority of the Section 2 Study Area.
 - iv. Unproductive Strata:
 - Peat – located in two localised areas between Aylesby Road and the A46 in the north of Section 2, east of pylon GL8 and north east of pylon GL9; and
 - Tidal Flat deposits – linearly distributed along surface watercourses entering the Section 2 Study Area from the east in the southern two thirds of Section 2, but not underlying any pylon locations.

- 7.5.37 The bedrock strata within the Section 2 Study Area (chalks of the Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the Carstone Formation) are all designated as Principal Aquifers.
- 7.5.38 The designation and spatial distribution of the superficial and bedrock aquifers within the Section 2 Study Area are shown on **PEI Report Volume 2 Part B Section 2 Figure 7.5 Aquifer Designations: Superficial Deposits** and **PEI Report Volume 2 Part B Section 2 Figure 7.6 Aquifer Designations: Bedrock Geology**. A brief summary of the aquifer descriptions is provided below in **Table 7.3**.

Table 7.3 Summary of aquifer designations

Aquifer Designation	Hydrogeological Description
Principal	Layers of rock that have high intergranular and/or fracture permeability and a high level of water storage, they may support water supply and/or river baseflow 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 baseflow 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 baseflow, and when neither Secondary A or B aquifer designation can be applied.
Unproductive	These strata have negligible significance for water supply or baseflows to rivers, lakes and wetlands. They typically consist of strata with low permeability that naturally offer protection to any aquifers that may be present beneath.

- 7.5.39 The BGS borehole records (Ref 11) have been 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 anticipated superficial cover of generally around 15 m – 30 m within the draft Order Limits, primarily comprising Glacial Till. The BGS report on the Chalk Aquifer System of Lincolnshire (Ref 16) has determined that the chalk aquifer is typically confined by the Glacial Till deposits within this region.
- 7.5.40 The northern two thirds of the Section 2 Study Area are located within the North Lincolnshire Chalk Unit groundwater body, which is monitored as part of the Water Framework Directive (WFD) and has been classified by the EA as having Poor status in 2019, due to poor nutrient management from agriculture and groundwater abstractions. The southern third of the Section 2 Study Area is located within the South Lincolnshire Chalk Unit groundwater body, which has been classified by the EA as having Poor status in 2019, also due to poor nutrient management from agriculture.

- 7.5.41 The northern end of the Section 2 Study Area (up to Ashby cum Fenby) is located within four drinking water safeguard zones for groundwater (referenced north to south as GWSGZ0015, GWSGZ0282, GWSGZ0288 and GWSGZ0285), all of which have been designated for nitrate. The remainder of the Section 2 Study Area is not located within any further drinking water safeguard zones. The northern third of the Section 2 Study Area is located within the Lincolnshire Chalk nitrate vulnerable zone (NVZ) designated for groundwater.

Groundwater Levels

- 7.5.42 The EA has provided details of boreholes monitored for groundwater levels within or surrounding the Project Study Area. A total of eight are located within the Section 2 Study Area, as detailed below.
- 7.5.43 Boreholes Laceby STW No. 1 (8/923) and Laceby STW No. 2 (8/922) are located 180 m south west of the draft Order Limits, south west of pylon GL9 and both monitor the groundwater levels within the superficial deposits, recorded within this area to comprise Glacial Till and Alluvium. Borehole 8/923 has recorded a groundwater level ranging between 5.6 m and 9.0 m Above Ordnance Datum (AOD) (0.9 m and 4.3 m below ground level (bgl)) and borehole 8/922 has shown levels ranging between 7.8 m and 8.8 m AOD (1.0 m and 2.0 m bgl).
- 7.5.44 The remainder of the borehole records provided by the EA are recorded to screen groundwater in bedrock (Chalk, or in one instance the Spilsby Sandstone). It should be noted that, given the prevalence of low permeability superficial deposits in the Section 2 Study Area, groundwater levels in these boreholes may reflect sub-artesian conditions rather than the actual level of groundwater in the ground.
- 7.5.45 To the south of the Laceby boreholes and 200 m south west of the draft Order Limits is a borehole installed within the North Lincolnshire Chalk bedrock (borehole reference Laceby STW Support (5/910)). This borehole shows a groundwater level variation of between 5.5 m and 9.5 m AOD (1.0 m and 4.5 m bgl).
- 7.5.46 In the centre of Section 2, the closest monitoring borehole is located on the western edge of the draft Order Limits, with the closest pylon to this borehole being GL71. This borehole (Brackenborough, 6/117) is screened in the South Lincolnshire Chalk and shows a notable variability in groundwater levels of between 3.5 m and 17.3 m AOD (0 m and 13.8 m bgl), although the typical variation is between 6 m and 9 m AOD (8 m and 11 m bgl).
- 7.5.47 A monitoring borehole is located approximately 1.3 km south west of pylon GL80 and 350 m south west of the draft Order Limits. This borehole (Keddington (6/055)) monitors the groundwater levels within the South Lincolnshire Chalk and shows the average levels to be consistent over time, with regular seasonal variations and levels typically varying between 12 m and 13.5 m AOD (ground level and 1.5 m bgl), likely suggesting sub-artesian/artesian conditions.
- 7.5.48 A monitoring borehole is located north east of pylon GL82 and on the eastern edge of the draft Order Limits for Section 2. This borehole (South Cockerington (6/065)) is also screened within the South Lincolnshire Chalk and shows generally similar levels across the records, typically varying between 2.5 m and 4.5 m AOD (8 m and 10 m bgl).
- 7.5.49 Towards the south of Section 2, two boreholes are located adjacent to one another and screened within differing bedrock aquifers. These boreholes are located

approximately 80 m north east of the draft Order Limits for Section 2, east of pylon GL113. The first borehole is referenced as Withern Wood South (6/084) and is screened within the South Lincolnshire Chalk. This borehole shows a typical groundwater level variation of between 2.5 m and 4 m AOD (6.5 m and 8 m bgl). The second borehole in this location is referenced as Withern Wood North (7/083) and is screened within the Spilsby Sandstone (present lower in the geological sequence than the chalk). The groundwater levels within this monitoring borehole are recorded to be several metres above ground level. The geological log for this borehole has not been able to be obtained, so it is unknown whether the records are spurious or represent artesian conditions. As this monitoring borehole is not within the draft Order Limits and based on the uncertainties with the data, it has been discounted from further assessment.

Source Protection Zones

- 7.5.50 Large areas of the Section 2 Study Area are located within SPZs, and the overhead line passes through two SPZ I (inner catchment) areas, one located east of Barnoldby le Beck and one north west of Fulstow, measuring approximately 1 km and 1.5 km in diameter, respectively. At present, three pylons (GL21, GL22 and GL23) are proposed within the Barnoldby le Beck SPZ I and four pylons (GL48, GL49, GL50 and GL51) are proposed within the Fulstow SPZ I.
- 7.5.51 The northern half of the Section 2 Study Area, up to Covenham St Bartholomew lies entirely within either SPZ II (outer catchment) or SPZ III (total catchment). From Covenham St Bartholomew to Legbourne, the Section 2 Study Area is not within any SPZ areas. From Legbourne to the southern end of Section 2, the Study Area is located within a SPZ III.
- 7.5.52 Outside the draft Order Limits, but within the Section 2 Study Area, there are two further SPZ I areas. The first is a SPZ I (and surrounding SPZ II area) located immediately east of the draft Order Limits, to the west of Withern and east of pylons GL108 and GL109. The second is located north of Manby and enters the east of the Section 2 Study Area due to being within 500 m of an access route.
- 7.5.53 The locations of the SPZ areas within the Section 2 Study Area are shown on **PEI Report Volume 2 Part B Section 2 Figure 7.4 Groundwater Source Protection Zones**.

Abstractions

- 7.5.54 There are a number of groundwater abstractions located within the Section 2 Study Area, all of which are located outside of the draft Order Limits. These are as follows:
 - i. AN/029/0010/002/R02 – located approximately 190 m west of the draft Order Limits, 340 m south west of pylon GL9, a remedial river/wetland support abstraction point;
 - ii. 4/29/10/*G/0005 – a public water supply borehole for Anglian Water Services Ltd, located in the area to the east of Barnoldby le Beck;
 - iii. 4/29/11/*G/0196 – a public water supply for Anglian Water Services Ltd, located in the area to the north west of Fulstow;
 - iv. 4/29/14/*G/0120 – located approximately 300 m south east of the draft Order Limits and north east of pylon GL109, noted to be for agricultural purposes associated with the Withern Mill Trout Farm; and

- v. 4/29/14/*G/0109 – located 70 m west of the draft Order Limits and 190 m west of pylon GL114, noted for Aby Grange Farms as an agricultural and domestic supply borehole.

7.5.55 East Lindsey District Council have provided records of private water supplies (PWS) within their district area, none of which are located within the draft Order Limits for Section 2. There are a total of 20 private water supplies within the Section 2 Study Area, which relate to boreholes and springs associated with primarily domestic supply or commercial/public activities/consumption, with one at North Thoresby recorded as non-domestic supply (for a swimming pool). The majority of the PWS are located several hundred metres from the draft Order Limits and any areas of ground disturbance or construction. The closest private water supplies to the draft Order Limits are located adjacent to existing roads that will be used for construction access but not adjacent to construction areas for the overhead line, including four individual records south west of pylon GL78, one record south of pylon GL103, one west of pylon GL111 and one west of pylon GL115. There are no PWS within 100 m of construction activities that will involve ground disturbance.

7.5.56 The locations of the private water supplies are shown on **PEI Report Volume 2 Part B Section 2 Figure 7.6 Aquifer Designations: Bedrock Geology**.

Environmental Setting

7.5.57 Zetica UXO online risk mapping (Ref 15) shows the Section 2 Study Area as lying entirely within an area of Low bomb risk. A Luftwaffe target and UXO find are located at the Manby Airfield immediately west of Manby, within the east of the Section 2 Study Area, although the level of risk is recorded as Low.

7.5.58 A historical landfill named Butt Lane is located 200 m south of the draft Order Limits, but within the Section 2 Study Area on the edge of Laceby, in the far north of Section 2. The last reported acceptance of waste is dated 1976 and the landfill is recorded as accepting inert waste. A second historical landfill named Withern Mill is recorded 300 m east of the draft Order Limits, but within the Section 2 Study Area, to the east of Tothill, which has no recorded input dates and is recorded to have accepted household waste.

7.5.59 There are no recorded current landfills within the Section 2 Study Area.

7.5.60 The following waste exemptions are recorded within the Section 2 Study Area:

- i. WEX129835 – located just beyond the extent of the draft Order Limits and approximately 240 m north east of pylon GL16, recorded for the storage of sludge on a farm;
- ii. WEX142244 – located on the eastern boundary of the draft Order Limits between pylons GL24 and GL25, recorded for screening and blending of waste on a farm;
- iii. WEX142241 – located 140 m east of pylon GL27, recorded for screening and blending of waste on a farm.

7.5.61 A sewage treatment works is recorded to the south of Alvingham, named Louth Sewage Treatment Works. This feature is located outside of the draft Order Limits, but within the Section 2 Study Area and south west of pylon GL77. A second sewage treatment works is located approximately 290 m south west of the draft Order Limits and 140 m south west of pylon GL9.

- 7.5.62 A Lincolnshire Mineral Site is recorded immediately west of the draft Order Limits, to the west of pylon GL85, to the south east of Louth. This relates to the Keddington Oilwell, which is an active abstraction location for the commodity of oil, and associated storage area and above ground tanks.
- 7.5.63 A Waste Site recorded in Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (Ref 4) is present on the eastern edge of the Section 2 Study Area, to the west of Manby. The license holder is recorded as 'G B M Waste Management', who are a demolition contractor, but with no details as to the nature of any works or material types dealt with at the site. This feature is located directly in the centre of the former Royal Air Force (RAF) Manby site.
- 7.5.64 North East Lincolnshire Council has not provided any information on environmentally designated sites or potentially contaminative land uses for use within this assessment.
- 7.5.65 East Lindsey District Council has provided a list of any sites with environmental permitted activities within their district area, none of which are within the Section 2 Study Area. Records were also provided on historical contaminative land uses within their district area, a number of which are located within the Section 2 Study Area, which are detailed in **PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification**. One of these features is located within the draft Order Limits for Section 2, an area of recorded use of animal by-products. This feature is dated 1907 and is located to the east of North Thoresby along a construction access route, approximately 210 m north east of pylon GL48. The location is shown on current aerial imagery to contain agricultural fields.
- 7.5.66 The features outlined above are all shown on **PEI Report Volume 2 Part B Section 2 Figure 7.7 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

Pollution Incidents

- 7.5.67 The EA has recorded a total of 34 historical pollution incidents within the Section 2 Study Area, dating between 2001 and 2024. The details of these incidents are summarised as follows.
- 7.5.68 There are no Category 1 (major), Category 2 (significant) or Category 4 (no impact) pollution incidents to land or water within the draft Order Limits for Section 2.
- 7.5.69 There are two recorded Category 3 (minor) pollution incidents within the draft Order Limits for Section 2. The first is located on the southern boundary of the draft Order Limits and approximately 150 m south of pylon GL31, dated 2003 and recorded to be a Category 3 (minor) impact on water associated with a containment failure of petrol from a road traffic accident. The second is located on the western boundary of the draft Order Limits and approximately 270 m north west of pylon GL24. This pollution incident is dated 2022 with a Category 3 (minor) impact on water associated with grey water (sewage materials), although no identified cause was recorded.
- 7.5.70 The remaining 32 historical pollution incidents within the Section 2 Study Area are located outside the draft Order Limits. These comprise:
- i. One Category 2 (significant) incident to land. This incident occurred in 2015 and is associated with a sewer failure or overflow of crude sewage, located just beyond the extent of the draft Order Limits and approximately 510 m south west

of pylon GL78, most likely associated with the adjacent Louth Sewage Treatment Works.

- ii. Thirty Category 3 (minor) incidents to land, water or both. These cover a range of contaminants and causes (fly tipping, oils/fuel, sewage, fires/smoke etc). Given their minor classification and their location outside the draft Order Limits, it is not considered likely that these historical pollution incidents will be having a substantive effect on the current Geology and Hydrogeology baseline within the draft Order Limits.
- iii. One recorded incident with no classification, reference ID or noted cause, which has therefore not been referenced further within this assessment.

7.5.71 The locations of recorded historical pollution incidents within the Section 2 Study Area are shown on **PEI Report Volume 2 Part B Section 2 Figure 7.7 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

Discharge Consents

7.5.72 There are no discharge consents within the draft Order Limits for Section 2, although there are a number of discharge consents within the Section 2 Study Area, all of which relate to discharge to surface water and are therefore not considered relevant for the assessment within this Chapter. These are discussed within **PEI Report Volume 2 Part B Section 2 Chapter 6 Water Environment and Flood Risk**.

Minerals

- 7.5.73 A Minerals Safeguarding Report has been prepared for the Project, which is provided in **PEI Report Volume 3 Part B Sections 1 to 7 Appendix 7B Minerals Safeguarding Report**. This report identifies the safeguarded minerals and safeguarded areas within the draft Order Limits and any potential effects on these as a result of the Project, within the context of relevant mineral safeguarding policy. One safeguarded mineral within the Section 2 Study Area is Glaciofluvial Sand and Gravel, which is recorded beneath pylon GL4 and in localised areas within the Section 2 Study Area. These areas are isolated and the quantity of sand and gravel within each of these areas is considered too small to be commercially viable as a standalone mineral extraction site. Alluvium is also considered a safeguarded mineral and is recorded underlying several pylons throughout Section 2. Although Alluvium does contain sand and gravel, it also contains high quantities of silt and clays and it is therefore highly unlikely it would be worked as a commercial mineral within Section 2.
- 7.5.74 A mineral safeguarding area is recorded within the Section 2 Study Area, associated with the Kedington Oil well site located directly west of the draft Order Limits and approximately 180 m south west of pylon GL84.
- 7.5.75 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

7.5.76 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.

- 7.5.77 At this preliminary stage, a full assessment of the implications of any committed developments with respect to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 7.5.78 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.
- 7.5.79 Hydrogeological conditions are more susceptible to change and therefore may be affected by the following factors:
- i. Climate change – changes in rainfall can affect aquifer recharge, groundwater levels and flow gradients (including consequent effects on the movement of contaminants in the ground);
 - ii. Future developments, should there be any such developments that are completed prior to the construction start date of the Project, including housing – increases in housing within the areas surrounding the Study Area have the potential to affect recharge to the underlying aquifers. Increased demand for drinking water associated with these can also affect future water resources and groundwater levels in aquifers, including the SPZ areas present across the Section 2 Study Area; and
 - 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.
- 7.5.80 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 2. This will remain under review prior to submission of the ES, to ensure that any changes 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 the design and siting of substations, converter stations and SECs. These

approaches are explained in further detail within the Corridor Preliminary Routing and Siting Study (CPRSS) (Ref 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 of works within Section 2. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project, particularly in relation to the SPZ I areas and drinking water abstractions.

Control Mitigation Measures

- 7.6.3 A Preliminary Code of Construction Practice (CoCP) has been prepared for this project, provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control measures included within this document relevant to Geology and Hydrogeology within Section 2 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 CL:AIRE guidance 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention' (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 22), 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 environmental 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 23).
- 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 24), 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 Construction Environmental Management Plan (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 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 (CL:AIRE) “A Definition of Waste: Development Industry Code of Practice (DoWCoP)” (Ref 25). Dedicated waste management areas will be designed to sufficiently accommodate the types and volumes of waste produced and to reduce the environmental risk of storing waste on-site (covered, secured and away from drainage).
 - The control of earthworks and the movement of excavated materials (including any re-use of excavated materials) will be achieved under appropriate Environmental Permits, exemptions or the DoWCoP.

Additional Mitigation Measures

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

7.7 Preliminary Assessment of Effects

- 7.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, maintenance and/or operational activities within Section 2.
- 7.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures, as previously described.
- 7.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 2 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 within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 7.7.4 Where it has been concluded that effects are not significant but may still be considered notable from a stakeholder perspective, a more detailed explanation is provided in support of the summaries included within **Table 7.4**. Examples include consideration of receptors of particularly high sensitivity or effects which have been identified of interest during previous consultation and engagement.
- 7.7.5 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.

Likely Significant Effects

Construction

- 7.7.6 Based upon the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 2, 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 2, 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 7.7.5, a detailed explanation of the non-significant effects on the chalk aquifer and associated SPZ and licensed abstractions is provided below. The effects on these receptors have been selected for this detailed explanation due to the regional importance of the aquifer and presence of public drinking water supplies from groundwater. For brevity, this detailed explanation text does not specifically refer to the 20 private water supply records (i.e. abstractions that fall below licensed abstraction volumes), but many of the same factors are applicable to those abstractions and the effects on them are included in **Table 7.4**.

Construction

Chalk Aquifer and Source Protection Zones

- 7.7.9 Large areas of the Section 2 Study Area are located within SPZs associated with the chalk aquifer. Three pylons (GL21, GL22 and GL23) and a total of 920 m of undergrounding of existing Distribution Network Operator (DNO) assets are located within the Barnoldby le Beck SPZ I area (spread over three separate locations within that area). Four pylons (GL49, GL50, GL51 and GL52) are proposed within the Fulstow SPZ I. In addition, a total of 22 pylons are located in SPZ II areas within Section 2, as is around 1.8km of undergrounding of existing DNO assets (cumulative total across seven separate undergrounding locations that are individually between 172 m and 531 m).
- 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 (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 low permeability superficial cover across the majority of the draft Order Limits also provides further assurance of protection in this regard.
- 7.7.11 There are no instances in which the construction of the Project would involve ground disturbance in areas of potential historical land contamination (moderate or above risk previous land uses, as identified in **PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification**) on land underlain by the chalk aquifer, other than the former RAF Manby site. This is outside any SPZ areas. A variety of potential contaminants may be associated with airfield uses (e.g. metals, asbestos, pH, hydrocarbons and volatile organic compounds).
- 7.7.12 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, which may introduce a risk of creating a pathway for vertical migration and mixing of groundwater between different aquifers (including groundwater that may be affected by pre-existing contamination in the instance of pylon construction at the former RAF Manby site). Such effects would be prevented through the use of suitable piling methods to prevent inadvertent mixing of shallow groundwater with that in deeper, sensitive aquifers (control measure GH02 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**). Control measure GH02 would include the preparation of a FWRA which would include appropriate controls to prevent any significant effects. Examples include the selection of specific piling techniques that prevent the creation of open pathways and minimising any physical downwards transport of soils. This would include consideration of any pre-existing contamination that may be present in relation to pylon construction at the airfield. The chalk aquifer is recorded to have a protective cover of Glacial Till in this location (up to 32 m based on nearby BGS borehole records).
- 7.7.13 Control measure GH01 would ensure adequate pre-construction ground investigation to verify the ground conditions and inform the FWRA. Additionally, control measure

GH11 would ensure a suitable protocol in the instance of encountering unexpected contamination.

- 7.7.14 The locations of DNO asset undergrounding are not on land identified in **PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification** to have potentially contaminative previous uses. Control measures GH01, GH09 and GH11 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) would be applied as necessary to these works.
- 7.7.15 In addition to the chemical or contamination effects discussed above, physical effects on the SPZ and chalk aquifer require consideration in relation to any construction activities that could mobilise sediment/turbidity in the chalk. The majority of the construction work would involve near surface construction activities that would not be expected to interact with the chalk, given the expected nature and thickness of the superficial deposits. Exceptions may include piling for pylon foundations or horizontal directional drilling (HDD) to underground existing lower voltage utilities. Any piling work would be controlled in accordance with control measure GH02 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) through a FWRA, which would require careful controls and monitoring particularly if the piling is within 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 is anticipated in Section 2, although this is subject to confirmation as the design progress. Additionally, as a general groundwater protection requirement, HDD work would be subject to control measure GH09.
- 7.7.16 Given the expected depth of the chalk aquifer and the nature of the construction activities, it is not anticipated that any pumping/dewatering of the chalk aquifer would be required during construction, nor that there would be any discharges to the aquifer.
- 7.7.17 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 aquifer 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 would have a negligible effect on these receptors.

Abstractions

Abstraction AN/029/0010/002/R02

- 7.7.18 This abstraction is located approximately 190 m west of the draft Order Limits, south west of pylon GL9, and is a remedial river/wetland support abstraction point. Nearby BGS borehole data indicates the presence of primarily granular deposits to 2.4 m depth, overlying silty sandy clay (boulder clay) to 7.5 m depth. Underlying the superficial deposits are strata described as chalk gravel becoming sandy at depth and interpreted as weathered Burnham Chalk Formation. Groundwater was encountered during drilling at 1.90 m and 7.50 m.

- 7.7.19 Other than piling for pylon foundations (if required), construction work would be expected to be within the superficial deposits rather than intersecting the chalk. Construction in the superficial deposits is unlikely to present a risk of causing adverse physical or chemical effects on any shallow groundwater that could affect groundwater at the abstraction, given the absence of potentially contaminative historical land uses, the implementation of control measures to prevent the release or mobilisation of contamination or adverse physical effects on groundwater during construction (control measures (GH01, GH03, GH04, GH05, GH06, GH08, GH09, GH11 and GG21) within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**), and the distance between the construction works and the abstraction (over 100 m with intervening low permeability geology). These factors would also prevent adverse chemical or physical effects on groundwater within the chalk aquifer from shallow construction works, as would the likely low permeability of the superficial (clay) deposits which would reduce vertical hydrogeological connectivity with the chalk (e.g. preventing or minimising pathways for the downwards transport of solids mobilised by shallow construction activities, or vertical migration of contaminants).
- 7.7.20 In relation to piling (if required), then control measure GH02 would be implemented to ensure that any risks to the abstracted aquifer are effectively mitigated/prevented. Examples include the selection of specific piling techniques that prevent the creation of pathways between perched groundwater lenses in the superficial deposits and deeper groundwater in the chalk, and minimising any physical downwards transport of soils.
- 7.7.21 Based on the assessment provided above, it is concluded that the magnitude of change (impact) on the abstraction, for all effect types identified in the Scoping Report (Ref 6), is negligible. Together with a high receptor sensitivity, this shows that the Project would have a negligible effect on this abstraction.
- Abstraction 4/29/10/*G/0005
- 7.7.22 This is a public water supply for Anglian Water Services Ltd located in the area to the east of Barnoldby le Beck.
- 7.7.23 This abstraction borehole is in an area that is mapped to be underlain by Glacial Till superficial deposits overlying the Burnham Chalk Formation, although there is no information on the abstraction borehole construction and screening details or depth to groundwater.
- 7.7.24 With the possible exception of piling for pylon foundations (if required), construction work would be expected to be within the superficial deposits rather than intersecting the abstracted chalk aquifer. Shallow construction work in the superficial deposits would not be expected to have adverse chemical or physical effects on groundwater quality or levels in the abstracted chalk aquifer. Firstly, this is because it is not anticipated that construction activities in superficial deposits would be a source of physical effects (such changes in groundwater levels or substantive generation of turbidity) or contamination given the baseline conditions (absence of anticipated pre-existing land contamination), the nature of the construction activities, and the implementation of control measures GH01, GH03, GH04, GH05, GH06, GH08, GH09, GH11 and GG21 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**). Secondly, it is not considered that there is likely to be a pathway by which the abstracted chalk aquifer could be affected by shallow construction in the superficial

deposits because the presence of low permeability superficial deposits is likely to prevent or substantially limit vertical hydrogeological connectivity between the shallow superficial deposits and the underlying chalk (preventing or minimising pathways for the downwards transport of solids mobilised by shallow construction activities, or vertical migration of contaminants).

- 7.7.25 The possible exception to the scenario described above would be piling, if required for pylon foundations. Should this be required, it may introduce a risk of creating a pathway for vertical migration and mixing of groundwater between different geological strata. This risk would be prevented through the use of suitable piling methods to prevent inadvertent mixing of shallow groundwater with that in the chalk aquifer (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.
- 7.7.26 Undergrounding for existing DNO assets would take place in the SPZ I area associated with this abstraction. The undergrounding does not cross any major surface water features or roads that would necessitate the use of HDD, so it is currently anticipated that it would be undertaken through open trenching methods. Control measures GH01 and GH11 (including a watching brief during undergrounding works) (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**) would allow identification of any contamination which could be disturbed and implementation of suitable controls to prevent migration of contaminants.
- 7.7.27 Based on the assessment provided above, it is concluded that the magnitude of change (impact) on the abstraction, for all effect types identified in the Scoping Report (Ref 6), is negligible. Together with a high receptor sensitivity, this shows that the Project would have a negligible effect on this abstraction.

Abstraction 4/29/11/*G/0196

- 7.7.28 This abstraction is noted to be a public water supply for Anglian Water Services Ltd located to the north west of Fulstow.
- 7.7.29 Nearby BGS borehole records indicate that water bearing chalk strata are located at a depth of approximately 68 ft (21 m). The overlying superficial strata are described as interbedded blue and brown warp (artificially induced alluvium) to approximately 9 ft (3 m) underlain by boulder clay to approximately 52 ft (15.8 m). This is in turn underlain by chalk.
- 7.7.30 The hydrogeological and construction scenario is generally very similar to that described above for Abstraction 4/29/10/*G/0005, with construction (other than potentially piling, if required) expected to involve shallow work in cohesive superficial deposits that are hydrogeologically isolated from the abstracted aquifer by a substantial thickness of low permeability superficial deposits. Considering this scenario, and the use of control measures GH01, GH02, GH03, GH04, GH05, GH06, GH08, GH09, GH10, GH11 and GG21 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction**

Practice), any risks to groundwater quality or quantity in the abstracted chalk aquifer would be prevented or minimised such that the effects of the Project would be negligible, which is not considered to be significant. This reflects the assessment provided for construction within Source Protection Zones, which specifically considers the SPZ associated with this abstraction, so is not repeated for brevity.

Abstraction 4/29/14/*G/0120

- 7.7.31 This abstraction is used for agricultural purposes (aquaculture) associated with Withern Mill Trout Farm.
- 7.7.32 Records from a BGS borehole in the area of the recorded abstraction (TF48SW55) record approximately 11 m of cohesive superfcials (clay), overlying around 5 m of sand, in turn overlying chalk at around 16 m depth. No details on water levels can be ascertained from the log.
- 7.7.33 The abstraction is located approximately 300 m from the draft Order Limits and over 400 m from any pylon construction or DNO undergrounding works. The superficial geology within the draft Order Limits in this area is recorded to be Glacial Till and Alluvium. It is expected that, with the possible exception of piling, construction activities would be situated within these superficial deposits. It is not expected that this construction work would introduce new contamination, nor mobilise pre-existing contamination, given the recorded baseline conditions and implementation of control measures (GH01, GH04, GH06, GH08, GH09, GH11 and GG21) within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**). Any physical effects on the level or turbidity of groundwater in the shallow deposits (for example from temporary pumping/control of shallow groundwater in the Alluvium during pylon construction or DNO undergrounding) would of a scale that would not be expected to affect groundwater (in any stratum) at the abstraction point, given the large pathway distance (over 300 m), relatively low permeability of the superficial geology, and implementation of control measures GH05 and GH09. Piling activities (if required) would be informed by and controlled under a suitable FWRA (control measure GH02).
- 7.7.34 It is therefore concluded that any risks to groundwater quality or quantity at the abstraction would be prevented or minimised such that the effects of the Project would be negligible, which is not considered to be significant.

Abstraction 4/29/14/*G/0109

- 7.7.35 This abstraction is located 70 m west of the draft Order Limits and 190 m west of pylon GL114, noted to be associated with Aby Grange Farms as an agricultural and domestic supply borehole.
- 7.7.36 BGS borehole record TF48SW73 is located adjacent to this abstraction. This borehole recorded 11.5 m of clay, overlying 10 m of sand, before encountering chalk at around 21.5 m depth. The superficial geology within the draft Order Limits (to the west of the abstraction) and in the intervening area between the draft Order Limits and the abstraction point is recorded to be Glacial Till.
- 7.7.37 With the possible exception of piling for pylon foundations (if required), construction work would be expected to be only within the superficial deposits rather than intersecting the chalk. Construction in the superficial deposits is unlikely to present a risk of causing adverse physical or chemical effects that could affect groundwater (in

any stratum) at the abstraction, given the absence of potentially contaminative historical land uses, the implementation of control measures to prevent the release or mobilisation of contamination or adverse physical effects on groundwater during construction (control measures GH01, GH03, GH04, GH05, GH06, GH08, GH11 and GG21 within the Preliminary CoCP (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**)), the distance between the construction works and the abstraction, and the likely low permeability of the shallow superficial deposits (which would limit lateral pathways for the migration of contaminants or turbidity in any shallow groundwater in the superficial deposits, and vertical pathways for shallow construction work to affect groundwater in the chalk).

- 7.7.38 Piling activities would be informed by and controlled under a suitable FWRA (control measure GH02 (provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**)). The Project does not involve DNO undergrounding work within 500 m of this abstraction.
- 7.7.39 It is concluded that, with implementation of control measures (GH01, GH02, GH03, GH04, GH05, GH06, GH08, GH11 and GG21) within the Preliminary CoCP (**PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**), the risks to this abstraction would be appropriately reduced and mitigated such that the resulting effects would be negligible, which is not considered to be significant.
- 7.7.40 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 Geology and Hydrogeology effects – Section 2

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 sources have been identified within the draft Order Limits for Section 2 with a moderate or greater potential, including historical railways, a historical airfield and a waste site. The contamination sources within the Section 2 Study Area are summarised within PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification.</p> <p>The historical airfield is shown on historical mapping as having taxiways to aircraft storage areas extending across the draft Order Limits in likely areas of ground disturbance for the Project. The land within these areas appears from current aerial imagery to have been restored to agriculture, although remnant contamination may be present below the ground surface which could be disturbed during construction.</p> <p>With the exception of the historical airfield, all of the potential contamination sources within the draft Order Limits for Section 2 are located outside of pylon working areas and locations where undergrounding of existing DNO assets may be required, so would undergo either no ground disturbance or minimal</p>

¹ Geological Conservation Sites have not been included as receptors within this table due to their absence within the Section 2 Study Area. Groundwater aquifers for Peat and Tidal Flat superficial deposits have also not been included as they are not considered as groundwater aquifers, due to the unproductive nature of the strata.

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
					<p>ground disturbance (e.g. oversailed by overhead lines or crossed by construction accesses).</p> <p>However, a number of areas of undergrounding for existing DNO assets are located in close proximity to the potential contamination sources located outside of the draft Order Limits, which therefore may be disturbed during construction.</p> <p>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) included within the Preliminary CoCP (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 effects on construction workers are not significant.</p>
		High (adjacent land users)	Negligible	Negligible – not significant	<p>Potential contamination sources within the draft Order Limits and Section 2 Study Area have been identified within PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification.</p> <p>With the implementation of control measures (GH01, GH06 – dust and leachate control, and GH11) detailed within the Preliminary CoCP (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), the exposure pathways would be reduced/prevent such that the effects on adjacent land users are 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	High – Bedrock (Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the Carstone Formation)	Negligible	Negligible – not significant	<p>Potential contamination sources identified within the Section 2 Study Area (detailed within PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification) have the potential to negatively affect sensitive aquifers if pre-existing contamination is mobilised during construction. The only feature with a moderate or greater contamination potential that may undergo ground disturbance as part of construction of the project is the historical airfield at Manby (located within a pylon working area).</p> <p>Borehole data for Section 2 shows a superficial cover of predominantly cohesive deposits, which is consistent with geological mapping. Construction activities, other than potentially piling, would be anticipated to be at relatively shallow depths, within these deposits, rather than intersecting the chalk aquifer. The risk of mobilising pre-existing contamination from such construction work is therefore effectively mitigated by a combination of geological factors (low permeability superficial deposits isolating shallow construction from deep groundwater in the chalk) and the control measures within the CoCP.</p> <p>In relation to the potential for piling to cause contaminant migration pathways, control measure GH02 within the Preliminary CoCP (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice).</p> <p>It is concluded that, with the implementation of control measures (GH01, GH02 and GH11), the exposure pathways would be reduced/prevented</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					such that the effects on the bedrock aquifers are not significant.
		Medium – Glacial Till, Glaciofluvial deposits, Alluvium and River Terrace deposits	Low	Minor – not significant	<p>Glacial Till deposits underlie the majority of the Section 2 Study Area. Localised areas of Glaciofluvial deposits, Alluvium and River Terrace deposits are present within the Section 2 Study Area. The only potential contamination feature within a pylon working area is the historical airfield at Manby, located within an area of Glacial Till.</p> <p>The areas of undergrounding for existing DNO assets are predominantly within the areas of Glacial Till, with two areas recorded to cross Glaciofluvial deposits.</p> <p>One area of undergrounding is recorded through the historical location of the airfield. Control measure GH09 within the Preliminary CoCP (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) would include suitable controls for undergrounding of existing DNO assets, including a pre-construction Hydrogeological Risk Assessment and drilling fluid breakout management plan, if HDD is required.</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 superficial deposit groundwater aquifers are not significant.</p>
		Low – Lacustrine deposits	Negligible	Negligible – not significant	Lacustrine deposits are only located in isolated areas within the northern third of the Section 2 Study Area and not within proximity of any of the potentially

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>contaminative land uses, as described within PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction, the aquifer properties are such that this could be appropriately contained and mitigated through control measure GH11 within the Preliminary CoCP (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice). Therefore, it is not considered that the contamination sources would have an adverse effect on this aquifer.</p>
Groundwater Abstractions	Deterioration in chemical quality of the groundwater through disturbance of the ground during construction that is affected by pre-existing contamination	<p>High – Abstractions used for public drinking water supply</p> <p><i>And</i> – Licensed abstraction used for agricultural/domestic supply</p> <p><i>And</i> private water supplies</p>	Negligible	Negligible – not significant	<p>Potential contamination sources identified within the Section 2 Study Area are summarised within PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification.</p> <p>There are two high sensitivity public supply groundwater abstractions within the Section 2 Study Area, and one licensed abstraction for agricultural/domestic supply. No disturbance of identified potentially contaminative previous land uses is anticipated within 500 m of these abstractions.</p> <p>There are also 20 private water supply records within the Section 2 Study Area, seven within 100 m of the draft Order Limits, although these are all located adjacent to construction access roads and are not located next to pylon working areas or construction compounds/areas. No disturbance of identified potentially contaminative previous land uses is</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>anticipated within 500 m of these private water supplies.</p> <p>Control measure GH02 within the Preliminary CoCP (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 which could negatively impact the groundwater abstractions.</p> <p>Undergrounding for existing DNO assets would take place in the SPZ I area associated with the abstraction to the east of Barnoldby le Beck. The undergrounding does not cross any major surface water features or roads that would necessitate the use of HDD, so it is currently anticipated that it would be undertaken through open trenching methods. Control measures GH01 and GH11 (including a watching brief during undergrounding works) (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) would allow identification of any contamination which could be disturbed and implementation of suitable controls</p> <p>With the implementation of control measures (GH02, GH09 and GH11) within the Preliminary CoCP, the pathways would be reduced/prevented such that the effects on the high sensitivity groundwater abstractions are not significant.</p>
		Medium – Abstractions used for agricultural	Negligible	Negligible – not significant	Two abstractions of medium sensitivity are located within the Section 2 Study Area. One is located east of pylon GL109 and the other is located west of pylon

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
		purposes (Trout Farm and river/wetland support)			<p>GL9. These abstractions are not located within the draft Order Limits. There are no identified potential contamination sources within 500 m of these abstractions that are located within areas where construction would involve ground disturbance, therefore there is not considered to be a significant risk to the abstractions.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), then the likelihood of this affecting groundwater quality at the abstractions is low, given the lateral pathway lengths (distance) to abstractions anticipated low permeability superficial geology. This risk can be adequately controlled through measure GH011 and, in relation to piling (if required), the implementation of control measure GH02 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), so that any pathways would be reduced/prevented such that the effects on these abstractions are not significant.</p>
Groundwater Aquifers	Physical effects on aquifers, such as depletion of the aquifer and increased solids/turbidity through dewatering activities (e.g. during excavations	High – Bedrock (Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the	Negligible	Negligible - not significant	<p>The bedrock aquifers within Section 2 are of high sensitivity. The likely thickness of superficial deposits within the Section 2 Study Area from published borehole records is considered to typically be between approximately 10 m and 30 m.</p> <p>Excavations for pylon construction and open trenching for undergrounding of existing DNO assets would be expected to be within the superficial</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	for foundations for new structures) and changes to groundwater flows caused by construction activities and generation of solids through ground disturbance	Carstone Formation)			<p>deposits and not within the bedrock. Therefore, it is not considered likely that the high sensitivity bedrock aquifers would require dewatering for construction of pylons. Any physical effects (such as temporary mobilisation or sediment from construction activities) from foundation excavations, open trenching and other shallow construction work, would not be expected to affect the chalk aquifer due to the protection afforded by the low permeability superficial deposits (which would prevent/minimise vertical pathways to the underlying chalk aquifer).</p> <p>Whilst the majority of construction work would be undertaken within the superficial deposits and not within the chalk bedrock, the potential exception is piling for pylon foundations. In relation to piling, control measure GH02 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) would prevent migration of solids or shallow groundwater towards the underlying chalk aquifer and adequately control any release of solids from the chalk. Therefore, there is not considered to be a significant effect.</p>
		Medium – Glacial Till, Glaciofluvial deposits, Alluvium and River Terrace Deposits	Low	Minor – not significant	<p>The superficial deposits of medium sensitivity (Glacial Till, Glaciofluvial deposits, Alluvium and River Terrace Deposits) underlie the majority of the Section 2 Study Area.</p> <p>Limited information is available on groundwater levels within monitoring wells screened within the superficial deposits. Therefore, the worst-case scenario has been assumed, where some temporary dewatering</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>could be required for the construction within the superficial deposits. This has the possibility to reduce groundwater levels locally and increase suspended solids/turbidity.</p> <p>Section 2 involves overhead line, pylons and DNO undergrounding only. It is therefore considered that substantial dewatering would not be required during the construction phase. Temporary groundwater control/pumping during pylon foundation excavations or open trenching for undergrounding of existing DNO assets would be undertaken in accordance with EA guidance (control measure GH05 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice)).</p> <p>With the implementation of control measures GH05 (in relation to temporary groundwater control/pumping) and GH02 (in relation to the physical effects of piling) to ensure that physical effects are appropriately minimised and controlled, the effects on the medium sensitivity groundwater aquifers are not significant.</p>
		Low – Lacustrine deposits	Low	Minor – not significant	<p>Lacustrine deposits are present only in isolated areas within the northern third of Section 2. The groundwater levels within Section 2 are generally shallow, although no records have been provided for groundwater levels within the Lacustrine deposits. Given the low-lying nature of the land, it is anticipated that groundwater may be shallow, therefore it has been assumed as a worst-case scenario within this</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>assessment that some temporary dewatering may be required for construction.</p> <p>Section 2 involves overhead line, pylons and DNO undergrounding only. It is therefore considered that substantial dewatering would not be required during the construction phase. Temporary groundwater control/pumping during pylon foundation excavations would be undertaken in accordance with EA guidance (control measure GH05) (PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice).</p> <p>With the implementation of control measures GH05 (in relation to temporary groundwater control/pumping) and GH02 (in relation to the physical effects of piling) to ensure that physical effects are appropriately minimised and controlled, the effects on the low sensitivity groundwater aquifers are not significant.</p>
Groundwater Abstractions	Physical effects on aquifers, such as depletion of the aquifer and increased solids/turbidity through dewatering activities (e.g. during excavations for foundations for new structures) and changes to groundwater flows	High – Two abstractions used for public drinking water supply, and one licensed abstraction for agricultural/domestic supply <i>And</i> private water supplies	Negligible	Negligible – not significant	<p>Construction activities associated with the Project will involve ground disturbance in relatively close proximity to the abstractions. This includes several pylons located in SPZ II areas and pylon GL22 located close to the boundary with an SPZ I, as well as DNO undergrounding in SPZ II areas.</p> <p>As Section 2 involves overhead line, pylons and DNO undergrounding only, it is not considered that substantial dewatering would be required during the construction phase. If shallow groundwater is encountered, then temporary shallow groundwater control/pumping during pylon foundation excavations, and during open trenching or horizontal directional</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	caused by construction activities and generation of solids through ground disturbance	Medium – Abstractions used for agricultural purposes (Trout Farm and river/wetland support)			<p>drilling (i.e. at launch or reception pit sites) for undergrounding of existing DNO assets, would be undertaken in accordance with EA guidance (control measure GH05 within the Preliminary CoCP, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) to ensure physical effects are appropriately minimised.</p> <p>In relation to other physical effects, such as the generation of solids and increased turbidity from construction activities, then a combination of geological factors (such as low permeability superficial geology in the majority of the Study Area), the nature of the construction activities (localised works that would generally be at shallow depths), the pathway distance between construction activities and abstractions (in many cases several hundred metres), and the control measures (for example GH02 and GH09), are such that the effects on abstractions would not be significant. The combination of these factors will apply slightly differently in relation to each abstraction, but in all cases the predicted effect is not significant.</p> <p>It is therefore concluded that, with the implementation of the control measures in the Preliminary COCP, physical effects on groundwater abstractions would be suitably prevented and mitigated and would be negligible and not significant.</p>
Groundwater Aquifers	Physical and chemical effects on groundwater as a result of the	High – Bedrock (Burnham Chalk Formation, Welton Chalk	Negligible	Negligible – not significant	Any discharges of water generated during construction (e.g. from pylon foundations excavations) to land would be of unpolluted water only and carried out in accordance with control

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Groundwater Abstractions	discharge of groundwater, such as increased solids/turbidity and reduction in chemical quality, arising from dewatering or surface water control	<p>Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the Carstone Formation)</p> <p>Abstractions used for public drinking water supply and private water supplies</p> <p>Medium – Glacial Till, Glaciofluvial deposits, Alluvium and River Terrace deposits</p> <p>Abstractions used for agricultural purposes (Trout Farm and river/wetland support)</p> <p>Low – Lacustrine deposits</p>			measure W05 (compliance with discharge conditions) within the Preliminary CoCP (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.

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
		Negligible – Peat and Tidal Flat deposits			
Soil/land quality	Deterioration in chemical quality of the land through release of contamination by construction activities	Medium	Negligible	Negligible – not significant	<p>Soil/land quality can be negatively affected by construction due to the inadvertent release of contamination and/or incorrect storage and re-use of excavated soils.</p> <p>With the implementation of control measures (GH03 – adequate training of workers in managing hazardous substances, GH04 – appropriate storage of chemicals and health and safety measures for construction sites) within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), the effects on soil/land quality are not significant.</p>
Groundwater Aquifers	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g. loss of fuels to an aquifer)	<p>High – Bedrock (Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the Carstone Formation)</p> <p>Medium – Glacial Till, Glaciofluvial deposits, Alluvium</p>	Negligible	Negligible – not significant	<p>Published borehole records within Section 2 generally show a superficial cover of between approximately 10 m and 30 m, much of which is considered to be low permeability strata. The superficial deposits are more susceptible to releases of contamination from ground level than deeper aquifers, which are generally anticipated to be afforded protection from the effects of near surface construction activities by the superficial deposits.</p> <p>There are several areas where undergrounding of existing lower voltage assets may be required within the Section 2 Study Area. The anticipated thickness of superficial cover is such that undergrounding would be expected to be within the superficial deposits. A Hydrogeological Risk Assessment (control measure GH09 within the Preliminary CoCP,</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
		and River Terrace deposits Low – Lacustrine deposits			provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) 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. With the implementation of control measures (GH03, GH04, GH06, GH08, GH09 and GG21) within the Preliminary CoCP, 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.
Groundwater Abstractions	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g. loss of fuels to an aquifer)	High – Three Abstractions used for public drinking water supply, and one licensed abstraction for agricultural/domestic supply	Negligible	Negligible – not significant	Control measures GH08 and GH10 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) include specific construction control measures for works within SPZ 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. With the implementation of these control measures and additional measures (GH03, GH04, GH06, GH09 and GG21) 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.

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					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 any requirements.
		Medium – Abstractions used for agricultural purposes (Trout Farm and river/wetland support)	Negligible	Negligible – not significant	<p>There are two medium sensitivity groundwater abstractions within the Section 2 Study Area, but not within the draft Order Limits.</p> <p>With the implementation of control measures (GH03, GH04, GH06, GH08, GH09 and GG21) in the Preliminary CoCP (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 the medium sensitivity groundwater abstractions are not significant.</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>The initial contamination screening assessment (provided in PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification) indicates that the construction of the Project has the potential to disturb the potential sources of ground gas within the draft Order Limits, where Made Ground deposits are expected associated with the identified features, such as the historical airfield and historical railway.</p> <p>There are two areas of localised peat deposits recorded within the north of Section 2 which may also act as a source of ground gas.</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>As Section 2 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 use of appropriate PPE and the implementation of control measures (GH01 and GH02) within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice), as well as suitable construction of any temporary structures (i.e. construction compounds) to prevent accumulation of ground gas, the exposure pathways would be identified and mitigated such that the effects on construction workers and adjacent land users are not significant.</p> <p>The FWRA (within control measure GH02) would consider and provide suitable controls for the risk of piling activities causing lateral migration of gas below the ground, to ensure that there are no unacceptable 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>Only limited areas of possible ground gas-generating material were identified within the assessment of baseline conditions, including Made Ground associated with historical features and localised peat deposits.</p> <p>As Section 2 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</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>(e.g. farms, residential properties) are present in proximity to the draft Order Limits.</p> <p>Should ground investigations undertaken prior to construction (control measure GH01 within the Preliminary CoCP, provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice) identify the presence of hazardous ground gases or materials with the potential to generate these (e.g. Made Ground or natural materials with degradable content), suitable construction of any temporary structures (i.e. construction compounds) would prevent ground gas accumulation.</p> <p>The FWRA (within control measure GH02) would consider and provide suitable controls for the risk of piling activities causing lateral migration of gas below the ground, to ensure that there are no unacceptable risks to nearby existing structures from ground gas.</p>
Adjacent land users, construction workers (Human health)	Unstable ground and damage to human health and/or structures through disturbance of unstable ground by construction activities	High (Human health) Medium (Structures)	Negligible	Negligible – not significant	Based on the mapped geology and currently available information from the BGS geohazards data set, it is considered that natural geohazards can be mitigated through suitable engineering design (in accordance with standard good practice) such that adverse effects should not occur. As such, there is not considered to be a significant effect.
Structures					
Soil/land quality	Ground stability issues through dissolution of	High (Human health)	Negligible	Negligible – not significant	The bedrock beneath the Section 2 Study Area comprises chalk, which can be susceptible to dissolution through changes in the groundwater

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Adjacent land users, construction workers (Human health) Structures	soluble rocks, due to changed patterns or groundwater flow/discharges caused by construction activities	Medium (Structures and soil/land quality)			<p>regime, which could affect human health, structures and the soil/land quality through stability issues. However, the anticipated thickness of superficial deposits within Section 2 (approximately 10 m – 30 m) is such that it is not considered likely that construction activities would affect the deeper bedrock strata and discharges to the bedrock would not be undertaken within this project.</p> <p>Piling work would not be anticipated to affect groundwater flow patterns and induce dissolution, with this activity subject to control measure GH02 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice). With the implementation of control measures GH02 and GH09, there is not considered to be a significant effect from either shallow construction work or piling.</p>
Groundwater Aquifers Groundwater Abstractions	Deterioration in chemical quality of the groundwater through dissolution of soluble rocks, due to changed patterns or groundwater flow/discharges caused by construction activities	<p>High – Bedrock (Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation)</p> <p><i>and</i> Groundwater Abstractions (within the chalk aquifers)</p>	Negligible	Negligible – not significant	<p>The aquifer under consideration for this effect is the chalk bedrock, which is of high sensitivity, and groundwater abstractions associated with these strata. It is not considered that discharges to or disturbance of the bedrock aquifer would be undertaken within Section 2 for this Project, due to the anticipated thickness of superficial cover within the Section 2 Study Area.</p> <p>There is a possibility for dissolution of soluble rocks through piling activities associated with undergrounding of existing lower voltage assets. Control measure GH02 within the Preliminary CoCP (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
					<p>would include suitable risk assessment of any piling works and mitigation 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 effects to assess. It is also noted that, even if shallow rock was locally present (in areas of thinner superficial deposits), the scale of ground disturbance associated with pylon construction activities can, qualitatively, be considered such that this assessment would still apply and there would not be a significant effect with the implementation of control measures.</p>
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 – Bedrock (Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the Carstone Formation)	Negligible	Negligible – not significant	<p>The Project within Section 2 includes overhead line and pylons only, as well as localised undergrounding of existing lower voltage (DNO) assets. It does not include widespread areas of impermeable surfacing, such as substation infrastructure.</p> <p>The bedrock is recorded to be covered entirely by superficial deposits, anticipated to generally comprise approximately 10 m – 30 m thickness of primarily cohesive Glacial Till, with localised areas of more granular superficial deposits. The Glacial Till is likely to be primarily cohesive and of low permeability/infiltration capacity.</p> <p>The Project does not have the potential to change the existing infiltration regime to the extent that it would affect groundwater recharge, as any new</p>
Groundwater Abstractions		and Abstractions for drinking water			

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
		supply and private water supplies			impermeable surfacing for pylons will be minimal spatially. Therefore, the land within the draft Order Limits will generally retain its existing infiltration characteristics.
		Medium – Glacial Till, Glaciofluvial deposits, Alluvium and River Terrace deposits			As such, the effects on the groundwater receptors (aquifers and abstractions) are not significant.
		Low – Lacustrine deposits			
		Abstractions (for agricultural purposes)			
Future land users, adjacent land users	Harm to human health through exposure to contamination, including dust and vapours through disturbance of pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent maintenance or repair activities requiring	Medium	Negligible	Negligible – not significant	<p>There are a number of potential contamination sources with a moderate or higher risk of contamination identified within and immediately adjacent to the draft Order Limits for Section 2 in the initial contamination screening assessment (provided in PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification).</p> <p>These sources of contamination could affect human health if disturbed during maintenance activities, although only one source is located within an area that could require maintenance (i.e. where permanent infrastructure for the project is proposed), which is the former RAF Manby site.</p> <p>It is considered that the degree of ground disturbance associated with maintenance activities would be no greater than that associated with construction, which</p>

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	excavations for inspections/access to utilities, below ground infrastructure or foundations)				have been determined not to be significant for Section 2. There is also a minimal risk of encountering unexpected contamination during the maintenance phase, as this would already be known and understood from the construction phase. It is considered that with suitable health and safety measures, any risks to human health would be suitably mitigated. Therefore, the effects on human health are not significant.
Groundwater Aquifers Groundwater Abstractions	Deterioration in chemical quality of the aquifers through disturbance of pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent maintenance or repair activities requiring excavations for inspections/access to utilities, below ground infrastructure or foundations)	High – Bedrock (Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation and Hunstanton Formation, and sandstone of the Carstone Formation) <i>and</i> Abstractions for drinking water supply and private water supplies Medium – Glacial Till, Glaciofluvial deposits, Alluvium, River Terrace deposits and	Negligible	Negligible – not significant	There are several potential contamination sources within the Section 2 Study Area, as detailed within the initial contamination risk classification (provided in PEI Report Volume 3 Part B Section 2 Appendix 7A Initial Contamination Risk Classification). Any contamination associated with these potential sources would be known and understood from the construction phase. Any work involving disturbance of the ground would be planned and carried out accordingly, complying with suitable environmental controls, to prevent the release of contaminants to the sensitive aquifers. Maintenance activities are also typically much less intrusive than construction activities and any resulting effects therefore would be smaller than during the construction phase, where these effects were determined to be negligible (not significant). Therefore, the effects on groundwater are not significant.

Receptor ^{1,2}	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
		Abstractions (for agricultural purposes)			
		Low – Lacustrine deposits			

7.8 Monitoring

- 7.8.1 Although no significant effects have been identified within this assessment, given the hydrogeological sensitivity within Section 2, 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 hydrogeological regime has been undertaken.

References

- Ref 1 North East Lincolnshire Council, (2018). North East Lincolnshire Local Plan [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 19 May 2025].
- Ref 2 East Lindsey District Council, (2018). East Lindsey Local Plan [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230. [Accessed 19 May 2025].
- Ref 3 Greater Lincolnshire Nature Partnership, (2021). Greater Lincolnshire Geodiversity Strategy 2022 – 26 [online]. Available at: <https://glnp.org.uk/images/uploads/achieving-more/GeoStrat%202021.pdf> [Accessed 19 May 2025].
- Ref 4 Lincolnshire County Council, (2016). Lincolnshire Minerals and Waste Local Plan – Core Strategy and Development Management Policies. [online]. Available at: <https://www.lincolnshire.gov.uk/planning/minerals-waste> [Accessed 19 May 2025].
- Ref 5 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 6 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 7 Environment Agency, (2023). Land Contamination Risk Management (LCRM). [online]. Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm> [Accessed 19 May 2025].
- Ref 8 Environment Agency, (2018). The Environment Agency's approach to groundwater protection. [online]. Available at: <https://www.gov.uk/government/publications/groundwater-protection-position-statements> [Accessed 19 May 2025].
- Ref 9 CIRIA, (2001). CIRIA Publication 552 Contaminated Land Risk Assessment: A Guide to Good Practice. [online]. Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C552&Category=BOOK [Accessed 19 May 2025].
- Ref 10 National Library of Scotland, (2024), Side by side geo-referenced map viewer. [online]. Available at: <https://maps.nls.uk/geo/explore/side-by-side/> [Accessed 18 September 2024].
- Ref 11 British Geological Survey, (2024). GeoIndex. [online]. Available at: <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/> [Accessed 18 September 2024].

- Ref 12 Department for Environment, Food and Rural Affairs, (2024). MAGIC Interactive Map. [online]. Available at: <https://magic.defra.gov.uk/MagicMap.html>. [Accessed 18 September 2024].
- Ref 13 Environment Agency, (2024). Source Protection Zones Dataset. [online]. Available at: <https://www.data.gov.uk/dataset/09889a48-0439-4bbe-8f2a-87bba26fbbf5/source-protection-zones-merged1>. [Accessed 18 September 2024].
- Ref 14 Environment Agency, (2024). Catchment Data Explorer Database. [online]. Available at: <https://environment.data.gov.uk/catchment-planning/>. [Accessed 18 September 2024].
- Ref 15 Zetica, (2024). Unexploded Ordnance Risk Mapping. [online]. Available at: <https://zeticauxo.com/guidance/risk-maps/> [Accessed 18 September 2024].
- Ref 16 British Geological Survey, (2006). Research Report RR/06/03 The Chalk Aquifer System of Lincolnshire. [online]. Available at: <https://nora.nerc.ac.uk/id/eprint/3699/1/RR06003.pdf> [Accessed 19 May 2025].
- Ref 17 National Grid (no date) The Holford Rules. [online]. Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 13 March 2025]
- Ref 18 National Grid (no date) Horlock Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 13 March 2025].
- Ref 19 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 12 April 2024].
- Ref 20 CL:AIRE, (2025). Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. [online]. Available at: <https://claire.co.uk/home/news/2083-piling-and-penetrative-ground-improvement-methods-on-land-affected-by-contamination-guidance-on-pollution-prevention> [Accessed 18 September 2024].
- Ref 21 Environment Agency, (2024). Guidance on Pollution prevention for businesses. [online]. Available at: <https://www.gov.uk/guidance/pollution-prevention-for-businesses>. [Accessed 12 November 2024].
- Ref 22 Environment Agency, (2024). Groundwater protection guidance. [online]. Available at: <https://www.gov.uk/government/collections/groundwater-protection> [Accessed 15 November 2024].
- Ref 23 Department for Environment, Food and Rural Affairs, (2006). Code of practice for using plant protection products. [online]. Available at: <https://www.hse.gov.uk/pesticides/using-pesticides/codes-of-practice/code-of-practice-for-using-plant-protection-products.htm> [Accessed 19 May 2025].
- Ref 24 Construction Industry Research and Information Association, (2006). [online]. Available at: CIRIA Publication 648 Control of water pollution from linear construction projects. https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C649&Category=BOOK [Accessed 19 May 2025].

- Ref 25 Contaminated Land: Applications in Real Environments (CL:AIRE), (2011). The Definition of Waste: Development Industry Code of Practice. [online]. Available at: <https://claire.co.uk/component/phocadownload/category/7-guidance-bulletins-and-documents?download=241:guidance-bulletin-3-definition-of-waste-development-industry-code-of-practice> [Accessed: 19 May 2025].

8. Agriculture and Soils

Contents

8.	Agriculture and Soils	8-1
8.1	Introduction	8-1
8.2	Legislation and Policy Framework	8-3
	Legislation and National Policy	8-3
	Regional and Local Policy	8-3
8.3	Scope of Assessment	8-4
8.4	Assessment Methodology	8-4
	Assessment Assumptions and Limitations	8-6
8.5	Baseline Conditions	8-6
	Study Area	8-6
	Data Collection	8-6
	Existing Baseline	8-7
	Future Baseline	8-9
8.6	Design, Control and Additional Mitigation Measures	8-10
	Design Mitigation Measures	8-10
	Control Mitigation Measures	8-10
	Additional Mitigation Measures	8-12
8.7	Preliminary Assessment of Effects	8-12
	Likely Significant Effects	8-13
	Likely Non-Significant Effects	8-15
8.8	Monitoring	8-19
	Table 8.1 Supporting documentation	8-2
	Table 8.2 Preliminary summary of likely non-significant Agriculture and Soils effects – Section 2	8-16
	References	8-20

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 Grimsby West Substation to New Lincolnshire Connection Substation A Section (Section 2) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 8.1);
 - ii. Identification of key local and regional policy relevant to the assessment (section 8.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
 - iii. A summary of the assessment scoping process and the subsequent scope of the Agriculture and Soils assessment (section 8.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
 - iv. A high-level summary of the methodology of the Agriculture and Soils assessment within Section 2 (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 2 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 2, based upon the assessment completed to date (section 8.7); and
 - viii. An outline of the proposed 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 2 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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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 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 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.

- 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**:
- i. **PEI Report Volume 2 Part B Section 2 Chapter 2 Landscape** should be consulted in relation to the landscape setting (for example topography) which can influence land use in any given location;
 - ii. **PEI Report Volume 2 Part B Section 2 Chapter 4 Ecology and Biodiversity** should be consulted in relation to the ecology receptors and biodiversity value which can, in part, be influenced by the presence of Agri-environment and Woodland and Forestry Schemes and which may, in turn, be relevant to soil ecosystem services (such as potential for soil carbon sequestration associated with some habitat types);
 - iii. **PEI Report Volume 2 Part B Section 2 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 to land drainage, infiltration rates, erosion risk and flood risk;
 - iv. **PEI Report Volume 2 Part B Section 2 Chapter 7 Geology and Hydrogeology** should be consulted in relation to geology present within the Section and how the underlying geology influences soil characteristics and how soil characteristics may influence groundwater recharge;
 - v. **PEI Report Volume 2 Part B Section 2 Chapter 13 Summary** which provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment;
 - vi. **PEI Report Volume 2 Part C Route-wide Chapter 6 Agriculture and Soils (route-wide summary)** should be consulted in relation to impacts on best and most versatile (BMV) land across the entire Project and any significant effects; and
 - vii. **PEI Report Volume 2 Part C Route Wide Chapter 10 Cumulative Effects** presents a preliminary assessment of cumulative effects upon common receptors across environmental topics identified within PEI Report Volume 2 Part B (intra-project) and 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** and supporting appendices, detail of which is set out in **Table 8.1**.

Regional and Local Policy

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

- i. North East Lincolnshire Council 2013 to 2032 (Adopted 2018). Local Plan North East Lincolnshire (Ref 1):
 - Policy 5 Development Boundaries: this requires developments to have regard to the quality of agricultural land; and
 - Policy 31 Renewable and low carbon infrastructure: this requires that developments will be assessed on their merits and will take into account the importance of the soil resources and the loss of agricultural land.
- ii. East Lindsey District Council (Adopted 2018). East Lindsey Local Plan Core Strategy (Ref 2):
 - Strategic Policy (SP10): this requires poorer quality agricultural land to be used in preference to that of higher quality; and
 - Strategic Policy 24 (SP24): Biodiversity and Geodiversity: this recognises the importance of soil as a component of the natural environment and the requirement to protect soils and use them sustainably.

8.3 Scope of Assessment

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

8.4 Assessment Methodology

- 8.4.1 The assessment 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 defined and assigned to the assessment. A summary of the key components are outlined below.

- 8.4.2 This preliminary assessment is supported by an initial collation and review of available baseline data. The data sources used to develop the baseline conditions are set out in section 8.5.
- 8.4.3 To fully inform the assessment of Agriculture and Soils, a detailed ALC and soil survey will be undertaken from January to October 2025 to determine the sensitivities of soils and the grade(s) of agricultural land within the draft Order Limits. The 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 5) and the ALC guidelines (Ref 6) and will characterise soil properties based on an examination of soil profiles, from which agricultural land grade as well as soil resilience can be calculated and assessed. An Agriculture and Soils survey strategy document is provided within Annex B to the **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 8.4.4 The assessment presented in the PEI Report is based on publicly available Provisional ALC data, and detailed data (where available). The Provisional ALC mapping does not differentiate between Grade 3a (BMV) and Grade 3b (non-BMV); as such a worst-case approach has been taken for the assessment presented, with all land provisionally mapped as Grade 1, 2 and 3 being considered to comprise BMV land. The ES submitted with the DCO application will include detailed ALC survey data that will show the split between Grade 3a and 3b land. This information will further refine the assessment as presented in this Chapter for the ES. A Detailed ALC Survey Report will be included as an appendix within the ES.
- 8.4.5 To inform the assessment of impacts on farm holdings, broad data on agricultural landholdings will be collected through on-going discussions by the Project's Lands Team with landowner/occupiers or land agents. A preliminary overview of landowner/occupier information has been used to inform the preliminary assessment. This does not, for the PEI Report, include an assessment of individual landholdings in terms of viability (such as disruption or proportion of landholding taken temporarily or permanently). An assessment will be presented in the ES based on the level of further information gained and with a focus on the permanent impacts and on any land uses which may be considered more sensitive (such as orchards, high value cropping systems or livery stables). The assessment in relation to landholdings takes account of the framework associated with financial compensation for disruption and temporary/permanent loss of land (in accordance with the compensation code) which would include consideration of any active agri-environment and/or forestry/woodland schemes.
- 8.4.6 Land taken temporarily during construction, for example, 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 while most of the land in Section 2 is provisionally mapped as ALC Grade 3 land, this classification 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 2, 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) (England) (Ref 9);
 - iv. Department for Environment, Food and Rural Affairs (DEFRA) Post-1988 Agricultural Land Classification (England), provided through MAGIC (Multi-Agency Geographic Information for the Countryside) (Ref 9);
 - v. National Soil Association Map of East Midlands and Eastern England and soil data from National Soils Resources Institute at Cranfield university (NSRI) (Ref 10);

- vi. Likelihood of BMV Agricultural Land map (Ref 11);
- vii. Relevant Agriculture and Soils data from other projects which overlap with the draft Order Limits; and
- viii. Climate data sets for ALC assessment (Ref 12).

Existing Baseline

- 8.5.3 The following section outlines the Agriculture and Soils baseline. The baseline section should be read in conjunction with the following supporting Figures as found within **PEI Report Volume 2**:
- i. **PEI Report Volume 2 Part B Section 2 Figure 8.1 National Soil Map;**
 - ii. **PEI Report Volume 2 Part B Section 2 Figure 8.2 Provisional Agricultural Land Classification;**
 - iii. **PEI Report Volume 2 Part B Section 2 Figure 8.3 Detailed Agricultural Land Classification;**
 - iv. **PEI Report Volume 2 Part B Section 2 Figure 8.4 Woodland and Forestry Schemes;** and
 - v. **PEI Report Volume 2 Part B Section 2 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 Section 2 comprises three main underlying chalk bedrock geology formations; the Burnham Chalk Formation, the Welton Chalk Formation and the Hunstanton Chalk Formation. All of these are sedimentary bedrock formations formed between 103 and 83.6 million years ago during the Cretaceous period.
- 8.5.5 Superficial drift present across the whole Section is predominantly Devensian Till (Diamicton), a sedimentary superficial deposit formed between 2.6 million years ago and the present day during the Quaternary period. There are more limited extents of tidal flat deposits of clay and silt and glaciofluvial sand and gravel deposits from the Quaternary period, with alluvium deposits of sand and gravel adjacent to Waithe Beck, Poulton Drain, Black Dike and the River Lud.

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 this section (as shown in **PEI Report Volume 2 Part B Section 2 Figure 8.1 National Soil Map**) are:
- i. Holderness - consists mainly of slowly permeable fine loamy and moderately permeable coarse loamy soils on chalky till and glaciofluvial drift. 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. They are seasonally waterlogged slowly permeable soils, formed above 3 m Above Ordnance Datum (AOD) and prominently mottled above 40 cm depth. They do not have any

- relatively permeable material starting within 1 m of the surface and extending below it. This is the dominant Soil Association within Section 2 and is present throughout the Section;
- ii. Newchurch 2 - deep stoneless mainly calcareous clayey soils. Groundwater controlled by ditches and pumps. Flat land with risk of flooding in places. 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. Most occupy low-lying or depressional sites. These soils are predominantly associated with floodplains as narrow linear corridors;
 - iii. Arrow – deep permeable coarse loamy soils affected by groundwater. They are permeable but are likely to be seasonally waterlogged on undrained land. These soils are present in small areas within the draft Order Limits to the west of Grimsby;
 - iv. Wallasea 2 – deep stoneless clayey soils with some deep calcareous silty soils. They are often found in flat land often with low ridges giving a complex soil pattern with groundwater controlled by ditches and pumps. This causes seasonally waterlogged soils affected by a shallow fluctuating groundwater-table that are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth. Most occupy low-lying or depressional sites with distinct topsoil, in loamy or clayey recent alluvium more than 30 cm thick. These soils are present in part of a river corridor to the south of Louth; and
 - v. Fladbury 2 – consists of mottled, clayey soils. Soils tend to be waterlogged for long periods during winter and sometimes during the growing season, especially in low-lying sites. These soils are present along river valleys south east of Louth.

Agricultural Land Classification

- 8.5.7 ALC is a classification system used to assess the quality of agricultural land within England and Wales. Provisional ALC mapping shows that the draft Order Limits within Section 2 comprises almost entirely Grade 3 land (good quality agricultural land); a small area of non-agricultural land associated with the Manby Showground lies within the draft Order Limits. This is shown in **PEI Report Volume 2 Part B Section 2 Figure 8.2 Provisional Agricultural Land Classification**. This would be considered a receptor of high sensitivity.
- 8.5.8 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.
- 8.5.9 There is no pre-existing detailed ALC survey data available within the draft Order Limits for Section 2, as shown in **PEI Report Volume 2 Part B Section 2 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

- 8.5.10 Woodland and Forestry Schemes are government provided incentives that reward landowners for the creation and management of woodlands. There is an area under a Woodland Grant Scheme located to the south east of Brigsley and an area subject to a Felling License Agreement located to the south of Bradley (as shown on **PEI Report Volume 2 Part B Section 2 Figure 8.4 Woodland and Forestry Schemes**).

Agri-Environment Schemes

- 8.5.11 Agri-Environment Schemes comprise government funding to farmers and land managers to support activities which improve the local environment. There are different levels of Environmental Stewardship Schemes which have increasing complexity and land management requirements but also therefore have greater environmental benefits. The following areas under Agri-Environment Schemes are found within the draft Order Limits for Section 2 (as shown on **PEI Report Volume 2 Part B Section 2 Figure 8.5 Agri-Environment Schemes**):
- i. Countryside Stewardship (Middle Tier): west of Nunsthorpe, west of Fulstow, in west Yarburgh, west of Manby, west of Great Carlton and south of Tohill;
 - ii. Entry Level plus Higher Level Stewardship: west of Brigsley and north and south of Tohill; and
 - iii. Organic Entry Level plus Higher Level Stewardship: south of Little Farton.

Land Use

- 8.5.12 Aerial imagery and OS mapping indicate that the agricultural land use within Section 2 is predominantly arable, with some grassland and woodland areas also present. Field boundaries generally comprise hedges, trees, and roads.

Agricultural Landholdings

- 8.5.13 There are 37 landholdings identified within Section 2. Land use is predominantly arable with small sections of woodland and grassland. Given the predominant land use this receptor is considered to have a low sensitivity.

Future Baseline

- 8.5.14 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.
- 8.5.15 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.

- 8.5.16 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.
- 8.5.17 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.
- 8.5.18 The baseline details as presented above are not anticipated to change in the absence of the Project.

8.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 8.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 13) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 14) which apply to design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 15) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 8.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 2. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. For example, the Project design has been and will continue to be rationalised to minimise the extent of land take required to construct, maintain and operate the proposed assets and position infrastructure (such as pylons and access routes) as close as is practicable to field boundaries to minimise impacts to agricultural operations.

Control Mitigation Measures

- 8.6.3 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Agriculture and Soils assessment 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 Section 2 Study Area, as a result of construction, operational and/or maintenance activities.
- 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 2 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 mapping has been used to determine the 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 (described as ALC Grades 1, 2, and 3a) from agricultural productivity.
- 8.7.8 For Section 2 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. This is based on the requirement to secure land temporarily for both the construction of infrastructure and the stringing of conductors between pylons.
- 8.7.9 The agricultural land required in Section 2 is provisionally mapped as Grade 3, and as such is considered likely to comprise, at least in part, BMV land. BMV land is considered to have a very high to high sensitivity.
- 8.7.10 The total extent of land required during construction would be 700.2 ha. Of this, 582.3 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, 117.8 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 and is likely significant.

Soil Function

- 8.7.12 There would be disturbance to soils, from soil stripping required for the pylon construction, access routes and areas required temporarily (such as construction compounds and haul roads).
- 8.7.13 The soils in Section 2 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 and re-use of soils.
- 8.7.14 For Section 2, it is assumed that all land within the draft Order Limits would 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 2, 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 approximately 117.8 ha of soils would affect the associated soil ecosystem services within Section 2. However, where practicable, 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 result in a likely 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 phases

- 8.7.17 Based on 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 2. 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 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 2

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).
Operation 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 to high	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

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
						effects on BMV land during operational, maintenance or repair activities are predicted.
Impacts on soil function due to any activities required for operational and maintenance purposes.	Soil function	Disturbance to soils and loss of function due to activities required for operational and maintenance purposes.	Depending on the specific soil type, soils in Section 2 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	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

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
						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 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.

References

- Ref 1 North East Lincolnshire Council (2018). Local Plan North East Lincolnshire, adopted in 2018 [online]. Available at: <https://www.nelincs.gov.uk/planning-and-building-control/planning-policy/the-local-plan/>. [Accessed 20 May 2025].
- Ref 2 East Lindsey District Council (2018). East Lindsey Core Strategy [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230. [Accessed 20 May 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 09 April 2025].
- Ref 4 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 09 April 2025].
- Ref 5 Hodgson, J.M. (2022). Soil Survey Field Handbook: Describing and Sampling Soil Profiles. Cranfield: Cranfield University.
- Ref 6 MAFF (1988). Agricultural Land Classification of England and Wales: Revised criteria for grading the quality of agricultural land (ALC011) [online]. Available at: <https://publications.naturalengland.org.uk/publication/6257050620264448>. [Accessed 29 April 2024].
- Ref 7 British Geological Survey, BGS Geology Viewer [online]. Available at: <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/> [Accessed 3 May 2024].
- Ref 8 Google Earth (2024). Ordnance Survey Mapping and Aerial Photography [online]. Available at: <https://www.earth.google.com> [Accessed 29 April 2024].
- Ref 9 Defra, Magic Map Application [online]. Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed 29 April 2024].
- Ref 10 Cranfield University (2024). Soils and their use in East Midlands and East England.
- Ref 11 Natural England (2017). Likelihood of Best and Most Versatile (BMV) Agricultural Land – Strategic scale map East Midlands and Eastern region (ALC019). Available at: <https://publications.naturalengland.org.uk/category/5954148537204736> [Accessed 29 April 2024].
- Ref 12 The Met Office (1989). Climatological Data for Agricultural Land Classification.
- Ref 13 National Grid (no date) The Holford Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 13 March 2025].

- Ref 14 National Grid (no date) Horlock Rules [online] Available at:
<https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 13 March 2025].
- Ref 15 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at:
<https://www.nationalgrid.com/document/352621/download> [Accessed 12 April 2024].

9. Traffic and Movement

Contents

9.	Traffic and Movement	9-1
9.1	Introduction	9-1
9.2	Legislation and Policy Framework	9-4
	Legislation and National Policy	9-4
	Regional and Local Policy	9-4
9.3	Scope of Assessment	9-5
9.4	Assessment Methodology	9-6
	Assessment Assumptions and Limitations	9-8
9.5	Baseline Conditions	9-9
	Study Area	9-9
	Data Collection	9-11
	Existing Baseline	9-12
	Future Baseline	9-21
9.6	Design, Control and Mitigation Measures	9-22
	Design Mitigation Measures	9-22
	Control Mitigation Measures	9-23
	Additional Mitigation Measures	9-25
9.7	Preliminary Assessment of Effects	9-25
	Likely Significant Effects	9-26
	Likely Non-Significant Effects	9-27
9.8	Monitoring	9-34

Table 9.1	Supporting documentation	9-2
Table 9.2	Scope of Traffic and Movement assessment	9-5
Table 9.3	Distribution of project traffic – definitions	9-7
Table 9.4	Construction Traffic Route – SRN connections	9-10
Table 9.5	Primary Access Routes	9-10
Table 9.6	Highway network - links	9-13
Table 9.7	Highway link sensitivity	9-17
Table 9.8	Public Rights of Way and promoted/recreational routes	9-20
Table 9.9	Preliminary assessment of effects upon the highway network – Section 2	9-27
Table 9.10	Preliminary summary of non-significant Traffic and Movement effects – Section 2	9-30

References	9-35
------------	------

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 Grimsby West Substation to the New Lincolnshire Connection Substation A Section (Section 2) 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 2 (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 2 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 2, 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 2 Figures	<p>Figure 9.1 Overall Context Plan</p> <p>Figure 9.2 Primary Access Routes</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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2 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	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.

- 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 2 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 2 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 2 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 2 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** which 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** and supporting appendices, detail of which is set out in **Table 9.1**.

Regional and Local Policy

- 9.2.2 Regional and local plans or policies relevant to this assessment are as follows:
- i. North East Lincolnshire Local Plan 2013-2032 (Ref 1):
 - Policy 36 Promoting sustainable transport: which sets out the Council's support for measures that promote more sustainable transport choices and identifies a number of objectives for development proposals; and
 - Policy 37 Safeguarding transport infrastructure: the Council will safeguard routes of, and support measures which deliver, maintain and improvement key transport infrastructure, namely, South Humber Bank Link Road, Grimsby West Link Road and Network Rail improvements.
 - ii. Lincolnshire County Council's Local Transport Plan 5 (Adopted 2022) (Ref 2):
 - Aims to use the local and strategic development management processes to ensure that development is planned, delivered and managed to reduce the need to travel and to support the delivery of sustainable transport modes. Supports the provision of improved walking, cycling and public transport services and facilities as part of new development and actively encourage innovative solutions to travel.
 - iii. East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 3):
 - Strategic Policy SP22 Transport and Accessibility: which states that the Council will support accessibility and seek to reduce isolation in the District. The policy stipulates the requirements that developments must meet in order to secure Council support, and this includes large scale development being accompanied by a transport assessment and travel plan.
 - iv. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 4):
 - 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; and
 - Policy S48 Walking and Cycling Infrastructure: requires existing and new active travel infrastructure to be protected, maintained and improved.
 - v. South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019) (Ref 5):

- Policy 33 Delivering a More Sustainable Transport Network: seeks improvements to existing transport infrastructure and services and encourages the protection of existing footpaths, cycle routes and PRow from development; and
 - Policy 34 Delivering the Boston Distributor Road: Priority strategic infrastructure – development that compromises identified priority strategic infrastructure will not be permitted.
- vi. Lincoln Transport Strategy¹ 2020-2036 (Ref 6):
- Aims to provide a clear vision of transport across the Lincoln area, it sets out measures to enhance the transport network, improve choice and inclusive accessibility and to support growth. Strategic interventions include improvements to the A46 and rail services.

9.3 Scope of Assessment

- 9.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 7) provided by the Planning Inspectorate in September 2014 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 8). 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 Institute of Environmental Management and Assessment (IEMA) guidance (Ref 9) which is based on the 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 indivisible loads and hazardous loads during construction.

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

Receptor	Potential Effects
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, cycle and equestrian 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 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 assesses the effect on users by assessing the transport infrastructure upon which they rely.

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.

- 9.4.3 For users of the highway network during construction, the assessment is based on the impact criteria set out within the IEMA Guidance (Ref 9) which sets out two broad rules for identifying potential highway links for analysis:
- i. 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
 - ii. 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 additional roads and junctions which are not promoted as construction HGVs routes but which could be used by workers to travel to site. These are identified as likely routes between residential areas, key employment/skills centres and the bellmouths.

- 9.4.6 A qualitative assessment of impacts to bus users has been undertaken based on the projected increase in traffic flows as a result of the Project and potential impact to bus services. More detailed assessment will be provided within the ES if the projected

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

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 2. An initial assessment of sensitivity is based on consideration of the likely numbers of users of the infrastructure; for railways this is considered High as there are likely to be high numbers of passengers, for waterways this is considered Low as the number of users will likely be less. More detailed assessment, where required, will be provided in the ES following further consultation with the infrastructure operators.
- 9.4.8 A qualitative assessment of impacts to pedestrians and cyclists has been undertaken based on the projected increase in traffic flows 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 works within Section 2 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 2.
- 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 2 comprises highway links assumed to be used to provide access for construction vehicles and considers the impacts to traffic, bus routes and pedestrian/cycle routes along these highway access routes. The Study Area for Construction Traffic Routes is defined in further detail below.
- 9.5.2 The Study Area also includes pedestrian/cycle/equestrian routes and PRow networks, railways and waterways that are crossed by the Section 2 draft Order Limits.
- 9.5.3 **PEI Report Volume 2 Part B Section 2 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 2 Study Area are shown in **PEI Report Volume 2 Part B Section 2 Figure 9.2 Primary Access Routes and Workers Access Routes**.

Construction Traffic Routes - HGVs

- 9.5.4 Initial construction information (including construction traffic, compound locations, bellmouth accesses and haul 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:
- i. 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.
 - ii. 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 2 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 2 Figure 1.2 Temporary and Construction Features** and **Figure 1.3 Permanent and Operational Features** respectively.
 - iii. Shorter available routes between the SRN and classified road network and site access bellmouths have been selected where possible, balancing distance and the suitability of links to accommodate construction traffic.
 - iv. Existing known highway constraints, such as road geometry, height and weight restrictions, junction arrangements 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 2 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 M180, M18, M62 and A1(M) and Immingham Docks
A46	South west to SRN A46 at Lincoln to A1(M) and M1
A158	West to SRN A46 at Lincoln to A1(M) and M1

- 9.5.6 Primary Access Routes are formed of one or more roads within the road network between the SRN/classified road network and the site access bellmouths. The Primary Access Routes are made up of Core Routes (CR series) which are the main A roads providing connections across the wider Project 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 2 Figure 9.2 Primary Access Routes**. Further details of the roads forming the Primary Access Routes and Workers 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
GL-B001 GL-B002	CR1 A180/CR2 A180	LK1 A1136/LK2 A1136 Great Coates Road/LK3 Aylesby Road
GL-B003 GL-B004 (compound)	CR1 A180/CR21 A1173/CR20 A18/CR19 A46	-
GL-B005 GL-B006	CR1 A180/CR21 A1173/CR20 A18/CR18 A18	LK16 Main Road/Waltham Road
GL-B007	CR1 A180/CR21 A1173/CR20 A18/CR18 A18	LK4 B1203 Ashby Hill
GL-B012 GL-B013 GL-B014 (compound)	CR1 A180/CR21 A1173/CR20 A18/CR18 A18/CR5 A16	-

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
GL-B019 GL-B020	CR1 A180/CR21 A1173/CR20 A18/ CR18 A18/CR5 A16	LK17 Station Road
GL-B021 GL-B022	CR1 A180/CR21 A1173/CR20 A18/ CR18 A18	LK18 Pear Tree Lane
GL-B023 GL-B024	CR1 A180/CR21 A1173/CR20 A18/ CR18 A18/CR6 A16	LK19 Bollingbroke Road/LK20 Brackenbrough Road/LK21 Westfield Road
GL-B031 GL-B032	CR1 A180/CR21 A1173/CR20 A18/ CR18 A18/CR6 A16 or CR25 A17/CR8 A16/CR7 A16	LK5 A157 Kenwick Hill/LK6 B1200 Manby Road
GL-B037 GL-B038 (compound)	CR1 A180/CR21 A1173/CR20 A18/ CR18 A18/CR6 A16 or CR25 A17/CR8 A16/CR7 A16	LK5 A157 Kenwick Hill/LK22 A157 Main Road

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 2 overhead line route. Therefore, Construction Worker Routes are not considered separately for the Section 2 assessment. An uplift of 100 per cent has however been applied to the HGV trips generated by bellmouths within Section 2, 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 2 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 10), Google Maps (Ref 11), OpenStreetBrowser (Ref 12);
 - bus route information – local bus operators, traveline.info (Ref 13), Google Maps (Ref 11);
 - rail information – National Rail (Ref 14), Google Maps (Ref 11);
 - waterways – Environment Agency, Navigation Authority and The Inland Waterways Association (Ref 15);

- v. designated non-motorised user routes for pedestrians, cyclists and equestrians and PRow – Sustrans (Ref 16) 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 17);
- 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 18);
- xi. traffic growth factors have been obtained from the Trip End Model Presentation Program (TEMPPro)/National Trip End Model; and
- xii. identification of pedestrian, cycle and horse-riding infrastructure provision along the Primary Access Routes, obtained from Google Maps imagery of the highway network.

9.5.10 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 2 Figure 9.1 Overall Context Plan;**
- iii. **PEI Report Volume 2 Part B Section 2 Figure 9.2 Primary Access Routes;**
- iv. **PEI Report Volume 2 Part B Section 2 Figure 9.3 Existing Public Rights of Way (PRow); and**

v. **PEI Report Volume 2 Part B Section 2 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 2 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 2 Figure 9.2 Primary Access Routes.**

Table 9.6 Highway network - links

Route Ref	Highway Link	Description
CR1/ CR2	A180	Dual carriageway through rural area, national speed limit = 70 mph, no footways or street lighting
CR3	A180	Dual carriageway through built up area of Grimsby, national speed limit = 70 mph reduces to 50 mph to east of Westgate roundabout, street lighting, generally no footways with shared footway/cycleway on northern side of Westgate section
CR4	A16	Wide single carriageway road through Grimsby, localised widening at main road junctions, 30 mph speed limit increases to 40 mph on Peaks Parkway, footways and street lighting, numerous local junctions (priority and traffic signal control) and commercial frontages, bus stops, pedestrian crossing provision, generally double yellow line restrictions although some on street parking
CR5	A16	Wide single carriageway, more rural road to south of Grimsby, 40 mph speed limit increases to 50 mph and national speed limit (60 mph) to south, street lighting, generally no footways. Speed limit reduces (30 mph/40 mph) and sections of footway/cycleway in built up areas at New Waltham, bus stops on A16 at a few locations including North Thoresby and New Waltham
CR6	A16	Wide single carriageway, generally national (60 mph) and 50 mph speed limits reduces 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 (60 mph), no street lighting, some narrow footways
CR8	A16	Wide single carriageway, national speed limit (60 mph), no street lighting or footways

Route Ref	Highway Link	Description
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
CR19	A46	Dual carriageway to east of A18, 50 mph speed limit applies, street lighting, no footways
CR20	A18	Wide single carriageway to north becomes dual carriageway north west of Aylesby, rural route, national speed limit (60 mph/70 mph) applies, street lighting on single carriageway section, no street lighting on dual carriageway, no footways
CR21	A1173	Wide single carriageway, rural route, generally national speed limit (60 mph) applies except 50 mph limit on short section south of A180 and 40 mph limit to south of roundabout junction with B1210, generally no street lighting except at main road junctions, generally no footways although narrow footways on some short sections near residential properties. Crosses rail line at level crossing
CR25	A158	Single carriageway, national speed limit (60 mph), no footways or street lighting. Footways and street lighting in Horncastle, 30 mph speed limit
LK1	A1136 (north-south)	Wide single carriageway, speed limit = 50 mph, street lighting, no footways.
LK2	A1136 (east-west)	Wide single carriageway, speed limit = 40 mph, street lighting, footways on southern side. Signed cycleway (Healing Way) – shared footway/cycleway on southern side.
LK3	Aylesby Road	Narrow single carriageway, speed limit = 30 mph/40 mph (increasing to national limit (60 mph) to south of urban area), street lighting, narrow footway on western side, double yellow line restrictions apply, 7.5 t weight restriction (except for loading). No footway to south of the urban area and in vicinity of site access point. Signed cycleway – no infrastructure.
LK4	B1203 Ashby Hill	Single carriageway, national speed limit (60 mph) reducing to 30 mph on approach to Briglsey, no footways or street lighting
LK5	A157 Kenwick Hill	Wide single carriageway, national speed limit (60 mph), no street lighting, no footways
LK6	B1200 Manby Road	Single carriageway, national speed limit (60 mph), no street lighting, no footways
LK16	Main Road/Waltham Road	Single carriageway, national speed limit (60 mph) applies except in Barnoldby le Beck where it reduces to 40 mph and 30 mph, generally no street lighting or footways some narrow footways in Barnoldby le Beck

Route Ref	Highway Link	Description
LK17	Station Road	Narrow single carriageway with wide verges, national speed limit applies (60 mph), no footways or street lighting
LK18	Pear Tree Lane	Narrow single carriageway with wide verges, national speed limit applies (60 mph), no footways or street lighting
LK19	Bollingbroke Road	Single carriageway, 30 mph speed limit, footways and street lighting
LK20	Brackenborough Road	Narrow single carriageway with verges, some tight bends, national speed limit applies (60 mph), no footways or street lighting
LK21	Westfield Road	Narrow single carriageway with verges, national speed limit applies (60 mph), no footways or street lighting
LK22	A157 Main Road	Wide single carriageway, national speed limit (60 mph), no footways or street lighting except through South Reston and Legbourne where speed limit reduces and footways and street lighting are provided

- 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. The DfT traffic counter sites are shown on **PEI Report Volume 2 Part B Section 2 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 2 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 Worker Access Routes where surveys have been undertaken are presented in **PEI Report Volume 3 Part B Sections 1-7 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 2 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 and Workers Access Routes. Data for a five-year period (2019-2023) is presented on **PEI Report Volume 2 Part B Section 2 Figure 9.4 Route Sensitivity**.
- 9.5.22 A collision cluster has been determined by the following criteria:
- a location where there are nine or more injury collisions occurring within a junction or a 100 m stretch; and
 - 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 junction of A180/Estate Rd 1/Estate Rd 2/Gilbey Rd and junction of A180/Moody Lane/Birchin Way/Pyewipe Rd to the north west of Grimsby;
 - at the junction of A180/Lockhill/A16 and junction of A16/A1136 in Grimsby;
 - at the junction of A16/B1219 in Grimsby; and
 - on the A16 between Cordeaux Corner and Bolingbroke Road to the north of Louth.

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 2. 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 an assessment of each highway link's congestion rating and any

associated collision clusters. Further detail is included in **PEI Report Volume 3 Part A Appendix 4A Environmental Impact Assessment Assessment Methodologies and Scope**.

- 9.5.26 A description, location, and the sensitivity level within the Section 2 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 2 Figure 9.4 Route Sensitivity**.

Table 9.7 Highway link sensitivity

Route Ref	Highway Link	Description	Sensitivity Level
CR1/ CR2	A180	No receptors identified on this link	Negligible
CR3	A180	Urban area with a range of commercial premises although limited direct local accesses or frontages, segregated shared pedestrian/cycle route along Westgate. Some peak hour congestion, collision cluster identified at two junctions	Medium
CR4	A16	Urban area through central Grimsby. Multiple commercial properties with local accesses and direct frontages, busy pedestrian area with varying width/quality of footways and crossings, on road cycling, bus route, some peak hour congestion, collision cluster identified at one junction	Very High
CR5	A16	A few residential and commercial properties with some frontages/direct accesses. Sections of footway and limited off road cycle infrastructure, bus route, collision cluster identified at one junction	Medium
CR6	A16	A few residential and commercial properties, occasional footways near properties, 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
CR18	A18	A few residential properties at southern end of link	Low
CR19	A46	Occasional residential and commercial properties, segregated shared pedestrian/cycle route on part of the route, bus stops on western section of A46	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

Route Ref	Highway Link	Description	Sensitivity Level
CR25	A158	A few residential and commercial properties in rural area. Residential and commercial frontages, footways and some on street parking though Horncastle	Medium
LK1	A1136 (n-s)	No receptors identified on this link	Negligible
LK2	A1136 (e-w)	Pedestrians/cyclists – segregated shared route	Low
LK3	Aylesby Road	Pedestrians/cyclists – narrow footway. Edge of urban area but no direct frontages	Medium
LK4	B1203 Ashby Hill	A few residential properties along this link	Low
LK5	A157 Kenwick Hill	A few residential properties along this link	Low
LK6	B1200 Manby Road	A few residential properties along this link	Low
LK16	Main Road/Waltham Road	Some properties fronting, forms part of National Cycle Network (NCN) Route 110	Medium
LK17	Station Road	Occasional residential access driveways, crosses Lincolnshire Wolds Railway close to Ludborough station (historic leisure line)	Low
LK18	Pear Tree Lane	Occasional residential properties along this link	Low
LK19	Bollingbroke Road	Industrial buildings and accesses, some on street parking	Low
LK20	Brackenbrough Road	A few residential properties along this link	Low
LK21	Westfield Road	A few residential properties along this link	Low
LK22	A157 Main Road	A few residential properties along route. Multiple residential properties in Legbourne some with direct frontage/access, retail and commercial properties	Medium

Bus Routes

- 9.5.27 A number of bus services operate in the vicinity of the Section 2 draft Order Limits. Two bus services run through Laceby and along the A46 (service 250 Hull to Grimsby and service 53 Lincoln to Grimsby). Service 9 and 10 Connect Barnoldby le Beck and Waltham with Grimsby along Waltham Road and Barnoldby Road. Service 25 provides services between Ludford and Grimsby and service 51 runs between Louth and Grimsby. Service 28 runs along the B1200 between Louth, Grimoldby and Mablethorpe. Service 50 provides services approximately every 2 hours between Louth and Mablethorpe along the A157.

- 9.5.28 Bus stops are located on Primary Access Routes providing access to the Section 2 draft Order Limits including the A46, A16 through Grimsby as well as some sections of the A16 connecting local towns and villages.

Railway Infrastructure

- 9.5.29 The Section 2 draft Order Limits pass close to the Lincolnshire Wolds Rail line. This provides a tourist line between North Thoresby and Ludborough with trains running at weekends and bank holidays through the spring and summer with additional services at Halloween and Christmas. A level crossing is provided on Station Road between the A16 and the overhead line route. No rail lines are crossed by the Section 2 draft Order Limits.

Waterways

- 9.5.30 The Section 2 draft Order Limits cross the River Freshney, Louth Navigation Canal/River Ludd, Long Eau and Great Eau as well as a number of smaller becks, dykes and land drains. These are not currently navigable waterways although there are some restoration works ongoing on the Louth Navigation Canal. Further detail of the works to the canal will be obtained and discussed with the relevant authority and impact presented within the ES if relevant.

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 2 draft Order Limits are summarised in **Table 9.8** below and presented on **PEI Report Volume 2 Part B Section 2 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 2 draft Order Limits cross the Wanderlust Way long distance circular walking route, the Greenwich Meridian long distance walking route and Louth Canal walking route.
- 9.5.34 NCN Route 1 passes the draft Order Limits near Grimsby, Boston and Wisbech. The NCN Route 110 also runs close to the draft Order Limits. The Section 2 draft Order Limits cross the Grimsby Link local cycle routes running alongside the A46 and Waltham Road as well as the Louth Cycle Trail loop at two points to the north east of Louth.
- 9.5.35 Further details of Promoted Recreational Routes are included within **PEI Report Volume 2 Part B Section 2 Chapter 11 Socio-economics, Recreation and Tourism** and discussions with PRoW officers from all relevant Local Authorities will continue to be undertaken to confirm the key routes.

Table 9.8 Public Rights of Way and promoted/recreational routes

PRoW Ref	Type	Location	Sensitivity
P024/P025	Footpath	Connects Laceby and west Grimsby,	Local route, modest use = Medium
Grimsby Link	Cycleway	Runs alongside the A46 to the west of Grimsby	Segregated route along highway, connectivity to Grimsby – Medium
P029	Bridleway	Runs southwards from the A46 to the south of Laceby	Local route, rural, limited urban connectivity, low usage, shared vehicle use = Medium
P020/P021	Wanderlust Way footpath	Circular route to the north of Barnoldby le Beck	Local route, rural leisure route, limited urban connectivity – Medium
P023	Footpath	Runs to south east of Laceby/south west of Grimsby	Local route rural leisure, limited urban = Low
P028	Wanderlust Way - Bridleway	Circular route to the north of Barnoldby le Beck	Local route, rural leisure route, limited urban connectivity – Medium
Grimsby Link	Cycleway	Runs alongside Waltham Road to the south west of Grimsby	Segregated route along highway, connects urban areas = Medium
P027	Bridleway	Runs between Horton Le Clay and Brigsley to the south of Waltham	Local route, limited connection, light use = Low
P077	Footpath	Runs to the north of North Thoresby	Limited connectivity = Low
P129/P127/P056	Footpaths	Routes run to east of Utterby	Local route, not connecting urban settlement, low usage = Low
P055	Bridleway	Routes run to east of Utterby	Local route, not connecting urban settlement, low usage = Low
Louth Cycle Trail	Cycleway	Circular route to the north of Louth, crossed twice east of Fotherby	Local route, signed leisure route = Medium
P143	Greenwich Meridian long distance	Long distance route passes north of Louth	National route, signed, limited urban connection, leisure route = Medium

PRoW Ref	Type	Location	Sensitivity
	walking route and bridleway		
P144	Footpath	Route to Yarburgh	Local route, limited connection, light use = Low
P148	Louth Canal footpath	Runs to the north east of Louth	Local route, signed leisure route = Medium
P102	Bridleway	Runs to the north east of Louth	Local route = Low
P103	Footpath	Runs to the north east of Louth	Local route, leisure = Low
P114/P079	Footpath	Connects Grimoldby and Manby with Louth,	Local route = Low
P097/P091	Bridleway	Runs close to Manby	Local route = Low
P111	Footpath	Connects local villages to the east of Legbourne	Local route, limited connectivity and usage = Low
P113/P107	Footpath	Connects local villages to the east of Legbourne	Local route, leisure = low
P147	Footpath	Connects Withern and Tothill	Local route –, local leisure areas, modest use = Medium
P145	Footpath	Connects Withern, Claythorpe and local leisure area Tothill Wood	Local route, modest use = Medium

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 19) applicable to routing of new overhead line and the 'Horlock Rules' (Ref 20) 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 21) 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 2. 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 Access 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 if 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. PRow users are unlikely to be significantly affected during the delivery of the Project. PRow users will only be closed or diverted on safety grounds to protect PRow users or workers. Haul roads crossing PRow users will be designed such that the PRow remains open by default and passing construction traffic affords priority of movement to PRow users. In the locality of PRow crossing points, the haul road will be fenced and gated to prevent PRow users and animals from straying into a construction site.
 - vii. Where more than one PRow crosses the haul road in close proximity to another, local diversions will be required to merge PRow routes across a single passing point to reduce the likelihood of pedestrian-vehicular conflict (including equestrians and horses).
 - viii. PRow users will be closed when necessary on safety grounds. This is likely to be over a couple of months during the overhead line stringing works. Where PRow closures are required, the period of the closure would be kept to a minimum, and a diversion provided where necessary and practicable. Any route diversions or closures will be discussed with the local authority.

Control Mitigation Measures

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), 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.'
 - 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 PRowMP. PRowS crossing the working areas will be managed in discussion with the relevant local authorities and potential temporary closures applied for discussed with the relevant local authority. Access disruption would be reduced as reasonably practicable while construction activities occur.
- 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 suitable a suitable surface finish established to permit the passage of plant, equipment, materials, and people. Temporary culverts will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge. 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:

- i. measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions;
- ii. measures for the maintenance and upkeep of the public highway;
- iii. identification of access routes for emergency vehicles;
- iv. measures to reduce safety risks through construction vehicle and driver quality standards; and
- v. measures to manage abnormal loads.

Additional Mitigation Measures

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

9.6.6 Additional mitigation measures are not anticipated to be required in relation to Traffic and Movement effects. However, this will remain under review during the completion of further assessment and development of the ES.

9.7 Preliminary Assessment of Effects

9.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, maintenance and/or operation activities within Section 2.

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 2 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 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 2 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 the highway network – Section 2

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), CR18 (A18), CR20 (A18), CR21 (A1173), CR25 (A158), LK1 (A1136), LK2 (A1136), LK3 (Aylesby Road), LK5 (A157 Kenwick Hill), LK16 (Waltham Road), LK17 (Station Road), LK19 Bollingbroke Road), LK20 (Brackenborough Road), LK21 Westfield Road), LK22 (A157 Main Road)
Bus passengers	Potential for delay to bus services due to congestion as a result of increased traffic	CR6 (A16)
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), CR25 (A158), LK2 (A1136), LK3 (Aylesby Road), LK16 (Waltham Road), LK22 (A157 Main Road)

Operation and Maintenance

- 9.7.11 Based upon the preliminary assessment, no significant effects upon Transport and Movement receptors within the Section 2 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 2 Figure 9.5 Preliminary Impact Analysis shows the location of highway links that are below or above 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 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 2 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. P024/025 – haul route managed crossing of medium sensitivity route
 - ii. Grimsby Link – break in the haul route⁴, route not impacted
 - iii. P029 – haul route managed crossing of medium sensitivity route
 - iv. P020/021 Wanderlust Way – local diversion of medium sensitivity route
 - v. P023 – haul route managed crossing of low sensitivity route
 - vi. P028 Wanderlust Way - haul route managed crossing of medium sensitivity route
 - vii. P027 - haul route managed crossing of low sensitivity route
 - viii. P077 - local diversion of low sensitivity route
 - ix. P127/129/056 – short diversion (<100 m) and managed crossing of low sensitivity route
 - x. P055 – break in the haul route, route not impacted
 - xi. P143 Greenwich Meridian Trail – haul route managed crossing of medium sensitivity route
 - xii. P144 – break in the haul route, route not impacted
 - xiii. P148 Louth Cycle Trail – break in the haul route, route not impacted
 - xiv. P102 – break in the haul route, route not impacted
 - xv. P103 – haul route managed crossing of low sensitivity route
 - xvi. P114/P079 – haul route managed crossing of low 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.

- xvii. P097/P091 – break in the haul route, route not impacted
- xviii. P111 – haul route managed crossing of low sensitivity route
- xix. P113/P107 – local diversion of low sensitivity route
- xx. P147 – haul route managed crossing of low sensitivity route
- xxi. P145 – local diversion of low sensitivity route

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 one departure). 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 2 there are 122 pylons therefore there would be 244 vehicle trips (arrivals and departures). This would therefore generate approx. 4-5 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 2 overhead line does not cross any rail lines, 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 2, 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 2 draft Order Limits, therefore no significant effects are expected.

Table 9.10 Preliminary summary of non-significant Traffic and Movement effects – Section 2

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
Construction					
Highway Network					
Users of highway links CR1, CR2, CR3, CR5, CR19, LK4, LK6, LK18	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.
Users of highway link CR4	Increased traffic due to construction of the Project, potentially resulting in severance, changes in journey time, driver delay and highway safety effects upon road users.	High	<10 per cent	Low – Not significant	The percentage increase in traffic flows as a result of Project does not meet IEMA thresholds for significant effects.
Bus passengers in services on highway links CR4, CR5	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 CR3, CR4, CR5, CR19	Potential for severance, delay, increased journey time, decline in amenity,	Low, medium, high	Daily no. of construction workers	Low – Not significant	The volume of construction does not meet IEMA thresholds or volume of cars/LGVs is low and

	additional fear and intimidation and safety effects as a result of increased traffic		cars/LGVs between 0-100		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 2 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 2 overhead line therefore no significant effects are expected.
Rail Infrastructure					
Railway users	Potential to delay due to temporary closure of rail lines	High	Negligible	Negligible – Not significant	No railway lines are crossed by the Section 2 draft Order Limits. Therefore no likely significant effects on railway users are expected.
Waterways					
Waterway users	Potential to delay due to temporary closure of waterways	Low	Negligible	Negligible – 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.

Public Rights of Way and Promoted/Recreational Routes

Pedestrians, cyclists and equestrians on Grimsby Link and links P055, P144, P148, P102 and P097/091	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 Routes are not affected
Pedestrians, cyclists and equestrians on links P024/P025, P029, P020/P021, P023, P028, P027, P077, P127/P129/P056, P143, P103, P114/P079, P111, P113/107, P147 and P145	Temporary route closures/diversions to enable construction and the movement of construction traffic, resulting in potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.	Low/medium	Potential slight delay through short diversion (<100 m) 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.

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 – medium	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 to closure of rail lines	High	No impact	Negligible – Not significant	Rail lines will not be closed during operation
Waterway users	Potential to delay due to closure of waterways	Low	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 2 Study Area.

References

- Ref 1 North East Lincolnshire (2018) Local Plan 2013 to 2032 [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 21 October 2024].
- Ref 2 Lincolnshire County Council (2022) Local Transport Plan 5 [online]. Available at: <https://www.lincolnshire.gov.uk/downloads/file/7200/local-transport-plan-5> [Accessed 21 October 2024].
- Ref 3 East Lindsey District Council (2018) East Lindsey Local Plan Core Strategy [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Final_Version_of_Core_Strategy_2018.pdf?m=1546595473230 [Accessed 21 October 2024].
- Ref 4 Central Lincolnshire Joint Strategic Planning Committee (2023) Central Lincolnshire Local Plan (Adopted April 2023). [online] Available at: <https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf> [Accessed 29 May 2024].
- Ref 5 South East Lincolnshire Joint Strategic Planning Committee (2019) South East Lincolnshire Local Plan 2011-2036 [online]. Available at: <https://southeastlincslocalplan.org/media/21941/South-East-Lincolnshire-Local-Plan-2011-2036/pdf/Local-Plan-text-March-2019.pdf?m=1703963372690> [Accessed 21 October 2024].
- Ref 6 Lincolnshire County Council (no date) Lincoln Transport Strategy 2020-2036 [online], Available at: <https://www.lincolnshire.gov.uk/downloads/file/3608/lincoln-transport-strategy> [Accessed 21 October 2024].
- Ref 7 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 21 October 2024].
- Ref 8 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 21 October 2024].
- Ref 9 Institute of Environmental Management and Assessment (2023). Environmental Assessment of Traffic and Movement [online]. Available at: <https://www.iema.net/media/5mrmquib/iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf> [Accessed 21 October 2024].
- Ref 10 Ordnance Survey (2024). OS OpenMap [online]. Available at: <https://www.ordnancesurvey.co.uk> [Accessed 21 October 2024].
- Ref 11 Google (2024). Google maps [online]. Available at: <https://www.google.com/maps> [Accessed 21 October 2024].

- Ref 12 OpenStreetBrowser (no date). OpenStreetMap [online]. Available at <https://www.openstreetmap.org/#map=16/53.81194/-1.81826> [accessed 28 October 2024].
- Ref 13 Mapway Ltd (no date). Home. Traveline.info. [online]. Available at: <https://www.traveline.info/> [Accessed 21 October 2024].
- Ref 14 National Rail (2024). National Rail Enquiries - Official source for UK train times and timetables [online]. Available at: <https://www.nationalrail.co.uk/> [Accessed 21 October 2024].
- Ref 15 Inland Waterways Association (no date). Map of Inland Waterways [online]. Available at: <https://www.waterways.org.uk/waterways/uk-canal-map> [Accessed 28 October 2024].
- Ref 16 Sustrans (no date). Sustrans homepage [online]. Available at: <https://www.sustrans.org.uk/> [Accessed 21 October 2024].
- Ref 17 Roadtraffic.dft.gov.uk. (no date). Map Road traffic statistics - Road traffic statistics [online]. Available at: <https://roadtraffic.dft.gov.uk/> [Accessed 21 October 2024].
- Ref 18 Department for Transport (2024). Road Safety Data [online]. Available at: <https://www.data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data> [Accessed 18 October 2024].
- Ref 19 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 20 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
- Ref 21 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 12 April 2024].

10. Noise and Vibration

Contents

10.	Noise and Vibration	10-1
10.1	Introduction	10-1
10.2	Legislation and Policy Framework	10-4
	Regional and Local Policy	10-4
10.3	Scope of Assessment	10-4
10.4	Assessment Methodology	10-5
	Assessment Assumptions and Limitations	10-6
10.5	Baseline Conditions	10-6
	Study Area	10-6
	Data Collection	10-7
	Existing Baseline	10-7
	Future Baseline	10-8
10.6	Design, Control and Additional Mitigation Measures	10-9
	Design Mitigation Measures	10-9
	Control Mitigation Measures	10-10
	Additional Mitigation Measures	10-13
10.7	Preliminary Assessment of Effects	10-13
	Likely Significant Effects	10-13
	Likely Non-Significant Effects	10-14
	Summary	10-18
10.8	Monitoring	10-22
	Table 10.1 Supporting documentation	10-2
	Table 10.2 Summary of construction noise assessment	10-14
	Table 10.3 Summary of construction vibration assessment	10-16
	Table 10.4 Summary of operational substation noise assessment	10-18
	References	10-23

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 Grimsby West Substation to New Lincolnshire Connection Substation (LCS) A Section (Section 2) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 10.1);
 - ii. Identification of key local and regional policy relevant to the assessment (section 10.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
 - iii. A summary of the assessment scoping process and subsequent scope of the Noise and Vibration assessment (section 10.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
 - iv. A high-level summary of the methodology of the Noise and Vibration assessment within Section 2 (section 10.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
 - v. A description of the environmental baseline within the Section 2 Study Area relevant to the assessment of Noise and Vibration effects (section 10.5);
 - vi. A description of mitigation measures included for the purposes of the assessment reported within the PEI Report (section 10.6). Further information regarding design development can be found in **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 the Section 2 Study Area, based upon the assessment completed to date (section 10.7); and
 - 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 2 Figures	<p>Figure 10.1 Noise and Vibration Study Area</p> <p>Figure 10.2 Noise and Vibration Baseline</p> <p>Figure 10.3 Initial Construction Noise Assessment Outputs</p> <p>Figure 10.4 Initial Construction Vibration Assessment Outputs</p>
PEI Report Volume 3 Part B Section 2 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 2 Appendix 10B Construction Traffic Noise Assessment	Includes the assessment of construction traffic noise on construction traffic routes within Section 2.
PEI Report Volume 3 Part B Section 1 Appendix 10D Initial Operational Substation Noise Assessment	Includes the assessment of operational noise from the proposed New Grimsby West Substation in Section 1 New Grimsby West Substation (Section 1). The assessment also includes receptors within the operational noise Study Area that are within Section 2.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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

Supporting Information	Description
	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 Preliminary Code of Construction Practice (CoCP) will be submitted in support of the Development Consent Order (DCO) application.

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

10.2 Legislation and Policy Framework

- 10.2.1 Legislation and national policy relevant to the Project and this chapter is described in **PEI Report Volume 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. North East Lincolnshire Council Local Plan 2013 to 2032 (Ref 1):
 - Policy 5 Development boundaries: states that development boundaries are identified on the Policies Map. All development proposals located within or outside of the defined boundaries will be considered with regard to suitability and sustainability, having regard to the impact upon neighbouring land uses by reason of noise; and
 - Policy 31 Renewable and low carbon infrastructure: states that renewable and low-carbon energy proposals will be supported if adverse impacts are minimised and public benefits outweigh the harm. Developments will be assessed on their impact on landscapes and townscapes, particularly in regard to local amenities like noise.
- ii. East Lindsey District Council Local Plan Core Strategy 2018 (Ref 2):
 - Strategic Policy 10 (SP10) Design: states that the council will support 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: states that large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where (amongst other factors) their individual or cumulative impact(s) is considered acceptable in relation to residential amenity.

10.3 Scope of Assessment

- 10.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 1) 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 2 includes the following:

- i. construction noise;
- ii. construction vibration on people within buildings;
- iii. construction vibration on buildings and structures;
- iv. construction traffic noise;
- v. operational noise from proposed operational plant (e.g. transformers) within proposed new substations; and
- vi. operational Noise and Vibration from substantial maintenance activities.

- 10.3.4 There are no new substation locations within Section 2, with infrastructure associated with overhead line elements of the Project only. However, some NSR in Section 2 (close to the Section 1 and 2 boundary) fall within the Study Area for operational noise effects from the proposed New Grimsby West Substation in Section 1. Operational noise effects from the proposed New Grimsby West Substation on NSR in Section 2 are therefore considered in this chapter with reference to **PEI Report Volume 3 Part B Section 1 Appendix 10D Initial Operational Substation Noise Assessment**.
- 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 short-term 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 9) 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 10). The outcomes of this assessment will be reported within the ES.
- 10.4.4 Operational noise has been assessed in accordance with the methodology described in BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS 4142) (Ref 7). The assessment Study Area for operational

noise is 1 km from the proposed New Grimsby West Substation, based on guidance from International Standard (ISO) 9613-2:2014. Acoustics — Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors (ISO 9613-2) (Ref 8).

- 10.4.5 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

- 10.4.6 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 2:
- 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 2 Chapter 9 Traffic and Transport**. Preliminary construction traffic projections are subject to change and will be updated in support of the assessment reported in the ES.
 - iii. The operational substation noise assessment is based on National Grid Electricity Transmission plc (National Grid) specification data from proposed plant items (e.g. transformers and shunt reactors). In practice, noise levels from proposed plant would be expected to be no higher than the specification noise levels during normal operation. For the purposes of the assessment, it is assumed that substation transformers and shunt reactors are housed within acoustic enclosures providing a reduction of 20 decibels (dB).
- 10.4.7 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 Section 2 Study Area for the assessment of the Noise and Vibration baseline is illustrated in **PEI Report Volume 2 Part B Section 2 Figure 10.1 Noise and Vibration Study Area**. The baseline Study Area includes an additional 1 km buffer from the Section 2 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 2 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 2 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 2. 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 2 Figure 10.1 Noise and Vibration Study Area**; and
 - ii. **PEI Report Volume 2 Part B Section 2 Figure 10.2 Noise and Vibration Baseline**.
- 10.5.4 The overhead line route within Section 2 passes predominantly through rural areas. The majority of NSRs assessed within the Section 2 Study Area are therefore isolated dwellings and farms and those located in small settlements. Assessed NSRs in the Section 2 Study Area also include those located in:
- i. the southwest of Grimsby off Laceby Road, approximately 600 m east of the draft Order Limits;
 - ii. Laceby, approximately 650 m east of the draft Order Limits;
 - iii. Barnoldby le Beck, approximately 400 m east of the draft Order Limits;
 - iv. Waltham, approximately 200 m west of the draft Order Limits;
 - v. Brigsley, immediately south of the draft Order Limits;
 - vi. North Thoresby, approximately 600 m west of the draft Order Limits;
 - vii. Fulstow, approximately 700 m east of the draft Order Limits;
 - viii. Covenham St Mary, approximately 600 m east of the draft Order Limits;
 - ix. Yarburgh, approximately 700 m east of the draft Order Limits;
 - x. Little Carlton, approximately 300 m east of the draft Order Limits;
 - xi. South Reston, approximately 300 m west of the draft Order Limits; and
 - xii. Withern, approximately 700 m east of the draft Order Limits.
- 10.5.5 One notable high sensitivity NSR in the Section 2 Study Area is The Thomas Centre, which is located approximately 700 m east of the draft Order Limits, northwest of

Covenham St Bartholomew. The Thomas Centre is a holiday park for those who are affected by autism, epilepsy, and other complex needs.

- 10.5.6 **PEI Report Volume 2 Part B Section 2 Figure 10.1 Noise and Vibration Study Area** shows NSR locations, including residential and non-residential receptors.
- 10.5.7 The noise environment is expected to vary around the Section 2 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 2 Figure 10.2 Noise and Vibration Baseline**, showing how existing noise levels vary in the Study Area. 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.
- 10.5.8 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 2 Figure 10.2 Noise and Vibration Baseline**. There are several NIAs close to the Section, including NIA_6550, NIA_6551 and NIA_6552 on the A46 Grimsby Road, and NIA_14303 on the A16.
- 10.5.9 Acceptable levels of vibration during construction are higher than those that would be acceptable during normal conditions. It is therefore assumed that existing vibration levels at NSR within the draft Order Limits are negligible compared to the construction vibration threshold values, as described in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Construction vibration impacts are therefore assessed against fixed thresholds, rather than relative thresholds informed by an assessment of the baseline.
- 10.5.10 Section 2 is predominantly rural, passing through agricultural land. The main sources of environmental noise include the A46 Grimsby Road, the A16, the B1200, and the A157, as well as traffic on local roads. In terms of industrial sources, the main source of noise is likely to be agricultural activity. The Lincolnshire Wolds Railway, a heritage railway, is located approximately 300 m west of the draft Order Limits between North Thoresby and Ludborough, with a length of approximately 3 km and operates between approximately one and ten days per month, depending on the time of year.

Future Baseline

- 10.5.11 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 10.5.12 At this preliminary stage, a full assessment of the implications of any committed 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.

- 10.5.13 The northern extent of Section 2 includes part of the strategic allocation location of the proposed Grimsby West Urban Expansion (GWUA) which has been considered during the assessment of operational noise from the proposed New Grimsby West Substation in **PEI Report Volume 2 Part B Section 1 Chapter 10 Noise and Vibration**. The proposed urban expansion aims to deliver 3,500 new homes and associated facilities, as well as new transport links. Limited information is currently available regarding the GWUA. However, the site allocation is understood to be located on land to the northeast of the existing Grimsby West Substation and draft Order Limits between Aylesby Road and Great Coates Road, and to the south of the existing Grimsby West Substation on land between Aylesby Road and the A46 Grimsby Road, thus dissected by the draft Order Limits.
- 10.5.14 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 draft Order Limits. 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 11) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 12) which apply to design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 13) 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 2. This has and will continue to contribute to the avoidance or reduction of the potential environmental impacts of the Project as the design is finalised.
- 10.6.3 The proposed overhead line system is a 'Triple Araucaria' conductor bundle. Noise from high voltage overhead lines is primarily due to a phenomenon called corona discharge. Overhead line noise is generated when the conductor surface voltage gradient (electric stress, or E_{max} expressed in kilovolts per centimetre (kV/cm)) exceeds the inception level for corona discharge activity which is released as acoustic energy and radiates into the air as sound. In UK 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 lines are designed to operate below this level, those that operate close to this may produce audible noise when enhancement of conductor surface electric stress occurs due to rainfall (wet noise) or the presence of conductor surface contamination (dry noise). Overhead lines that

operate significantly below the corona inception level are much less likely to produce audible noise. 'Triple Araucaria' is regarded as practically quiet during both dry and wet weather conditions as it typically operates with an electrical stress below the inception level for corona discharge. Operational noise from the proposed overhead line would therefore not lead to significant adverse effects at nearby NSR, even if directly underneath the line. This supports the rationale for scoping operational noise out of the assessment.

- 10.6.4 In addition, pylon fittings, such as insulators, dampers, spacers, and clamps, are designed and procured in accordance with a series of National Grid 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 the Noise and Vibration assessment of Section 2 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 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 14) 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 15). 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 2 Study Area, as a result of construction, maintenance and/or operational activities.
- 10.7.2 The preliminary assessment of effects reported below takes into account the Design and Control Measures previously described.
- 10.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 2 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 10.5**, 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 10.5**. 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 detailed 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 2.

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 2 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which in Section 2 include:
- preparation and 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; and
 - 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 2 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	1038	860	175	3	0
High sensitivity non-residential	3	3	0	0	0
Medium sensitivity non-residential	1	0	0	0	1
Low sensitivity non-residential	39	31	6	1	0

- 10.7.11 The assessment indicates that the magnitude of impact from construction noise is:
- negligible or small at most residential NSR;

- ii. negligible at all high sensitivity non-residential NSR; and
 - iii. negligible, small or medium at all low sensitivity non-residential NSR in the Study Area.
- 10.7.12 These impacts would not result in significant adverse effects, even without specific BPM mitigation measures in place.
- 10.7.13 However, there are three residential NSR potentially experiencing a medium magnitude impact, and one medium sensitivity non-residential NSR potentially experiencing at large magnitude impact. The impacts could result in significant noise effects without specific mitigation in place. The specific construction activities causing the predicted impacts and affected receptors include:
- i. proposed pylon construction:
 - pylon GL11 affecting one residential NSR: Pigeon Cote, Grimsby Road, Laceby, Grimsby, DN37 7ED.
 - pylon GL23 affecting one residential NSR: Grange Farm House, Waltham Road, Barnoldby Le Beck, Grimsby, DN37 0AR.
 - pylon GL48 affecting one non-residential NSR: Dog Training Area, Station Road, North Thoresby, DN36 5QU.
 - pylon GL71 affecting one non-residential NSR: Westfield Paddocks, Westfield Road, Yarburgh, LN11 0NU.
 - ii. construction of access:
 - access off Westfield Road south of proposed pylon GL71 affecting one non-residential NSR: Westfield Paddocks, Westfield Road, Yarburgh, LN11 0NU
 - iii. drainage works:
 - works in the vicinity of proposed pylon GL71 affecting one non-residential NSR: Westfield Paddocks, Westfield Road, Yarburgh, LN11 0NU.
 - works northwest of proposed pylon GL27 affecting one residential NSR: Cottonwood, Waltham Road, Brigsley, Grimsby, DN37 0RQ.
- 10.7.14 It is noted that one non-residential NSR (Westfield Paddocks, Westfield Road, Yarburgh, LN11 0NU) is potentially impacted by three activities (access construction, pylon construction, and drainage) in the vicinity of proposed pylon GL71, which would result in significant effects upon this receptor, without mitigation.
- 10.7.15 In all cases, construction noise impacts may be reduced to levels which would not result in significant noise effects through the application of BPM as set out in the Preliminary CoCP. As such, significant adverse effects are not expected in Section 2.
- 10.7.16 It is noted that The Thomas Centre, which is classified as a high sensitivity NSR, falls outside of the 300 m construction noise Study Area, at a distance of approximately 700 m from the draft Order Limits. Construction noise levels would be expected to be low at this distance, and not significant. However, some construction activity may still be audible on occasion. BPM would be applied to works in this area to reduce the potential effects of noise as far as practicable.

Construction vibration

10.7.17 The construction vibration assessment is based on the construction vibration data presented in **PEI Report Volume 3 Part B Section 2 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which include:

- i. construction of access tracks (compaction);
- ii. construction of construction compounds (compaction); and
- iii. construction of pylon foundations (piling).

Construction vibration on people in buildings

10.7.18 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.

10.7.19 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 2 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	311	285	26	0	0
High sensitivity non-residential	7	7	0	0	0
Medium sensitivity non-residential	28	25	2	1	0
Low sensitivity non-residential	26	23	2	1	0

10.7.20 The assessment indicates that the magnitude of impact from construction vibration is:

- i. negligible or small at all 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, small or medium at all low sensitivity non-residential NSR.

10.7.21 These impacts would likely not result in significant adverse effects, even without specific BPM mitigation measures in place.

- 10.7.22 However, there is one medium sensitivity non-residential NSR potentially experiencing a medium magnitude impact. In the absence of specific mitigation, this would result in a significant effect. The specific construction activity causing the predicted impacts and affected receptor are:
- i. Proposed pylon construction:
 - Pylon GL71 affecting one non-residential NSR: Westfield Paddocks, Westfield Road, Yarburgh, LN11 0NU.
- 10.7.23 Construction vibration impacts may be reduced through the application of BPM. As such, based upon the application of control mitigation measures, significant adverse effects due to construction vibration are not expected in Section 2.

Construction vibration on buildings and structures

- 10.7.24 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

- 10.7.25 The initial construction noise assessment outputs are presented in **PEI Report Volume 3 Part B Section 2 Appendix 10B Construction Traffic Noise Assessment**.
- 10.7.26 Construction traffic noise impacts have been assessed on 33 construction traffic road links in Section 2 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 15 road links; and
 - iii. a small increase in noise level on 4 road links, none of which include NIAs.
- 10.7.27 No medium or large magnitude construction traffic noise impacts are expected in the Section 2 Study Area. 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 2.

Operation and Maintenance

Operational substation noise

- 10.7.28 As discussed above, there are no proposed new substation locations within Section 2. However, some NSR in Section 2 (close to the Section 1 and 2 boundary) fall within the Study Area for operational noise effects from the proposed New Grimsby West Substation in Section 1.
- 10.7.29 The initial operational substation noise assessment for is presented in **PEI Report Volume 3 Part B Section 1 Appendix 10D Initial Operational Substation Noise Assessment** and is summarised in **Table 10.4** for NSR in Section 2.

Table 10.4 Summary of operational substation noise assessment

NSR Type/Sensitivity	Total Number of NSR in Study Area	Number of NSR experiencing magnitude of impact:			
		Negligible	Small	Medium	Large
Residential	4	4	0	0	0
High sensitivity non-residential	0	0	0	0	0
Medium sensitivity non-residential	0	0	0	0	0
Low sensitivity non-residential	0	0	0	0	0

- 10.7.30 The assessment indicates that with appropriate standard noise mitigation measures incorporated in the design, the magnitude of impact of operational noise from the proposed new substation would be negligible at all nearby NSR. As such, there are no likely significant adverse effects from operational substation noise in the Section 2 Study Area.

Operational maintenance Noise and Vibration

- 10.7.31 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 those during the construction phase, as assessed above. As such, in the Section 2 Study Area there are no likely significant adverse effects from noise and vibration generated during operational maintenance, even without specific BPM mitigation measures in place.

Summary

- 10.7.32 For completeness, **Table 10.5** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Noise and Vibration effects.

Table 10.5 Preliminary summary of non-significant Noise and Vibration effects – Section 2

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.
All NSR within Study Area	Construction vibration	Residential, and high medium and low sensitivity	Negligible to small	Negligible to minor adverse. Not significant	Due to the distance between proposed construction activities and receptors, construction vibration levels would be

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
		non-residential NSR			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 2. 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 2.
Operation					
All NSR within Study Area	Operational noise	Residential	Negligible	Negligible. Not significant	With the implementation of standard noise mitigation measures (e.g. transformer enclosures), operational noise levels from the proposed New Grimsby West Substation would be below the threshold for potential

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					significant adverse effects at all nearby NSR.
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 would be undertaken in the management of Noise and Vibration in accordance with the Preliminary CoCP:
- i. Further detailed construction Noise and Vibration assessments will be conducted by the contractor based on their specific proposed construction methodologies prior to construction; and
 - ii. Based on the findings of the contractor's detailed construction Noise and Vibration assessments, specific BPM mitigation measures will be determined to avoid significant adverse effects and reduce and minimise adverse effects.
- 10.8.2 It is anticipated that the Preliminary CoCP will be secured through DCO requirements.
- 10.8.3 If appropriate, through consultation with the local authority, the contractor may apply for prior approval under section 61 of the CoPA (Ref 14) for certain construction activities.
- 10.8.4 Further detailed operational substation noise assessments will be undertaken as the design progresses, with appropriate mitigation specified where required to avoid significant adverse effects and reduce and minimise adverse effects.

References

- Ref 1 North East Lincolnshire Council (2018). Local Plan 2013 to 2032 (Adopted 2018) [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 18 October 2024].
- Ref 2 East Lindsey (2018). Core Strategy [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Core_Strategy_adopted_version_for_web.pdf [Accessed 24 October 2024].
- Ref 3 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 4 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 5 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 BS 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound, British Standard Institution, 2019.
- Ref 8 ISO 9613-2:2014. Acoustics — Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors. International Organization for Standardization, 2024.
- Ref 9 Department for Transport (1988). Calculation of Road Traffic Noise.
- Ref 10 Highways England et al. (2020). Design Manual for Roads and Bridges LA 111 Noise and vibration.
- Ref 11 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 12 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
- Ref 13 Grimsby to Walpole Corridor Preliminary Routeing and Siting Study. January 2024 [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 18 September 2024].

- Ref 14 Control of Pollution Act 1974 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40/contents> [Accessed 18 September 2024].
- Ref 15 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

Contents

11.	Socio-economics, recreation and tourism	11-1
11.1	Introduction	11-1
11.2	Legislation and Policy Framework	11-3
	Legislation and National Policy	11-3
	Regional and Local Policy	11-4
11.3	Scope of Assessment	11-5
11.4	Assessment Methodology	11-5
	Assessment Assumptions and Limitations	11-6
11.5	Baseline Conditions	11-6
	Study Area	11-6
	Data Collection	11-7
	Existing Baseline	11-8
	Future Baseline	11-23
11.6	Design, Control and Additional Mitigation Measures	11-24
	Design Mitigation Measures	11-24
	Control Mitigation Measures	11-25
	Additional Mitigation Measures	11-25
11.7	Preliminary Assessment of Effects	11-25
	Likely Significant Effects	11-26
	Likely Non-Significant Effects	11-26
11.8	Monitoring	11-67

Table 11.1	Supporting documentation	11-2
Table 11.2	Study Areas	11-7
Table 11.3	Local businesses within the Study Area	11-9
Table 11.4	Development land allocations, solar and onshore wind farms within the Study Area	11-11
Table 11.5	Community facilities within the Study Area	11-12
Table 11.6	Open space within the Study Area	11-14
Table 11.7	PRoW and promoted/recreational routes within the Study Area	11-16
Table 11.8	Airfields and Airstrips within the Study Area	11-22
Table 11.9	Preliminary summary of non-significant Socio-economic, recreation and tourism effects – Section 2	11-28

References	11-68
------------	-------

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 Grimsby West Substation to New Lincolnshire Connection Substation (LCS) A (Section 2) 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 2 (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 2 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 Section 2, 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 2 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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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.
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

Supporting Information	Description
	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 2 Chapter, 3 Visual**, should be consulted in relation to amenity effects on users of Public Rights of Way (PRoWs) and promoted/recreational routes.
 - ii. **PEI Report Volume 2 Part B Section 2 Chapter 8 Agriculture and Soils**, in regard to effects on agricultural landholdings.
 - iii. **PEI Report Volume 2 Part B Section 2 Chapter 9 Traffic and Movement**, should be consulted in relation to impacts on access, PRoWs and promoted/recreational routes.
 - iv. **PEI Report Volume 2 Part B Section 2 Chapter 10 Noise and Vibration**, should be consulted in relation to effects on noise and vibration sensitive receptors. This includes residential and community receptors, local businesses, and users of PRoWs and promoted/recreational routes.
 - v. **PEI Report Volume 2 Part B Section 2 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 2 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

Legislation and National Policy

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

Policy Context and supporting appendices, the details of which are set out in **Table 11.1**.

Regional and Local Policy

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

- i. Lincolnshire County Council Minerals and Waste Local Plan (Ref 1):
 - Lincolnshire Minerals and Waste Local Plan: Core Strategy and Development Management Policies - this policy outlines the principles for the future working of minerals and the form of waste management, including the criteria under which applications are considered; 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. North East Lincolnshire Council Local Plan (Ref 2):
 - Policy 1 Employment land supply – provides a portfolio of sites to enable the development growth of renewables and energy, chemicals and process, food processing and ports and logistics industries;
 - Policy 6 Infrastructure – outlines the authorities’ support for developments to create, expand or alter service facilities, including schools, health facilities and key infrastructure to meet the needs of existing and new communities; and
 - Policy 7 Employment allocations – outlines specific areas of land allocated for employment development under use classes B1, B2 and B8.
- iii. Emerging North East Lincolnshire Council Local Plan (Ref 3):
 - Draft Strategic Policy 4 Infrastructure – stipulates that the Council will support the expansion, and improvement of service facilities, including schools, healthcare, and key infrastructure, to meet the needs of communities; and
 - Draft Policy 5 Existing Employment Sites – outlines the Council’s aims to safeguard existing land allocated for employment and business uses. Proposals for the development or reuse of vacant sites within these areas for employment purposes will be supported by the Council.
- iv. East Lindsey District Council Local Plan (Ref 4):
 - Strategic Policy 3 – Housing Growth and the Location of Inland Growth: The Council will seek to deliver housing growth across the Authority at key locations;
 - Strategic Policy 13 – Inland Employment: The Council will support growth and diversification of the local economy by identifying and protecting additional land employment uses;
 - Strategic Policy 26 – Open Space, Sport and Recreation: The Council will safeguard, expand, enhance and promote access to sports and recreational facilities and open spaces; and

- Strategic Policy 27 – Renewable and Low Carbon Energy: Renewable and low carbon energy which states that amongst other characteristics, large-scale renewable or low carbon energy development will be supported where individual or cumulative impacts are considered acceptable in relation amenity.

11.3 Scope of Assessment

- 11.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 6). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Socio-economic, 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**.
- 11.3.1 Non statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 11.3.2 The scope of the construction assessment covers the following receptor groups:
- local businesses;
 - development land;
 - community facilities;
 - open space;
 - users of PRow and promoted/recreational routes; and
 - aviation.
- 11.3.3 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**.
- 11.3.4 As outlined in the Scoping Report (Ref 6), the effects of the Project's 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 5), where significant effects have the potential to be felt, this is reported on as appropriate.

11.4 Assessment Methodology

- 11.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Socio-economic, recreation and tourism assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment**

Methodologies and Scope. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components is outlined below.

- 11.4.2 There is limited technical guidance available for Socio-economic, recreation and tourism assessments. As such, the methodology for assessing impacts has followed standard EIA guidance and entails:
- i. assessment of the likely scale, permanence and significance of effects associated with Socio-economics, recreation and tourism receptors; and
 - ii. an assessment of the potential cumulative impacts with other projects within the surrounding area.

Assessment Assumptions and Limitations

- 11.4.3 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 2.
- 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 5).
- 11.5.2 The proposed Study Areas for Section 2 is shown on
- i. **PEI Report Volume 2 Part B Section 2 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area;**
 - ii. **PEI Report Volume 2 Part B Section 2 Figure 11.2 Development Land Allocations and Open Space Within the Study Area;**
 - iii. **PEI Report Volume 2 Part B Section 2 Figure 11.3 PRow and Promoted/Recreational Routes Within the Study Area;** and
 - iv. **PEI Report Volume 2 Part B Section 2 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
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 those 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 Chapter 7 Socio-economics, recreation and tourism**, owing to the nature of the impacts which will be felt at a regional level.

Data Collection

11.5.8 The following data has been used to inform the baseline conditions:

- i. Lincolnshire County Council Local Plan (Ref 1);
- ii. North East Lincolnshire Council Adopted Local Plan (Ref 2);
- iii. East Lindsey District Council Local Plan (Ref 4);
- iv. Ordnance Survey (OS) Open Greenspace (Ref 7);

- v. OS Local Important Buildings (Ref 8);
- vi. OS AddressBase (Ref 9);
- vii. traffic count data from surveys undertaken by Traffic and Movement, which include pedestrians, cyclists and equestrians; and
- viii. designated non-motorised user (NMU) routes and PRowS from Sustrans (Ref 10 and Ref 11) 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 and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:

- i. **PEI Report Volume 2 Part B Section 2 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area;**
- ii. **PEI Report Volume 2 Part B Section 2 Figure 11.2 Development Land Allocations and Open Space Within the Study Area;**
- iii. **PEI Report Volume 2 Part B Section 2 Figure 11.3 PRow and Promoted/Recreational Routes Within the Study Area;** and
- iv. **PEI Report Volume 2 Part B Section 2 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, Laceby Manor – Spa and Golf Resort and Woodthorpe Hall Golf Course are considered to have a high sensitivity given its limited potential for substitution. Similarly, Herons Mead Caravan Park and Fishing Lakes and Furze Farm Estate are considered to have a high sensitivity resulting from their limited potential for substitution owing to their multi-faceted operations and unique offering within the Study Area.
- 11.5.11 Where receptors are not considered likely to experience any loss or gain in the economic value as a result of the potential environmental effects resulting from the Project, they are considered to have a low sensitivity.
- 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 2 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
Laceby Manor - Spa and Golf Resort	At its closest point, this receptor is approximately 250 m from the draft Order Limits and is situated along Barton Street.	High
Sanscoe Kennels Ltd	At its closest point, this receptor is situated within approximately 5 m of the draft Order Limits. This receptor is situated along Butt Lane.	Medium
Hall Farm Hotel and Restaurant	At its closest point, this receptor is approximately 30 m from the draft Order Limits and is situated along Ashby Lane.	Medium
North Thoresby Fisheries	At its closest point, this receptor is approximately 390 m from the draft Order Limits and is situated near Fen Lane.	Medium
Northolme Farm Campsite and Shop	At its closest point, this receptor is approximately 50 m from the draft Order Limits and is situated along Yarburgh Road.	Medium
Rushmoor Farm Park and Falconry Centre	At its closest point, this receptor is approximately 5 m from the draft Order Limits and is situated along Louth Road.	Medium
Inshape Gym	At its closest point, this receptor is approximately 25 m from the draft Order Limits and is situated off Manby Road.	Low
Furze Farm Estate, Luxury Caravan and Motorhome Park and Self-Catering Holiday Cottage	At its closest point, this receptor is approximately 15 m from the draft Order Limits and is situated along Manby Road.	High
North Lincs Engineering Ltd	At its closest point, this receptor is approximately 490 m from the draft Order Limits and is situated adjacent to Manby Middlegate.	Low
The Old Rectory Cottage	At its closest point, this receptor is approximately 400 m from the draft Order Limits and is situated off Burwell Road.	Medium
Withern Mill Trout Farm and Fishery	At its closest point, this receptor is approximately 150 m from the draft Order Limits and is situated along Church Lane.	Medium
Park Farm Holidays	At its closest point, this receptor is approximately 250 m from the draft Order Limits and is situated along Park Farm Aby Road.	Medium

Receptor	Description of location	Sensitivity
Grange Farm Riding School	At its closest point, this receptor is within approximately 5 m of the draft Order Limits. The receptor is situated along Waltham Road.	Medium
Veronica's Larder - Restaurant	At its closest point, this receptor is within approximately 5 m of the draft Order Limits. The receptor is situated along Waltham Road.	Medium
Westfield Paddocks	At its closest point, this receptor is within the draft Order Limits. The receptor is situated along Westfield Road.	Medium
Woodthorpe Hall Golf Course	At its closest point, this receptor is approximately 450 m from the draft Order Limits. The receptor is situated along Alford Road.	High

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 generation infrastructure (solar and onshore wind farms) within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 2 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. The exception to this is the Sand and Gravel Minerals Safeguarding Area Policy M12 allocation which has been assigned a medium sensitivity because a Safeguarding Area does not give permission for operations, but it is a designated area where mineral resources are protected to ensure they are available for future generations.
- 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 North East Lincolnshire Local Plan Grimsby West Housing Allocation (Grimsby West Urban Extension site area of 206.7 ha, total capacity yield 3,337 dwellings) crosses both Section 1 New Grimsby West Substation (Section 1) and Section 2. The receptor has been assessed within **PEI Report Volume 2 Part B Section 1 Chapter 11 Socio-economics, recreation and tourism** to avoid double counting where its impact from the Project is likely to be greatest.

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

Local authority area	Receptor	Description and location	Sensitivity
North East Lincolnshire Local Plan	Proposed Education Area	Education allocation, approximately 300 m from the draft Order Limits. The land is south of Butt Lane.	High
North East Lincolnshire Local Plan	HOU131 Housing Allocation	Housing allocation of which 12 dwellings have been constructed, situated approximately 5 m from the draft Order Limits. The land is west of Bradley, along Bradley Road.	High
North East Lincolnshire Local Plan	HOU292 Waltham Housing Allocation	Housing allocation, approximately 70 m from the draft Order Limits. The land is west of Bradley Road. The site area is 3.4 ha, with an anticipated total capacity yield of 66 dwellings.	High
North East Lincolnshire Local Plan	HOU111 Waltham Housing Allocation	Housing allocation, approximately 170 m from the draft Order Limits. The land is west of Bradley Road. The site area is 8.7 ha, with an anticipated total capacity yield of 199 dwellings.	High
Lincolnshire Minerals and Waste Local Plan	Sand and Gravel Minerals Safeguarding Area Policy M12	Safeguarding of Existing Mineral Sites and Associated Minerals Infrastructure Mineral sites allocation, situated partially within the draft Order Limits, near Conscience Hill.	Medium
North East Lincolnshire Local Plan	HOU342 Housing Allocation	Housing allocation, situated partially within the northern section of the draft Order Limits. The land is east of Aylesby Road. The site area is 206.7 ha, with an anticipated total capacity yield of 3,337 dwellings.	High
North East Lincolnshire Council	Yarburgh Grove Solar Farm	This receptor is situated within the high central section of the draft Order Limits. The receptor is situated north of Westfield Road.	High
North East Lincolnshire Council	Laceby Solar Farm	This receptor is situated within the northern section of the draft Order Limits. The receptor is situated along Grimsby Road.	High

Local authority area	Receptor	Description and location	Sensitivity
North East Lincolnshire Council	Low Farm Solar Farm	This receptor is situated within the northern section of the draft Order Limits. The receptor is situated along Bradley Road.	High
North East Lincolnshire Council	Wind Turbine east of Aylesby Lane	At its closest point, this receptor is approximately 330 m from the draft Order Limits. The receptor is situated east of Aylesby Lane.	Medium
North East Lincolnshire Council	Wind Turbine west of Aylesby Lane	At its closest point, this receptor is approximately 470 m from the draft Order Limits. The receptor is situated west of Aylesby Lane.	Medium

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 2 Figure 11.1 Local Business Receptors and Community Facilities Within the Study Area**.
- 11.5.19 Generally, the community facilities possess some social and/or community value and would likely have limited potential for substitution in the immediately surrounding area, 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
Cloverdale Residential Home	At its closest point, this receptor is approximately 120 m from the draft Order Limits and is situated on Butt Lane.	High
Briglseyy Village Hall	At its closest point, this receptor is approximately 30 m from the draft Order Limits and is situated on Walthams Road.	High
St Martin's Church	At its closest point, this receptor is approximately 100 m from the draft Order Limits. The receptor is situated on Church Lane.	High
St Nicholas Church	At its closest point, this receptor is approximately 450 m from the draft Order Limits and is situated on Grainsby Lane.	High
St Helen's Church	At its closest point, this receptor is approximately 30 m from the draft Order Limits and is situated off Beck Farm Mews.	High
St Lawrence's Church	At its closest point, this receptor is approximately 350 m from the draft Order Limits and is situated on Church Lane.	High

Receptor	Description of location	Sensitivity
Fulstow Primary School	At its closest point, this receptor is approximately 430 m from the draft Order Limits and is situated on Churchthorpe.	High
Fulstow Village Hall	At its closest point, this receptor is approximately 380 m from the draft Order Limits and is situated on Churchthorpe.	High
Yarburgh Village Hall	At its closest point, this receptor is approximately 5 m from the draft Order Limits and is situated off Covenham Road.	High
St John the Baptist's Church	At its closest point, this receptor is approximately 380 m from the draft Order Limits and is situated on Church Street.	High
Alvingham Village Hall and Social Club	At its closest point, this receptor is approximately 5 m from the draft Order Limits and is situated on Yarburgh Road.	High
St. Andrew's Church	At its closest point, this receptor is approximately 250 m from the draft Order Limits and is situated on Church Lane.	High
St John the Baptist's Church	At its closest point, this receptor is approximately 10 m from the draft Order Limits and is situated on Main Road.	High
St Peter's Church	At its closest point, this receptor is approximately 10 m from the draft Order Limits and is situated on Main Road.	High
East Lindsey Fire Protection Services Ltd	At its closest point, this receptor is approximately 80 m from the draft Order Limits and is situated off the A157 road.	High
St Margarets Church Hall	At its closest point, this receptor is approximately 485 m from the draft Order Limits. This receptor is situated along Grimsby Road.	High
Ashtree House Residential Home	At its closest point, this receptor is approximately 430 m from the draft Order Limits. The receptor is situated along Church Lane.	High
St Helen's Church	At its closest point, this receptor is approximately 360 m from the draft Order Limits. The receptor is situated off of Waltham Road.	High
St George's Church	At its closest point, this receptor is approximately 15 m from the draft Order Limits. The receptor is situated west of Bradley Road.	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 12).

- 11.5.21 **Table 11.6** below identifies areas 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 2 Figure 11.2 Development Land Allocations and Open Space Within the Study Area**.
- 11.5.22 It is acknowledged that Laceby Manor Golf Club and Briglsey Village Hall also have green spaces associated with their buildings. Whilst the impact on these is considered and assessed under community facilities in **Table 11.4** above, the green spaces are shown on **PEI Report Volume 2 Part B Section 2 Figure 11.2 Development Land Allocations and Open Space Within the Study Area** for completeness.
- 11.5.23 The areas of open space have some social and/or community value with potential for substitution, and as such should be considered to have medium sensitivity.
- 11.5.24 Mother Wood is an open space receptor within the Section 2 Study Area. However, it is omitted from this assessment as it is located directly adjacent to the draft Order Limits of Section 3 New Lincolnshire Connection Substation A and B (Section 3) and so has been assessed within **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, recreation and tourism**.

Table 11.6 Open space within the Study Area

Receptor	Description of location	Sensitivity
Butt Lane Allotments	At its closest point, this receptor is approximately 250 m from the draft Order Limits and is situated on Butt Lane.	Medium
Butt Lane Play Area	At its closest point, this receptor is approximately 145 m from the draft Order Limits and is situated on Butt Lane.	Medium
Bradley and Dixon Wood	At its closest point, this receptor is approximately 5 m from the draft Order Limits and is situated off Bradley Road.	Medium
Rushmoor Country Park (including Playspace)	At its closest point, this receptor is approximately 5 m from the draft Order Limits and is situated off Louth Road.	Medium
Playing Field along Butt Lane	At its closest point, this receptor is approximately 50 m from the draft Order Limits. The receptor is situated along Butt Lane.	Medium
Bowling Green and Pavilion along Butt Lane	At its closest point, this receptor is approximately 150 m from the draft Order Limits. The receptor is situated along Butt Lane.	Medium
St Helens Crescent Play Area	At its closest point, this receptor is approximately 30 m from the draft Order Limits. The receptor is situated along St Helens Crescent.	Medium
Dog Training Area	At its closest point, this receptor is within approximately 5 m of the draft Order Limits. The receptor is situated along Station Road.	Medium

Receptor	Description of location	Sensitivity
Fulstow Sports Ground	At its closest point, this receptor is approximately 380 m from the draft Order Limits. The receptor is situated along Thoresby Road.	Medium
Tennis Court along the Barnoldby Public Path	At its closest point, this receptor is approximately 475 m from the draft Order Limits. The receptor is situated along the Barnoldby Public Path.	Medium
Tennis Court along Waltham Road	At its closest point, this receptor is approximately 45 m from the draft Order Limits. The receptor is situated along Waltham Road.	Medium
Tennis Court along Waltham Road	At its closest point, this receptor is approximately 50 m from the draft Order Limits. The receptor is situated along Waltham Road.	Medium
Tennis Court along Thoresby Road	At its closest point, this receptor is approximately 380 m from the draft Order Limits. The receptor is situated along Thoresby Road.	Medium
Tennis Court situated along Harneis Crescent	At its closest point, this receptor is approximately 140 m from the draft Order Limits. The receptor is situated along Harneis Crescent.	Medium
Butt Lane Tennis Court	At its closest point, this receptor is approximately 135 m from the draft Order Limits. The receptor is situated along Butt Lane.	Medium
Butt Lane Basketball Court	At its closest point, this receptor is approximately 130 m from the draft Order Limits. The receptor is situated along Butt Lane.	Medium

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

- 11.5.25 This section of the baseline considers people using PRoWs for walking, wheeling, cycling and horse riding. PRoWs 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 2 Figure 11.3 PRoW and Promoted/Recreational Routes Within the Study Area**.
- 11.5.26 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 North East Lincolnshire (Ref 12) and Lincolnshire County Council (Ref 13) definitive maps, and desk-top research. Such routes, paths and trails generally follow alignments utilising combinations of PRoW.
- 11.5.27 PRoW are typically considered as:
- public footpaths, open to walkers only;
 - 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.
- 11.5.28 People using wheelchairs or mobility scooters can use all of the above designations.
- 11.5.29 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; and
 - 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 may be subject to available alternative routes.
- 11.5.30 Relevant transport surveys are ongoing, which are reported in **PEI Report Volume 2 Part B Section 2 Chapter 9 Traffic and Movement**. At ES stage survey results will help further inform the consideration of sensitivity of routes by providing information about usage and condition, which are relevant to determining value and potential for substitution.
- 11.5.31 **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 2 Chapter 9 Traffic and Movement**.

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

Parish area	Receptor	Description	Sensitivity
Promoted/recreational route			
N/A	Greenwich Meridian Trial	This receptor is a long distance walk that follows the line of the Prime Meridian. The route interacts with the Study Area at two locations in Section 2, and at its closest point, the route is within the draft Order Limits. The route is 269 miles in total length.	High
N/A	Louth Canal	This receptor is a long-distance path which runs through the Lincolnshire Wolds. At its closest point, this route is within the draft Order Limits. The route is 12 miles in total length.	High

Parish area	Receptor	Description	Sensitivity
N/A	Silver Lincs Way	This receptor is a long-distance path which runs through the Lincolnshire Levels and Lincolnshire Wolds. At its closest point, this route is within the draft Order Limits. The route is 25 miles in total length.	High
N/A	Wanderlust Way	This receptor is a long-distance path which runs through the Lincolnshire Wolds. The route interacts with the Study Area at three locations in Section 2, and at its closest point, the route is within the draft Order Limits. The route is 20 miles in total length.	High

North East Lincolnshire Council

Ashby Cum Fenby	1 Footpath; 85	There is 1 footpath in Ashby Cum Fenby which interacts with the draft Order Limits.	Medium
Ashby Cum Fenby	6 Footpaths; 86, 81, 82, 89, 90, 88	There are 6 footpaths located within the Ashby Cum Fenby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Aylesby	2 Footpaths; 103 and 110	There are 2 footpaths in Aylesby which interact with the draft Order Limits.	Medium
Aylesby	2 Footpaths; 105 and 112	There are 2 footpaths located within the Aylesby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Aylesby	2 Bridleways; 102 and 109	There are 2 bridleways located within the Aylesby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Barnoldby Le Beck	2 Footpaths; 93 and 94	There are 2 footpaths located within the Barnoldby Le Beck parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Barnoldby Le Beck	1 Footpath; 77	There is 1 footpath located within the Barnoldby Le Beck parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Barnoldby Le Beck	1 Bridleway; 93	There is 1 bridleway located within the Barnoldby Le Beck parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium

Parish area	Receptor	Description	Sensitivity
Bradley	2 Footpaths; 95 and 95a	There are 2 footpaths in Bradley which interact with the draft Order Limits.	Medium
Bradley	2 Footpaths; 121 and 166	There are 2 footpaths located within the Bradley parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Bradley	4 Bridleways; 75 93, 163 and 165	There are 5 bridleways located within the Bradley parish which interact with the draft Order Limits.	Medium
Brigsley	6 Footpaths; 77, 84, 79, 83, 73 and 81	There are 6 footpaths located within the Brigsley parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Briglse	2 Bridleways; 78 and 89	There are 2 bridleways located within the Briglse parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Laceby	2 Footpaths; 94 and 96	There are 2 footpaths located within the Laceby parish which interact with the draft Order Limits.	Medium
Laceby	2 Footpaths; 95 and 111	There are 2 footpaths located within the Laceby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Laceby	2 Bridleways; 97 and 120	There are 2 bridleways located within the Laceby parish which interact with the draft Order Limits.	Medium
Laceby	1 Bridleway; 101	There is 1 bridleway located within the Laceby parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Waltham	1 Footpath; 72 and 1 Bridleway; 75	There are 2 PRow located within the Laceby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Lincolnshire County Council			
Alvingham	1 Footpath; Alvi/343/4	There is 1 footpath within the Alvingham parish which interacts with the draft Order Limits.	Medium
Alvingham	4 Footpaths;	There are 4 footpaths located within the Alvingham parish which are located	Medium

Parish area	Receptor	Description	Sensitivity
	Kedd/343/1, Yarb/74/4, Alvi/74/1 and Alvi/343/3	within the Study Area and do not interact with the draft Order Limits.	
Brackenborough with Little Grimsby	2 Bridleways; Yarb/76/1 LGri/76/1	There are 2 bridleways within the Brackenborough with Little Grimsby parish which interact with the draft Order Limits.	Medium
Brackenborough with Little Grimsby	1 Bridleway; LGri/77/1	There is 1 bridleway located within the Brackenborough with Little Grimsby parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Claythorpe	2 Bridleways; WWSt/238/1 and Clyt/238/1	There are 2 bridleways located within the Claythorpe parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Covenham St. Bartholomew	5 Footpaths; CovB/85/1, CovB/78/1, CovB/86/3, CovB/86/1 and CovB/86/2	There are 5 footpaths located within the Covenham St. Bartholomew parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Covenham St. Mary	1 Footpath; CovS/78/1	There is 1 footpath located within Covenham St. Mary parish which interacts with the draft Order Limits.	Medium
Covenham St. Mary	3 Footpaths; CovS/80/1, CovS/74/3 and CovS/772/1	There are 3 footpaths located within the Covenham St. Bartholomew parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Fulstow	3 Footpaths; Fuls/92/1, Fuls/93/1 and Fuls/91/1	There are 3 footpaths located within the Fulstow parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
East Lindsey District, Grainsby	1 Footpath; Gnby/108/1	There is 1 footpath located within East Lindsey District, Grainsby parish which interacts with the draft Order Limits.	Medium
Grainsby	6 Footpaths; NTho/109/1, Gnby/111/1, Gnby/109/1, Gnby/114/1, Gnby/112/2 and	There are 6 footpaths located within the Grainsby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

Parish area	Receptor	Description	Sensitivity
	Gnby/109/2		
Great Carlton	6 Footpaths; GtCa/192/2, GtCa/229/1, GtCa/192/1, GtCa/218/1, GtCa/1012/1 and GtCa/228/1	There are 6 footpaths located within the Great Carlton parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Grimoldby	1 Footpath; Grim/211/1	There is 1 footpath located within Grimoldby parish which interacts with the draft Order Limits.	Medium
Grimoldby	6 Footpaths; Grim/218/5, Grim/222/1, Grim/218/6, Grim/218/4, Grim/537/1 and Grim/218/7	There are 6 footpaths located within the Grimoldby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Keddington	1 Footpath; Kedd/343/2	There is 1 footpath located within the Keddington parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Little Carlton	1 Footpath; LCar/1140/1	There is 1 footpath located within Little Carlton parish which interacts with the draft Order Limits.	Medium
Little Carlton	4 Footpaths; LCar/198/1, LCar/239/2, LCar/198/2 and LCar/239/1	There are 4 footpaths located within the Little Carlton parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Little Carlton	1 Bridleway; LCar/624/1	There is 1 bridleway located within Little Carlton parish which interacts with the draft Order Limits.	Medium
Little Carlton	2 Bridleways; LCar/194/1 and LCar/624/1	There are 2 bridleways located within the Little Carlton parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Ludborough	1 Footpath; Ludb/106/1	There is 1 footpath located within the Ludborough parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium

Parish area	Receptor	Description	Sensitivity
North Cockerington	1 Footpath; NCoc/68/1	There is 1 footpath located within North Cockerington parish which interacts with the draft Order Limits.	Medium
North Cockerington	1 Bridleway; NCoc/67/1	There is 1 bridleway located within North Cockerington parish which interacts with the draft Order Limits.	Medium
Reston	6 Footpaths; SRes/193/2, SRes/192/2, SRes/195/2, SRes/196/1, SRes/193/3, SRes/197/1 and SRes/195/1	There are 6 footpaths located within Reston parish which interacts with the draft Order Limits.	Medium
Reston	3 Footpaths; SRes/196/2, SRes/197/2 and SRes/193/1	There are 3 footpaths located within the Reston parish which are located within the Study Area and does not interact with the draft Order Limits.	Medium
Reston	1 Bridleway; SRes/194/2	There is 1 bridleway located within the Reston parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Stewton	2 Footpaths; Stew/211/1 and Stew/210/1	There are 2 footpaths located within the Stewton parish which is located within the Study Area and do not interact with the draft Order Limits.	Medium
Utterby	3 Footpaths; Utte/84/1, Utte/78/1 and Utte/78/2	There are 3 footpaths located within the Utterby parish which is located within the Study Area and do not interact with the draft Order Limits.	Medium
Utterby	1 Footpath; CovB/84/1	There is 1 footpath located within the Utterby parish which is located within the Study Area and does not interact with the draft Order Limits.	Medium
Utterby	1 Bridleway; CovS/83/1	There is 1 bridleway within Utterby parish which interacts with the draft Order Limits.	Medium
Utterby	2 Bridleways; Utte/83/2 and Utte/83/1	There are 2 bridleways located within the Utterby parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

Parish area	Receptor	Description	Sensitivity
Withern with Stain	2 Footpaths; WWst/235/1 and WWst/236/3	There are 2 footpaths located within the Withern with Stain parish which interact with the draft Order Limits.	Medium
Withern with Stain	2 Footpaths; WWst/236/1 and WWst/236/2	There are 2 footpaths located within the Withern with Stain parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium
Yarburgh	1 Footpath; Yarb/75/1	There is 1 footpath located within the Yarburgh parish which interact with the draft Order Limits.	Medium
Yarburgh	4 Footpaths; Yarb/74/2, Yarb/74/1, Yarb/74/3, and Yarb/74/5	There are 4 footpaths located within the Yarburgh parish which are located within the Study Area and do not interact with the draft Order Limits.	Medium

Aviation

- 11.5.32 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 2 Figure 11.4 Airfields and Airstrips Within the Study Area**.
- 11.5.33 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
Lindens Farm Airstrip	This receptor is an unlicensed airfield located approximately 2.7 km from the proposed new overhead line alignment. The airstrip is situated approximately 3 km north west of Laceby.

Receptor	Description
Manby Eastfield Farm Airstrip	This receptor is an unlicensed airfield located approximately 2.3 km from the proposed overhead line alignment. The airstrip is situated approximately 1 km east of Manby.
Eastfield Farm Cottage Helipad	This receptor is a helipad located approximately 300 m from the proposed overhead line alignment. The helipad is situated approximately 2.5 km west of Manby.
Louth (Stewton) Airstrip	This receptor is an unlicensed airfield located approximately 1.8 km from the proposed overhead line alignment. The airstrip is situated approximately 2 km southeast of Louth. It is understood that this airfield is not currently operational, but that there are plans to potentially bring the airfield back into operation in the near future.
North Reston Airstrip	This receptor is an unlicensed airfield located approximately 2.2 km from the proposed overhead line alignment. The airstrip is situated approximately 6 km southeast of Louth.
Strubby Airfield (North)	This receptor is an unlicensed airfield located approximately 2.2 km from the proposed overhead line alignment. The airfield is situated approximately 7 km southwest of Mablethorpe. Strubby Airfield (North) primarily operates powered fixed wing light aircraft.
Strubby Airfield (South)	This receptor is an unlicensed airfield located approximately 1.3 km from the proposed overhead line alignment. The airfield is situated approximately 7 km southwest of Mablethorpe and approximately 200 m to the south of Strubby Airfield (North). Strubby Airfield (South) primarily operates glider aircraft.

Future Baseline

- 11.5.34 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.
- 11.5.35 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 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.
- 11.5.36 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.

- 11.5.37 Bradley Road Solar Farm is a development that has recently been granted planning permission, situated within the draft Order Limits, with a high sensitivity. Although planning permission has been secured for the development, construction activities have not commenced. However based upon available information, construction is due to commence in 2025. As such, the development is considered as part of the future baseline. National Grid and Renewable Connections are continuing to engage on this matter, and an update will be provided at ES stage.
- 11.5.38 Similarly, Aura Power Solar Farm is a development that has recently been granted planning permission and due to commence construction in 2025, situated partly within the draft Order Limits of Section 2, with a high sensitivity. However, it is omitted from this assessment as it is located primarily within the draft Order Limits of Section 1, and so has been included within the future baseline of **PEI Report Volume 2 Part B Section 1 Chapter 11 Socio-economics, recreation and tourism**.
- 11.5.39 The likely significance of effects for solar developments considered in the future baseline will be determined at ES stage when the necessary information from all relevant topic specialists is available and confirmed in addition to further landowner engagement.
- 11.5.40 The future baseline for other local businesses, community facilities, open spaces, and visitor attractions over the medium to longer-term is uncertain beyond where allocated and planned development sites have been identified. Due to this uncertainty, it is assumed the future baseline for the Study Area would be unchanged from the current baseline to the completion of the Project, except where new development is expected to be delivered in line with allocated and planned development sites as set out above.

11.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 11.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 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.
- 11.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 2. 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 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 Socio-economic, recreation and tourism assessment of Section 2 include:
- i. 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 Public Rights of Way Management Plan (PRowMP). PRowS crossing the working areas will be managed in discussion with the relevant local authorities and potential temporary closures applied for discussed with the relevant local authority. Access disruption would be reduced as reasonably practicable while construction activities occur.
 - ii. NV01 - Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the Construction Environmental Management Plan (CEMP).
 - iii. 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.
 - iv. GG11 - Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.

Additional Mitigation Measures

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

11.7 Preliminary Assessment of Effects

- 11.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, operation and/or maintenance activities within Section 2.

- 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 2 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 generating 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 intersect the draft Order Limits. Within Section 2 there are four which are Yarburgh Grove Solar Farm, Laceby Solar Farm, Low Farm Solar and Bradley Road Solar Farm. 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 2, 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 6), 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 5) and the request to report on significant effects resulting from the Projects operation and maintenance phases where they do arise, the Applicant 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 2. 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 2 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.
- 11.7.14 An assessment of the effects of the Project on users of airfields as socio-economic receptors will be presented in the ES. At this PEI Report stage, no direct effects are anticipated by virtue of no airfields being identified within the draft Order Limits. As such, it is anticipated that all identified effects will be indirect, adverse and temporary, with impacts likely to be experienced primarily during the construction stage. The likely significance of effects will be determined at ES stage when the necessary information from the specialist aviation consultation will help inform determination of receptors' sensitivity and magnitude of change.

Table 11.9 Preliminary summary of non-significant Socio-economic, recreation and tourism effects – Section 2

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Local businesses					
Laceby Manor - Spa and Golf Resort, Barton Street	At its closest point, this receptor is located approximately 250 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse, not significant	Owing to its limited potential for substitution by virtue of its nature and scale, this receptor has a high sensitivity. It is anticipated that there would be a small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
Sanscoe Kennels Ltd, Butt Lane	At its closest point, this receptor is located approximately 5 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity. It is anticipated that there would be a small change in

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					amenity given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
Northolme Farm Campsite and Shop, Yarburgh Road	At its closest point, this receptor is located approximately 50 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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 small change in amenity given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Rushmoor Farm Campsite and Shop, Louth Road	At its closest point, this receptor is located approximately 5 m from the draft Order	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.				substitution. It has therefore been assigned a medium sensitivity. It is anticipated that there would be a Small magnitude of change as a construction access track is proposed on through Louth Road, however this is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
Inshape Gym, Manby Road	At its closest point, this receptor is located approximately 25 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity. It is anticipated that there would be a small change in

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					amenity given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
Withern Mill Trout Farm and Fishery Camping Site, Church Lane	At its closest point, this receptor is located approximately 150 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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 small change in amenity given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Grange Farm Riding School, Waltham Road	At its closest point, this receptor is located approximately 5 m from the draft Order	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.				substitution. It has therefore been assigned a medium sensitivity. It is anticipated that there would be a Small magnitude of change as a construction access track is proposed adjacent to this receptor, however this is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
Veronica's Larder – Restaurant, Waltham Road	At its closest point, this receptor is located approximately 5 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity. It is anticipated that there would be a Small magnitude of

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					change as a construction access track is proposed adjacent to this receptor, however this is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
Hall Farm Restaurant, Ashby Lane	At its closest point, this receptor is located approximately 30 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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 Small magnitude of change as a maintenance access track is proposed adjacent to this receptor, however this is unlikely to compromise the overall viability, and it</p>

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					is assumed that access would be maintained at all times.
North Thoresby Fisheries, Station Road	At its closest point, this receptor is located approximately 390 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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 small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Westfield Paddocks, Westfield Road	This receptor is located within the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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>

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					It is anticipated that there would be a Small magnitude of change as a construction access track is proposed adjacent to this receptor, however this is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
Alvingham Lakes, Lock Road	At its closest point, this receptor is located approximately 10 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a medium sensitivity. It is anticipated that there would be a small change in amenity given construction activities in the surrounding areas, and it is assumed that access

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					would be maintained at all times.
The Old Rectory B&B, Louth Road	At its closest point, this receptor is located approximately 400 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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 small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Furze Farm Estate, Luxury Caravan and Motorhome Park and Self-Catering Holiday Cottage, Manby Road	At its closest point, this receptor is approximately 15 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	<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</p>

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					Small magnitude of change as a construction access track is proposed adjacent to this receptor, however this is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
North Lincs Engineering, Manby Middlegate	At its closest point, this receptor is approximately 490 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Low	Small, adverse	Minor adverse, not significant	<p>It is considered that this receptor possesses some economic value and has potential for substitution. This receptor is not considered likely to incur any loss or gain as a result of potential changes in the environment. It has therefore been assigned a low sensitivity.</p> <p>It is anticipated that there would be a small change given construction activities</p>

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					in the surrounding areas, and it is assumed that access would be maintained at all times.
Woodthorpe Hall Golf Course	At its closest point, this receptor is approximately 450 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse, not significant	Owing to its limited potential for substitution by virtue of its nature and scale, this receptor has a high sensitivity. It is anticipated that there would be a small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
Development land allocations					
North East Lincolnshire Local Plan – Waltham Housing Allocation (HOU292)	At its closest point, this receptor is located approximately 70 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air	High	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore considered to have limited potential for substitution, and as such, have a high sensitivity. It is

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	quality/dust, and visual impacts during construction.				anticipated that there would be a small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
North East Lincolnshire Local Plan – Waltham Housing Allocation (HOU111)	At its closest point, this receptor is located approximately 170 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore considered to have limited potential for substitution, and as such, have a high sensitivity. It is anticipated that there would be a small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
North East Lincolnshire Local plan – Housing Allocation (HOU131)	At its closest point, this receptor is located approximately 5 m	High	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				considered to have limited potential for substitution, and as such, have a high sensitivity. It is anticipated that there would be a small change given construction activities in the surrounding areas, including the proposal of a construction access track adjacent to the allocation which is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
North East Lincolnshire Local Plan – Proposed Education Area	At its closest point, this receptor is located approximately 300 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and	High	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore considered to have limited potential for substitution, and as such, have a high sensitivity. It is anticipated that there

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	visual impacts during construction.				would be a small change given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.
Lincolnshire Minerals and Waste Local Plan – Sand and Gravel Minerals Safeguarding Area (Policy M12)	This receptor is located within the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction. Loss of land (minor) as a direct impact.	Medium	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore considered to have limited potential for substitution, however because this receptor is not considered likely to incur any loss or gain as a result of potential changes in the environment, it has been assigned a medium sensitivity. It is anticipated that a small proportion of land would be required temporarily, which is unlikely to compromise the overall viability, and it is assumed that

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					access would be maintained at all times.
North East Lincolnshire Local Plan – Housing Allocation	This receptor is located within the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction. Loss of land (minor) as a direct impact.	High	Small, adverse	Minor adverse, not significant	Development land allocations are strategic in nature and are therefore considered to have limited potential for substitution, and as such, have a high sensitivity. It is anticipated that a small proportion of land would be required temporarily, which is unlikely to compromise the overall viability, and it is assumed that access 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 affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	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 medium

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					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 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.

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Community facilities					
Cloverdale Residential Home, Butt Lane	At its closest point, this receptor is located approximately 120 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St Helen's Church, north of Waithe Lane	At its closest point, this receptor is located approximately 30 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air	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

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	quality/dust, and visual impacts during construction.				are therefore assigned a high sensitivity. It is anticipated that a small change would be felt, given construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St Nicholas Church, Grainsby Lane	At its closest point, this receptor is located approximately 450 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					would be maintained at all times.
St Martin's Church, Church Lane	At its closest point, this receptor is located approximately 100 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St Lawrence's Church, Churchthorpe	At its closest point, this receptor is located approximately 350 m from the draft Order Limits and may be affected from access, adverse	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

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	noise/vibration, air quality/dust, and visual impacts during construction.				surrounding area and are therefore assigned a high sensitivity. It is anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Fulstow County Primary School, Churchthorpe	At its closest point, this receptor is located approximately 430 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					would be maintained at all times.
Yarburgh Village Hall, Covenham Road	At its closest point, this receptor is located approximately 5 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
John the Baptist's Church, Church Street	At its closest point, this receptor is located approximately 380 m from the draft Order Limits and may be affected from access, adverse	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

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	noise/vibration, air quality/dust, and visual impacts during construction.				surrounding area and are therefore assigned a high sensitivity. It is anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Alvingham Village Hall (including a Recycling Point), Yarburgh Road	This receptor is located within the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Minor adverse, not significant	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 anticipated that there would be a Small magnitude of change as a construction access track is proposed on the road adjacent to this

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					receptor, however this is unlikely to compromise the overall viability, and it is assumed that access would be maintained at all times.
St Andrew's Church, Louth Road	At its closest point, this receptor is located approximately 250 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St John the Baptist's Church, Main Road	At its closest point, this receptor is	High	Small, adverse	Minor adverse, not significant	Community facilities have some social

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	located approximately 10 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St Margaret's Church Hall	At its closest point, this receptor is located approximately 485 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Brigsley Village Hall- St Helens Crescent Club, St Helens Crescent	At its closest point, this receptor is located approximately 30 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Fulstow Village Hall, Thoresby Road	At its closest point, this receptor is	High	Small, adverse	Minor adverse, not significant	Community facilities have some social

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	located approximately 380 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Ashtree House Residential Home, Church Lane	At its closest point, this receptor is located approximately 430 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St Peter's Church, Main Road	At its closest point, this receptor is located approximately 10 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St Helen's Church, Waltham Road	At its closest point, this receptor is	High	Small, adverse	Minor adverse, not significant	Community facilities have some social

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	located approximately 360 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
St George's Church, Bradley Road	At its closest point, this receptor is located approximately 15 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
East Lindsey Fire Protection Ltd, Louth Road	At its closest point, this receptor is located approximately 80 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, 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 anticipated that a small change would be felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Open space					

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Butt Lane Allotments	At its closest point, this receptor is located approximately 250 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Bradley and Dixon Wood	At its closest point, this receptor is located approximately 5 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Playing Field, Butt Lane	At its closest point, this receptor is located approximately 50 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Bowling Green and Pavilion, Butt Lane	At its closest point, this receptor is located approximately 150 m from the draft Order Limits and may be	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
	affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Butt Lane Play Area	At its closest point, this receptor is located approximately 145 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given 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
St Helens Crescent Play Area	At its closest point, this receptor is located approximately 30 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Dog Training Area	At its closest point, this receptor is located approximately 5 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Fulstow Sports Ground, Thoresby Road	At its closest point, this receptor is located approximately 380 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Rushmoor Country Park (including Playspace), Louth Road	At its closest point, this receptor is located approximately 5 m from the draft Order Limits and may be	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
	affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Tennis Court, Harneis Crescent	At its closest point, this receptor is located approximately 140 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given 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
Butt Lane Tennis Court	At its closest point, this receptor is located approximately 135 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Butt Lane Basketball Court	At its closest point, this receptor is located approximately 130 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction

Receptor	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Tennis Court, Barnoldby Public Path (77)	At its closest point, this receptor is located approximately 475 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Tennis Court, Waltham Road	At its closest point, this receptor is located approximately 45 m from the draft Order Limits and may be	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
	affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.				therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.
Tennis Court, Waltham Road	At its closest point, this receptor is located approximately 50 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given 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
Tennis Court, Thoresby Road	At its closest point, this receptor is located approximately 380 m from the draft Order Limits and may be affected from access, adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	The identified Open space receptor has some social and/or community value, but has potential for substitution, and is therefore considered to have a medium sensitivity. It is anticipated that there would be a small change felt, given likely construction activities in the surrounding areas. It is also assumed that access would be maintained at all times.

11.8 Monitoring

- 11.8.1 The control measures set out in section 11.6 will secure a PRoWMP as part of the Preliminary CoCP. No further monitoring requirements have been identified at the time of writing over and above this requirement for the 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> [Accessed 28 February 2025].
- Ref 2 North East Lincolnshire Council, 2018. North East Lincolnshire Local Plan 2013 to 2023 (Adopted 2018) [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 25 October 2024].
- Ref 3 North East Lincolnshire Council, 2023. North East Lincolnshire Local Plan Review Draft Plan with options [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2024/01/2023-LocalPlanReview-DraftPlanWithOptions-Accessible.pdf>. [Accessed 25 March 2025].
- Ref 4 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 24 September 2024].
- Ref 5 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 8 January 2025].
- Ref 6 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 8 January 2025].
- Ref 7 Ordnance Survey, 2024. *OS Open Greenspace* [online]. Available at: <https://www.ordnancesurvey.co.uk/products/os-open-greenspace> [Accessed 25 September 2024].
- Ref 8 Ordnance Survey, 2024. *OS OpenMap Local Important Buildings* [online]. Available at: <https://www.ordnancesurvey.co.uk/products/os-open-map-local> [Accessed 25 September 2024].
- Ref 9 Ordnance Survey, 2024. *OS AddressBase* [online]. Available at: <https://www.ordnancesurvey.co.uk/products/addressbase> [Accessed 25 September 2024].
- Ref 10 Sustrans. 2024.. Temporary diversions of National Cycle Network routes [online]. Available at: <https://www.sustrans.org.uk/for-professionals/infrastructure/temporary-diversions-of-national-cycle-network-routes/> [Accessed October 2024]
- Ref 11 Sustrans. 2024. Sustrans traffic-free routes and greenways design guide [online]. Available at: <https://www.sustrans.org.uk/for-professionals/infrastructure/sustrans-traffic-free-routes-and-greenways-design-guide/> [Accessed October 2024].

- Ref 12 North East Lincolnshire Council (2024). North East Lincolnshire Public Rights of Way [online]. Available at: <https://storymaps.arcgis.com/stories/e6028a2a50fd4ac597042af0f27fb4d5> [Accessed 5 March 2025].
- Ref 13 Lincolnshire County Council (no date). Lincolnshire Public Rights of Way [online]. Available at: <https://www.lincolnshire.gov.uk/coast-countryside/public-rights-way/2?documentId=129&categoryId=20101> [Accessed 5 March 2025].
- Ref 14 Department for Levelling Up, Housing and Communities, 2014. Open space, sports and recreation facilities, public rights of way and local green space [online]. Available at: <https://www.gov.uk/guidance/open-space-sports-and-recreation-facilities-public-rights-of-way-and-local-green-space> [Accessed 3 March].
- Ref 15 National Grid (no date) The Holford Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 13 March 2025].
- Ref 16 National Grid (no date) Horlock Rules [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 13 March 2025].
- Ref 17 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 3 March 2025].

12. Air Quality

Contents

12.	Air Quality	12-1
12.1	Introduction	12-1
12.2	Legislation and Policy Framework	12-3
	Legislation and National Policy	12-3
	Regional and Local Policy	12-3
12.3	Scope of Assessment	12-4
12.4	Assessment Methodology	12-5
	Assessment Assumptions and Limitations	12-6
12.5	Baseline Conditions	12-6
	Study Area	12-6
	Data Collection	12-8
	Existing Baseline	12-8
	Future Baseline	12-20
12.6	Design, Control and Additional Mitigation Measures	12-21
	Design Mitigation Measures	12-21
	Control Mitigation Measures	12-22
	Additional Mitigation Measures	12-26
12.7	Preliminary Assessment of Effects	12-26
	Likely Significant Effects	12-27
	Likely Non-Significant Effects	12-31
12.8	Monitoring	12-38

Table 12.1	Supporting documentation	12-2
Table 12.2	Section 2 local authority NO ₂ monitoring data	12-10
Table 12.3	2024 modelled Defra background concentrations within the Section 2 Study Area	12-11
Table 12.4	Ammonia critical level and concentration, nitrogen and acid deposition rates and critical loads for the ecological sites within the Section 2 Study Area	12-12
Table 12.5	2029 modelled Defra background concentrations within the Section 2 Study Area	12-21
Table 12.6	Road links exceeding the relevant assessment criteria – construction traffic	12-28
Table 12.7	Potential dust emission magnitude	12-33
Table 12.8	Count of human sensitive receptors within defined distances	12-34
Table 12.9	Sensitivity of the Section 2 Study Area	12-34
Table 12.10	Summary dust risk table	12-35
Table 12.11	Preliminary summary of non-significant Air Quality effects – Section 2	12-36

References	12-39
------------	-------

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 Grimsby West Substation to New Lincolnshire Connection Substation (LCS) A Section (Section 2) 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 2 (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 2 Study Area relevant to the Air Quality assessment (section 12.5);
 - vi. A description of mitigation measures included for the purposes of the Air Quality 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 2 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 2 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 2 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 2, 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 2 Chapter 4 Ecology and Biodiversity** assesses the potential for changes in Air Quality to effect ecological receptors, such as increases in pollutant concentrations or dust deposition.
 - ii. **PEI Report Volume 2 Part B Section 2 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 2 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 2 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. North East Lincolnshire Local Plan 2013 to 2032 (Adopted 2018) (Ref 1):
 - Policy 5 – Development boundaries: all development needs to consider the use of mitigation to limit impacts on neighbouring land uses;

- Policy 31 – Renewable and low carbon infrastructure: the Air Quality and dust impacts due to the installation of infrastructure associated with renewable and low carbon projects will be assessed individually and cumulatively; and
 - Policy 36 – Promoting sustainable transport: the use of active and sustainable transport measures should be considered to limit congestion and improve environmental quality.
- ii. North East Lincolnshire Local Plan Review is currently being undertaken, including consultation on measures to be included within the local plan (Ref 2). The policies outlined above have been retained as Draft Strategic Policy 2 and 7 respectively.
 - iii. North East Lincolnshire Council Air Quality Strategy 2021-2026 (Ref 3). This strategy outlines where the council is seeking to influence reductions in air pollution within its administrative area.
 - iv. East Lindsey Council Local Plan Core Strategy (Adopted 2018) (Ref 4):
 - 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.

12.3 Scope of Assessment

- 12.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 6). 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 the use of NRMM will be included in the ES, in accordance with the Scoping Opinion (Ref 5).

- 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 outlined below.
- 12.4.2 This PEI Report chapter presents a baseline appraisal of Air Quality within Section 2. 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 7). 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 8).
- 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 9), and set out below, then detailed dispersion modelling will be undertaken to determine the impact on existing human sensitive receptors:

- i. a change in Light Duty Vehicle (LDV)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
- ii. 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 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 10). 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 9) for human sensitive receptors and the IAQM criteria (Ref 10) for ecological sensitive receptors.
- 12.4.9 Once updated construction and operational/maintenance traffic data is made available, projected changes in traffic flows as a result of the Project will be re-screened against the criteria within the EPUK/IAQM and IAQM guidance. A detailed assessment of impacts will be undertaken where traffic flows exceed the criteria and reported within the ES.

Assessment Assumptions and Limitations

- 12.4.10 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment 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 7) and additional guidance given by

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.

Natural England during the Scoping Opinion (Ref 5). The construction dust Study Area is shown within **PEI Report Volume 2 Part B Section 2 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 7), and has been used following the advice given by Natural England within their Scoping Opinion consultation response (Ref 5).

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 11) 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 12), along with acid deposition rates and the relevant critical levels and loads for the designated sites.

Road Traffic Emissions

12.5.4 The Section 2 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 12.3.4 Methodology (Ref 9). This Section 2 Study Area comprises any roads where these criteria are exceeded, and any human receptors within 200 m of these roads. The Section 2 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 2 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 10).

12.5.6 Roadside concentrations from local authority monitoring sites within 200 m of the routes within the Section 2 Study Area that are expected to be used by construction and operational/maintenance traffic, have therefore been used to determine baseline conditions.

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 500 m buffer has been applied.

Data Collection

- 12.5.7 The following data has been used to inform assessment of the baseline conditions:
- Defra's Background Maps (based on a 2021-base year) (Ref 11)
 - Air Pollution Information System (APIS) (Ref 12);
 - Defra's AQMA dataset (Ref 13);
 - Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref 14);
 - Local authority Air Quality Management Reports (Ref 15, Ref 16);
 - Ordnance Survey (OS) AddressBase Plus dataset;
 - Google Earth Imagery; and
 - 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 2 Study Area (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 2 Chapter 9 Traffic and Movement** and supporting appendices.

Existing Baseline

- 12.5.9 The following section outlines the Air Quality baseline for the Section 2 Study Area. There are two main potential sources of air pollution associated with the Project, construction dust emissions and construction road traffic emissions. The baseline presented is therefore based upon an assessment of likely background 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 2 Figure 12.1 Construction Dust Study Area**.
- 12.5.11 The Section 2 Study Area is rural in nature and predominantly consists of open agricultural (arable) land. To the north of the Section 2 Study Area, the overhead line route passes between the village of Laceby and the south western fringe of Grimsby, running in a south eastern direction past Waltham towards the town of Louth, passing this settlement to the east and continuing towards Alford, connecting with Section 3 east of Claythorpe.
- 12.5.12 As **PEI Report Volume 2 Part B Section 2 Figure 12.1 Construction Dust Study Area** illustrates, there are human sensitive receptors across the Section 2 Study Area. These are generally located within small settlements in proximity to the draft

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).

Order Limits or consist of individual scattered properties within the wider rural area. Villages adjacent the draft Order Limits include Brigsley, Yarburgh, Alvingham, Stewton and South Reston.

- 12.5.13 There is one statutory designated ecological site within the Section 2 Study Area, Bradley and Dixon's Woods (Local Nature Reserve), located to the south west of Grimsby.
- 12.5.14 Non-statutory ecological sites within the Section 2 Study Area which are sensitive to effects due to construction dust are:
- i. Bradley Gairs (Ancient Woodland) and Scartho Wood (Ancient Woodland), situated east of the draft Order Limit, south of the settlement of Bradley. It is noted that Scartho Wood is located entirely within Bradley and Dixon's Woods (Local Nature Reserve);
 - ii. Withern Wood (Ancient Woodland), situated to the east of the draft Order Limits, south of the settlement of Withern;
 - iii. Grange Plantation (Local Wildlife Site) is situated to the southwest of the Section 2 draft Order Limits;
 - iv. Great Eau (Local Wildlife Site) is situated in the southern part of Section 2 and crosses the draft Order Limits near Tothill;
 - v. Lacey Beck Blow Wells (Local Wildlife Site) is situated to the north of Section 2 to the east of the draft Order Limits;
 - vi. Lacey Beck North (Local Wildlife Site) is situated in the northern section of the Section 2 draft Order Limits to the east;
 - vii. Long Eau West (Local Wildlife Site) is situated to the east of the Section 2 draft Order Limits;
 - viii. Mother and Greenfield Woods (Local Wildlife Site) and Hornby/Mother Woods (Ancient Woodlands) are situated in the southern extent of Section 2, to the west of the draft Order Limits;
 - ix. River Freshney Headwaters (Local Wildlife Site) is situated in the northern extent of Section 2, to the west of the draft Order Limits;
 - x. Waithe Beck East (Local Wildlife Site) is situated to the west of the Section 2 draft Order Limits; and
 - xi. Withern Ings (Local Wildlife Site) is situated in the southern extent of Section 2 to the east of the draft Order Limits.

Local authority Air Quality monitoring data

- 12.5.15 Section 2 is located within the administrative boundaries of North East Lincolnshire Council (NELC) and East Lindsey District Council (ELDC).
- 12.5.16 There was one AQMA within NELC's administrative area declared due to exceedances of annual mean NO₂ concentrations along Cleethorpes Road in Grimsby in August 2010, approximately 5 km northeast of the draft Order Limits. However, this was revoked in May 2024 (Ref 13). There are no AQMAs within the

ELDC local authority area, as stated in the 2024 Annual Status Report (ASR) (Ref 16).

- 12.5.17 NELC and ELDC both only monitor pollutant concentrations for NO₂ (Ref 15, Ref 16). Monitoring of annual mean NO₂ levels is undertaken through a network of passive diffusion tubes and is reported in the local authorities respective 2024 ASRs, which present the concentrations from the calendar years 2019 to 2023. The locations and annual mean NO₂ concentrations of roadside diffusion tubes in NELC's administrative area 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 2 Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations**. None of ELDC's diffusion tubes are within 200 m of the construction traffic routes and consequently have not been presented.

Table 12.2 Section 2 local authority NO₂ monitoring data

ID	Location	Distance to draft Order Limits (km)	Annual Mean NO ₂ Concentration (µg/m ³)				
			2019	2020	2021	2022	2023
NEL S1	8 Town Hall Street, Grimsby	4.1	28.9	26.3	32.2	28.1	29.0
NEL S7	Toll Bar Roundabout, New Waltham	3.1	23.9	20.6	21.6	19.8	16.8
NEL S8	Toll Bar A16 side, New Waltham	3.1	17.4	12.0	17.5	15.1	12.3
NEL S13 S14, S15	Peaks Parkway Grimsby Air Quality Station C	3.7	-	20.0	23.6	21.9	18.6
NEL S16	Aylesby Road, Grimsby	0.3	19.9	16.4	18.9	16.6	12.2
NEL S22	9 Pyewipe Road, Grimsby	4.7	25.2	22.5	27.2	23.8	23.9
NEL S34	Victoria Street South, Grimsby	4.1	27.0	22.6	29.6	26.7	24.4
Air Quality Objective			40				

Note:

- Denotes no data

- 12.5.18 **Table 12.2** shows that concentrations generally decreased from 2019 to 2020 before increasing in 2021 (as consistent with national trends due to behavioural change during coronavirus lockdowns). Concentrations generally decreased between 2021

and 2023. There are no exceedances of the Air Quality Objective (AQO) seen within the scoped-in monitoring locations.

- 12.5.19 NELC only undertakes monitoring of PM₁₀ and PM_{2.5} in Immingham (at an urban background station adjacent to the docks) while ELDC does not measure this pollutant, therefore current (2024) levels 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.
- 12.5.20 A review of permitted industrial sources within 2 km of the draft Order Limits was completed (Ref 17, Ref 18, Ref 19). 23 industrial sources have been identified within the Section 2 Study Area however, they are unlikely to substantially contribute to dust and PM₁₀ levels within the Section 2 Study Area as those present will have limits on emissions to air imposed by the relevant regulator. These sources are represented within the background concentrations outlined within **Table 12.3**.

Background Air Quality data

- 12.5.21 **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 2 Study Area (Ref 11).

Table 12.3 2024 modelled Defra background concentrations within the Section 2 Study Area

Average (Minimum - Maximum) 2024 Annual Mean Concentration (µg/m³)			
NO _x	NO ₂	PM ₁₀	PM _{2.5}
8.1 (7.1 - 12.0)	6.4 (5.6 - 9.2)	12.9 (11.5 - 13.6)	5.7 (5.4 - 6.5)

- 12.5.22 The background concentrations of NO₂ and PM₁₀ are generally low within the Section 2 Study Area, given they are under half of the limit value of 40 µg/m³ for both pollutants.
- 12.5.23 Background NO_x concentrations (relevant to ecological receptors) are also generally low within the Section 2 Study Area. There are 13 designated site(s) of local importance within 200 m of Section 2. The average NO_x concentration across the Section 2 Study Area is 8.1 µg/m³, which falls below the critical level for the protection of vegetation of 30 µg/m³.
- 12.5.24 Concentrations of PM_{2.5} are below the relevant limit value (20 µg/m³) where the average concentration within the Section 2 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.
- 12.5.25 **Table 12.4** shows the NH₃ critical level and concentrations, nitrogen and acid deposition rates and critical loads for the designated ecological sites identified within the Section 2 Study Area. Scartho Wood is located entirely within Bradley & Dixon Woods (Local Nature Reserve) and as both sites are classified as a habitat of broadleaved, mixed, and yew woodland, the results have been presented together (Ref 12).

Table 12.4 Ammonia critical level and concentration, nitrogen and acid deposition rates and critical loads for the ecological sites within the Section 2 Study Area

Ecological Site (Grid Reference X, Y)	2020 - 2022 Average Concentration					
	Ammonia Critical Level ($\mu\text{g}/\text{m}^3$)*	Ammonia Concentration ($\mu\text{g}/\text{m}^3$)	Nitrogen Deposition Rate (kg N/ha/yr)	Nitrogen Critical Load Range (kg N/ha/yr)	Acid Deposition Rate (keq/ha/yr)	Acid Critical Load (CLmaxS/CLminN/ CLMaxN) (keq/ha/yr)
Bradley and Dixon's Woods (Local Nature Reserve) and Scartho Wood (Ancient Woodland)¹						
523500, 405500	1 - 3	1.37	26.7	10 - 15	1.79 (N:1.91 S: 0.2)	2.363/0.357/2.72
523500, 406500	1 - 3	1.36	26.61	10 - 15	1.8 (N:1.9 S: 0.21)	2.36/0.357/2.717
524500, 405500	1 - 3	1.38	26.53	10 - 15	1.8 (N:1.89 S: 0.21)	2.362/0.357/2.719
524500, 406500	1 - 3	1.37	26.45	10 - 15	1.81 (N:1.89 S: 0.22)	2.36/0.357/2.717
Bradley Gairs (Ancient Woodland)¹						
524500, 404500	1 - 3	1.37	26.61	10 - 15	1.78 (N:1.9 S: 0.2)	2.408/0.357/2.765
524500, 405500	1 - 3	1.38	26.53	10 - 15	1.8 (N:1.89 S: 0.21)	2.362/0.357/2.719
525500, 404500	1 - 3	1.38	26.43	10 - 15	1.78 (N:1.89 S: 0.21)	2.392/0.357/2.749
525500, 405500	1 - 3	1.38	26.36	10 - 15	1.8 (N:1.88 S: 0.22)	2.351/0.357/2.708
Withern Wood (Ancient Woodland)¹						
542500, 380500	1 - 3	1.55	28.37	10 - 15	1.77 (N:2.03 S: 0.16)	2.304/0.357/2.661

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)
542500, 381500	1 - 3	1.53	28.31	10 - 15	1.76 (N:2.02 S: 0.15)	2.303/0.357/2.66
543500, 380500	1 - 3	1.55	28.23	10 - 15	1.76 (N:2.02 S: 0.15)	2.302/0.357/2.659
Grange Plantation (Local Wildlife Site)¹						
542500, 379500	1 - 3	1.55	28.43	10 - 15	1.77 (N:2.03 S: 0.16)	2.289/0.357/2.646
Grange Plantation (Local Wildlife Site)⁴						
542500, 379500	1 - 3	1.55	15.13	5 - 15	0.83 (N:1.08 S: 0.12)	N/A
Great Eau (Local Wildlife Site)²						
540500, 377500	N/A	1.48	15.42	N/A	0.83 (N:1.1 S: 0.12)	N/A
540500, 378500	N/A	1.50	15.33	N/A	0.83 (N:1.09 S: 0.12)	N/A
541500, 378500	N/A	1.50	15.25	N/A	0.83 (N:1.09 S: 0.12)	N/A
541500, 379500	N/A	1.54	15.18	N/A	0.83 (N:1.08 S: 0.12)	N/A
541500, 380500	N/A	1.54	15.11	N/A	0.82 (N:1.08 S: 0.12)	N/A
542500, 380500	N/A	1.55	15.08	N/A	0.83 (N:1.08 S: 0.12)	N/A

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)
542500, 381500	N/A	1.53	15.03	N/A	0.82 (N:1.07 S: 0.11)	N/A
542500, 382500	N/A	1.52	14.99	N/A	0.82 (N:1.07 S: 0.11)	N/A
542500, 383500	N/A	1.52	14.85	N/A	0.82 (N:1.06 S: 0.11)	N/A
543500, 383500	N/A	1.50	14.69	N/A	0.81 (N:1.05 S: 0.11)	N/A
543500, 384500	N/A	1.49	14.55	N/A	0.81 (N:1.04 S: 0.11)	N/A
544500, 384500	N/A	1.45	14.39	N/A	0.8 (N:1.03 S: 0.11)	N/A
544500, 385500	N/A	1.43	14.26	N/A	0.8 (N:1.02 S: 0.11)	N/A
544500, 386500	N/A	1.42	14.12	N/A	0.79 (N:1.01 S: 0.11)	N/A
545500, 384500	N/A	1.42	14.24	N/A	0.79 (N:1.02 S: 0.11)	N/A
545500, 385500	N/A	1.40	14.10	N/A	0.79 (N:1.01 S: 0.11)	N/A
545500, 386500	N/A	1.38	13.97	N/A	0.79 (N:1 S: 0.11)	N/A
545500, 387500	N/A	1.37	13.83	N/A	0.78 (N:0.99 S: 0.11)	N/A
545500, 388500	N/A	1.36	13.79	N/A	0.78 (N:0.98 S: 0.11)	N/A

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)
545500, 389500	N/A	1.36	13.74	N/A	0.78 (N:0.98 S: 0.11)	N/A
546500, 388500	N/A	1.32	13.63	N/A	0.78 (N:0.97 S: 0.11)	N/A
546500, 389500	N/A	1.33	13.58	N/A	0.77 (N:0.97 S: 0.11)	N/A
546500, 390500	N/A	1.33	13.53	N/A	0.77 (N:0.97 S: 0.11)	N/A
540500, 377500	N/A	1.48	15.42	N/A	0.83 (N:1.1 S: 0.12)	N/A
Lacey Beck Blow Wells (Local Wildlife Site)²						
522500, 407500	N/A	1.36	14.21	N/A	0.9 (N:1.02 S: 0.15)	N/A
Lacey Beck North (Local Wildlife Site)²						
522500, 407500	N/A	1.36	14.21	N/A	0.9 (N:1.02 S: 0.15)	N/A
522500, 408500	N/A	1.37	14.29	N/A	0.92 (N:1.02 S: 0.17)	N/A
523500, 407500	N/A	1.35	14.09	N/A	0.91 (N:1.01 S: 0.17)	N/A
523500, 408500	N/A	1.35	14.16	N/A	0.93 (N:1.01 S: 0.18)	N/A
Long Eau West (Local Wildlife Site)²						

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)
540500, 385500	N/A	1.53	14.66	N/A	0.81 (N:1.05 S: 0.11)	N/A
540500, 386500	N/A	1.5	14.56	N/A	0.81 (N:1.04 S: 0.11)	N/A
541500, 386500	N/A	1.51	14.49	N/A	0.8 (N:1.04 S: 0.11)	N/A
Mother and Greenfield Woods (Local Wildlife Site) and Hornby/Mother Woods (Ancient Woodlands)¹						
542500, 378500	1 - 3	1.52	28.49	10 - 15	1.78 (N:2.04 S: 0.17)	2.29/0.357/2.647
543500, 377500	1 - 3	1.55	28.57	10 - 15	1.78 (N:2.04 S: 0.17)	2.289/0.357/2.646
543500, 378500	1 - 3	1.56	28.46	10 - 15	1.78 (N:2.03 S: 0.16)	2.288/0.357/2.645
River Freshney Headwaters (Local Wildlife Site)²						
521500, 404500	N/A	1.33	14.58	N/A	0.89 (N:1.04 S: 0.14)	N/A
521500, 405500	N/A	1.33	14.51	N/A	0.9 (N:1.04 S: 0.14)	N/A
521500, 406500	N/A	1.35	14.44	N/A	0.9 (N:1.03 S: 0.15)	N/A
522500, 404500	N/A	1.34	14.45	N/A	0.88 (N:1.03 S: 0.14)	N/A
522500, 405500	N/A	1.35	14.37	N/A	0.89 (N:1.03 S: 0.15)	N/A

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)
523500, 404500	N/A	1.36	14.31	N/A	0.88 (N:1.02 S: 0.15)	N/A
524500, 404500	N/A	1.37	14.17	N/A	0.88 (N:1.01 S: 0.15)	N/A
River Freshney Headwaters (Local Wildlife Site)¹						
521500, 404500	1 - 3	1.33	27.18	10 - 15	1.8 (N:1.94 S: 0.19)	10.868/0.142/11.01
521500, 405500	1 - 3	1.33	27.09	10 - 15	1.8 (N:1.93 S: 0.19)	10.817/0.142/10.959
521500, 406500	1 - 3	1.35	27	10 - 15	1.8 (N:1.93 S: 0.19)	1.614/0.142/1.756
522500, 404500	1 - 3	1.34	26.97	10 - 15	1.78 (N:1.93 S: 0.19)	1.661/0.142/1.803
522500, 405500	1 - 3	1.35	26.87	10 - 15	1.79 (N:1.92 S: 0.19)	1.614/0.142/1.756
523500, 404500	1 - 3	1.36	26.79	10 - 15	1.78 (N:1.91 S: 0.19)	2.409/0.357/2.766
524500, 404500	1 - 3	1.37	26.61	10 - 15	1.78 (N:1.9 S: 0.2)	2.408/0.357/2.765
River Freshney Headwaters (Local Wildlife Site)⁴						
521500, 404500	1 - 3	1.33	14.58	5 - 15	0.89 (N:1.04 S: 0.14)	N/A
521500, 405500	1 - 3	1.33	14.51	5 - 15	0.9 (N:1.04 S: 0.14)	N/A

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)
521500, 406500	1 - 3	1.35	14.44	5 - 15	0.9 (N:1.03 S: 0.15)	N/A
522500, 404500	1 - 3	1.34	14.45	5 - 15	0.88 (N:1.03 S: 0.14)	N/A
522500, 405500	1 - 3	1.35	14.37	5 - 15	0.89 (N:1.03 S: 0.15)	N/A
523500, 404500	1 - 3	1.36	14.31	5 - 15	0.88 (N:1.02 S: 0.15)	N/A
524500, 404500	1 - 3	1.37	14.17	5 - 15	0.88 (N:1.01 S: 0.15)	N/A
Waithe Beck East (Local Wildlife Site)²						
522500, 402500	N/A	1.32	14.61	N/A	0.87 (N:1.04 S: 0.14)	N/A
523500, 401500	N/A	1.32	14.57	N/A	0.86 (N:1.04 S: 0.13)	N/A
523500, 402500	N/A	1.32	14.45	N/A	0.87 (N:1.03 S: 0.14)	N/A
524500, 401500	N/A	1.33	14.40	N/A	0.85 (N:1.03 S: 0.13)	N/A
524500, 402500	N/A	1.34	14.30	N/A	0.86 (N:1.02 S: 0.13)	N/A
525500, 401500	N/A	1.35	14.23	N/A	0.85 (N:1.02 S: 0.13)	N/A
526500, 401500	N/A	1.37	14.06	N/A	0.84 (N:1 S: 0.13)	N/A

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)
527500, 400500	N/A	1.38	13.96	N/A	0.83 (N:1 S: 0.12)	N/A
527500, 401500	N/A	1.37	13.89	N/A	0.83 (N:0.99 S: 0.12)	N/A
Withern Ings (Local Wildlife Site)¹						
542500, 382500	1 - 3	1.52	28.25	10 - 15	1.76 (N:2.02 S: 0.15)	2.301/0.357/2.658
Withern Ings (Local Wildlife Site)³						
542500, 382500	1 - 3	1.52	14.99	10 - 15	0.82 (N:1.07 S: 0.11)	4/1.071/5.071
Withern Ings (Local Wildlife Site)⁴						
542500, 382500	1 - 3	1.52	14.99	5 - 15	0.82 (N:1.07 S: 0.11)	N/A
Note: *The NH ₃ 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 The habitat has been defined as broadleaved, mixed and yew woodland. ² The habitat is a watercourse for which APIS does not provide critical levels or loads. ³ The habitat has been defined as neutral grassland. ⁴ The habitat has been defined as fen, marsh and swamp for which APIS does not provide NH ₃ critical loads.						

- 12.5.26 **Table 12.4** shows that at all sites, where data is available, the existing concentration of NH₃ is estimated to be above the lower critical level of 1µg/m³ and the total acid deposition is below the minimum critical load. The predicted nitrogen deposition rate exceeds the upper critical rate at all sites (where data is available) apart from the neutral grasslands and fen, marsh and swamp habitats at Withern Ings.

Summary

- 12.5.27 Overall, the Air Quality in the Section 2 Study Area is very good. There are no exceedances of the annual mean NO₂ objective in the Local Authority monitoring data and the background concentrations within the Section 2 Study Area are low in comparison to the Air Quality objectives.
- 12.5.28 There are habitats In the Section 2 Study Area where the current predicted NH₃ concentrations and nutrient nitrogen deposition rates are above their respective lower critical levels and upper critical loads, whereas acid deposition rates are below the respective critical load.

Future Baseline

- 12.5.29 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 the anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be completed prior to construction of the Project.
- 12.5.30 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.
- 12.5.31 Projected background air pollutant concentrations available from a base year of 2021 (Ref 11) 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.
- 12.5.32 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 11).

- 12.5.33
- The arithmetic mean, minimum and maximum of predicted pollutant concentrations for the future baseline Section 2 Study Area for 2029 is shown in **Table 12.5**. There are reductions in both NO_x and NO₂ levels within the Section 2 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 0.9 - 1.2 µg/m³, and whilst there is a reduction in PM₁₀ and PM_{2.5}, it is of a lower magnitude of 0.3 - 0.4 µg/m³.

Table 12.5 2029 modelled Defra background concentrations within the Section 2 Study Area

Average (Minimum - Maximum) 2029 Annual Mean Concentration (µg/m ³)			
NO _x	NO ₂	PM ₁₀	PM _{2.5}
6.9 (6.0 - 10.7)	5.5 (4.8 - 8.3)	12.5 (11.1 - 13.2)	5.4 (5.1 - 6.2)

- 12.5.34
- Future baseline background NH₃ concentrations, rates of nutrient nitrogen and acid deposition are currently unknown. For the ES, these will be calculated using data from APIS projected using 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 2. 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.

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:

- i. Screening and filtering vegetation which, while primarily included to limit visual intrusion (for landscaping purposes), may also have a benefit to Air Quality in terms of screening receptors and minimising the impact of dust and air pollutants emitted by construction site activities.

Control Mitigation Measures

Construction

12.6.4 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Outline Code of Construction Practice**. The general control measures included within the Preliminary CoCP relevant to Air Quality assessment of Section 2 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 Strategy (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. GG18: Wheel washing facilities will be provided at each main compound, where appropriate. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- xi. GG19: Earthworks and stockpiled soil will be managed as per the 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 the site boundary, with cleaning to be provided if necessary. The frequency of site inspections will be increased by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out, during prolonged dry or windy conditions or in response to complaints or an incident resulting in dust emissions. Inspection results will be recorded, and an inspection log made available to the local authority upon request.
 - Site management will document all dust and Air Quality complaints, identify causes and take measures to reduce emissions in a timely manner, and record the measures taken.
 - Preparation and management of the site ensuring that machinery and dust causing activities are located as far as possible away from receptors, screens/barriers are erected around dusty activities/materials and are at least as high as any stockpiles, use wet methods to keep site fencing, barriers and scaffolding clean, remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site where they must be covered, seeded, or fence stockpiles used to prevent wind whipping.
 - Monitoring and inspections to include evolving evaluation of Project phases as required and practicable.
 - Construction operations will only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, for example, suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- ii. AQ03: During construction, bulk cement and other fine powder materials are to be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. Sand and other aggregates are 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 a site log book.
 - Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
 - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
 - Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
 - Access gates to be located at least 10 m from receptors where possible.
- v. AQ06: Dust pollution from earthworks activities will be limited through the use of the following measures, as appropriate:
- topsoil will be stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with run-off or dust generation;
 - Hessian, mulches, or tackifiers will be used where it is not possible to re-vegetate or cover with topsoil as soon as practicable.
 - materials will be compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats;
 - cover will only be removed in small areas during work and not all at once; 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 however noted that additional environmental mitigation which has been proposed to reduce effects upon visual amenity and ecology and biodiversity may also reduce impacts upon Air Quality 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.
 - 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 2 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 2 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 effects 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 the construction traffic flows is given in **PEI Report Volume 2 Part B 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 of vehicle movements.
- 12.7.7 Initial screening of the projected construction traffic flows against the EPUK/IAQM change criteria (for human sensitive receptors) and the IAQM criteria (for ecological sensitive receptors) has been undertaken. The road links where the criteria are exceeded in the NELC and ELDC local authority areas are shown in **PEI Report Volume 2 Part B Section 2 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, changes in traffic flows on 31 road links which form parts of the A16, A18, A157 and Aylesby Road in Grimsby are expected to exceed the EPUK/IAQM criteria for human sensitive receptors. Given these links are located outside an AQMA, the relevant criteria are:
- i. a change in LDV flows of more than 500 AADT; and/or
 - ii. a change in HDV flows of more than 100 AADT.
- 12.7.9 The initial screening has also identified road links which exceed the IAQM screening criteria for ecological sensitive receptors. The relevant criteria are:
- i. a change in total traffic flows greater than or equal to 1000 AADT; and/or
 - ii. a change in HDV flows greater than or equal to 200 AADT.

Table 12.6 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)
CR1	A180	26194	3197	27875	3403	852	119	734
CR2	A180	34885	2786	37125	2964	328	106	222
CR21-3	A1173	8146	402	8778	433	524	12	512
CR20-2	A18	14956	647	15916	688	560	48	512
CR18-2	A18	5682	566	6047	603	510	26	484
CR18-1	A18	3621	466	3854	496	506	22	484
CR20-1	A18	13946	664	14842	706	524	12	512
CR21-1	A1173	4782	422	5089	449	524	12	512
CR21-2	A1173	3363	354	3579	377	524	12	512
LK1	A1136	8507	224	9053	238	333	111	222
LK2	A1136 Great Coates Rd	0	0	0	0	363	141	222
LK3	Aylesby Rd - C149	2337	192	2487	204	465	243	222
CR7	A16	7666	547	8238	588	414	58	356
CR8	A16	5136	468	5519	502	513	173	340

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)
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

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)

Note:
All traffic data presented in the table has been rounded to the nearest whole number.

- 12.7.1 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.
- 12.7.2 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**.
- 12.7.3 It is noted that vehicle movements during construction of the Project will vary throughout the construction programme, with relatively short peaks in LDV 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.
- 12.7.4 Notwithstanding this, at receptors within 200 m 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

- 12.7.5 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

- 12.7.6 **PEI Report Volume 2 Part B Section 2 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 2 Chapter 1 Overview of the Section and Description of the Project**.
- 12.7.7 Construction activities (including the construction of an overhead line between New Grimsby West Substation to New LCS A) 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;
 - 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.

- 12.7.8 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 reinstated.
- 12.7.9 The construction dust assessment methodology adopts a worst-case approach and treats all receptors within the Section 2 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.
- 12.7.10 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 2 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

- 12.7.11 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

- 12.7.12 Demolition works within the Section 2 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.

- 12.7.13 Based upon precautionary assumptions, the total volume of assumed works is more than 75,000 m³ and is therefore defined as large.

Earthworks

- 12.7.14 The main earthworks that will be undertaken are localised preparation for haul roads, pylon foundation construction and landscaping. The soil type, and thus friability, varies throughout the Section 2 Study Area. The predominate soil types are Holderness, Burlingham 2, Newchurch 2 and Fladbury 2. These are predominately loamy/clayey 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 2 Chapter 8 Agriculture and Soils**.

- 12.7.15 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

- 12.7.16 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

- 12.7.17 There will be between 20 and 50 HDV outward movements in any one day, travelling over potentially dusty surface material. It is considered that the potential dust emission magnitude is medium for trackout.

Dust emission magnitude summary

- 12.7.18 **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	Medium

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

- 12.7.19 The prevailing wind direction is from the southwest. Therefore, receptors located to the northeast of the draft Order Limits, namely properties off Bradley Road (approximately 10 m to 250 m to the east) and those on Yarburgh Road (approximately 15 m to 200 m to the east) are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.
- 12.7.20 There are thirteen ecological receptors identified within 200 m of the draft Order Limits as outlined in Table 12.4. As per the IAQM guidance (Ref 7), Local Nature Reserves, Ancient Woodlands and Local Wildlife Sites are classified as low sensitivity receptors.
- 12.7.21 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 receptors on Station Road Stewton Lane, and Yarburgh Road that may be sensitive to trackout. Background PM₁₀ levels are predicted to be well below the annual mean objective (see 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
2	48	109	261	586	751

- 12.7.22 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 2 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

- 12.7.23 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 provides a summary of the risk of dust impacts

for the Project. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 12.10 Summary dust risk table

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Medium
Human Health	Medium	Low	Low	Low
Ecological	Medium	Low	Low	Low

- 12.7.24 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 AQ01). Based upon the application of the DMP and the further management measures included within Preliminary CoCP, it is not considered likely that there would be significant effects associated with dust generated during construction.

Construction traffic emissions

- 12.7.25 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 9) and IAQM guidance (Ref 10) and the outcomes reported within the ES.

Operation and maintenance

- 12.7.26 Once operational, traffic movements associated with the permanent works within Section 2 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.
- 12.7.27 Therefore, no likely significant effects are expected upon Air Quality during operation of the Project.

Summary

- 12.7.28 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 2

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 more than 10 high sensitivity receptors within 20 m of the draft Order Limits, therefore, according to the IAQM guidance, the area sensitivity is classified as high.	Negligible	Not Significant	With the appropriate mitigation in place as described in the chapter and as will be secured in the Preliminary CoCP, construction dust impacts are not considered significant.
Ecological Receptors sensitive to construction dust impacts	Without mitigation, there may be adverse impacts to ecological sites owing to construction dust impacts.	There are Local Wildlife Sites, Local Nature Reserves and Ancient Woodland receptors within 200 m of the draft Order Limits, therefore according to the IAQM guidance, the receptor sensitivity is low.	Negligible	Not Significant	With the appropriate mitigation in place as described in the chapter and as will be secured in the CoCP, construction dust impacts are not considered significant.
Receptors sensitive to loss of amenity 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 more than 10 high sensitivity receptors within 20 m of the draft Order Limits, therefore, according to the IAQM guidance, the area sensitivity is classified as 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.

Receptor	Impact	Sensitivity/Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
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.

References

- Ref 1 North East Lincolnshire Council (2018). Local Plan 2013 to 2032 (Adopted 2018) [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2018/05/20180518-AdoptedLocalPlan2018-WEB.pdf> [Accessed 18 October 2024].
- Ref 2 North East Lincolnshire Council (2023). North East Lincolnshire Local Plan Review Draft Plan with options [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2024/01/2023-LocalPlanReview-DraftPlanWithOptions-Accessible.pdf> [Accessed 4th November 2024].
- Ref 3 North East Lincolnshire Council (2018). Air Quality Strategy [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2022/02/NELC-Air-Quality-Strategy-Feb22.pdf> [Accessed 18 October 2024].
- Ref 4 East Lindsey (2018). Core Strategy [online]. Available at: https://www.e-lindsey.gov.uk/media/9791/Core-Strategy/pdf/Core_Strategy_adopted_version_for_web.pdf [Accessed 21 October 2024].
- Ref 5 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 6 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 7 Institute of Air Quality Management (2024). Guidance on the Assessment of Dust from Demolition and Construction v2.2 [online]. Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf> [Accessed 18 October 2024].
- Ref 8 Laxen & Marner (2008). NO₂ Concentrations and Distance from Roads [online]. Available at: <https://laqm.defra.gov.uk/documents/FallOffWithDistanceReptJuly08.pdf> [Accessed 15 January 2024].
- Ref 9 Environmental Protection UK and Institute of Air Quality Management (2017). Land Use Planning & Development Control: Planning for Air Quality [online]. Available at: <https://laqm.defra.gov.uk/assets/airqualityplanningguidance.pdf> [Accessed May 2024].
- Ref 10 Institute of Air Quality Management (2020). A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites v1.1 [online]. Available at: <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2019.pdf> [Accessed 18 December 2024].
- Ref 11 Defra (2024). Background Mapping data for local authorities - 2021 [online]. Available at: UK Air Information Resources: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021> [Accessed 18 January 2024]

- Ref 12 UK Centre for Ecology & Hydrology (CEH) (2025). The UK Air Pollution Information System [online]. Available at: <http://www.apis.ac.uk/> [Accessed 03 April 2025]
- Ref 13 Defra (2025). AQMAs Interactive Map [online]. Available at: <https://uk-air.defra.gov.uk/aqma/maps/> [Accessed 11 March 2025].
- Ref 14 Defra (2024). Multi-Agency Geographic Information for the Countryside Interactive Map [online]. Available at: <https://magic.defra.gov.uk/> [Accessed 18 October 2024].
- Ref 15 North East Lincolnshire Council (2024). North East Lincolnshire Council Annual Progress Report 2024 [online]. Available at: <https://www.nelincs.gov.uk/assets/uploads/2024/09/NELC-ASR-2024.pdf> [Accessed 14 January 2025].
- Ref 16 East Lindsey District Council (2024). 2024 Air Quality Annual Status Report [online]. Available at: https://www.e-lindsey.gov.uk/media/25163/Air-Quality-Status-Report-2024/pdf/East_Lindsey_District_Council_ASR_2024.pdf?m=1720804421840 [Accessed October 2024].
- Ref 17 UK Pollutant Release and Transfer Register data sets (2024). Public Register of Industrial Pollution Sources. Available at: <https://www.gov.uk/guidance/uk-pollutant-release-and-transfer-register-prtr-data-sets> [Accessed 27 November 2024].
- Ref 18 North East Lincolnshire Council (2024). Public Register of Industrial Pollution Sources. Private Communication with environmentteam@nelincs.gov.uk on 22 November 2024.
- Ref 19 East Lindsey Council (2024). Environmental Permits. Shared via private email communication from East Lindsey District Council on 25 November 2024.
- Ref 20 Defra (2019). Clean Air Strategy 2019 [online]. Available at: <https://www.gov.uk/government/publications/clean-air-strategy-2019> [Accessed 18 October 2024].
- Ref 21 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 22 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
- Ref 23 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 12 April 2024].

13. Summary

Contents

13.	Summary for Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A	13-1
13.1	Introduction	13-1

Table 13.1	Confidence level definitions	13-1
Table 13.2	Summary of significant effects during the construction phase – Section 2	13-3
Table 13.3	Summary of significant effects during the operation and maintenance phase – Section 2	13-20

13. Summary for Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A

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 Grimsby West Substation to New Lincolnshire Connection Substation A Section (Section 2). 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 2 Chapter 2 to 12**.
- 13.1.2
- The significant effects summarised in **Table 13.2** and **Table 13.3** take into account the design and embedded mitigation measures and control mitigation measures described within Chapter 2 to 12. Where additional mitigation measures have been determined, these are taken into account, however it is noted that the identification and design of additional mitigation measures is ongoing. As such, likely significant effects identified in **Table 13.2** and **Table 13.3** are based upon confirmed additional mitigation measures only.
- 13.1.3
- Baseline data is also still being collected, surveys are still being undertaken, and the design of the Project will be refined prior to the Development Consent Order (DCO) application being submitted. As such, a confidence rating has been introduced in the summary tables below which provides a rating of high, moderate or low confidence in the prediction of the significance of effects. Definitions of the confidence ratings are provided in **Table 13.1**
- 13.1.4
- As the design evolves mitigation measures and environmental assessments will be further developed and reported within the Environmental Statement (ES) submitted with the DCO application.

Table 13.1 Confidence level definitions

Confidence Level	Definition
High Confidence	<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 2

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 during the construction phase of the Project, based upon the preliminary assessment.				
Visual				
The community area of Aylesby Parish would be directly impacted by the construction of approximately 1.5 km of overhead line (including pylons GL5-GL8) and indirectly impacted by the construction of the new Grimsby West Substation (in Section 1), causing adverse impacts on the views from this area.	Amendments to locations of access tracks and bellmouths and the overhead line alignment to reduce loss of mature vegetation, which in turn would help to screen and filter views of the Project.	Areas of woodland planting to replace those affected by the Project.	Adverse effect	High
Users of the Greenwich Meridian Trail would be impacted by the presence of construction activities resulting in adverse impacts upon views from this route.	Construction impacts will be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).	Areas of woodland planting to replace those affected by the Project.	Adverse effect	High
Users of the Nev Cole Way would be impacted by the presence of construction activities resulting in adverse impacts upon views from this route.		Areas of woodland planting to replace those affected by the Project.	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)
Users of the Wanderlust Way would be impacted by the presence of construction activities resulting in adverse impacts upon views from this route.	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.	Areas of woodland planting to replace those affected by the Project.	Adverse effect	High
Users of the Silver Lincs Way would be impacted by the presence of construction activities and tall construction equipment resulting in adverse impacts upon views from this route	Construction impacts will be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).		Adverse effect	High

Ecology and Biodiversity

Designated Sites

<p>Birds 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> <ul style="list-style-type: none"> • Humber Estuary Special Protection Area (SPA) and Ramsar site; • The Greater Wash SPA; • The Wash SPA and Ramsar site; 	<p>The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction impacts will be managed through the measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed. These measures will be informed by ongoing survey and assessment and are likely to include the creation of replacement habitats</p>	<p>Significant adverse effects cannot be excluded at this stage</p>	<p>Low – further assessment is required once bird surveys are completed and data assessed. The potential for Likely Significant Effect (LSE) upon these sites will be assessed within the Report to Inform the Habitat Regulations Assessment,</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"> The Gibraltar Point SPA and Ramsar site. 		where required to avoid significant effects.		informed by discussions with Natural England other statutory bodies.
Dune habitats present in the Saltfleetby-Theddlethorpe Dunes (including Gibraltar Point) Special Area of Conservation (SAC) and SSSI may be impacted by construction activities causing changes in water quality, level and flow, resulting in degradation.	<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>Use of clear span bridges where crossings of sensitive water courses (e.g. main rivers) would be required.</p> <p>Construction impacts will be managed through the 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	Low - further assessment is required once surveys are completed and data assessed. The potential for LSE upon this site will be assessed within the Report to Inform the Habitat Regulations Assessment, informed by discussions with Natural England other statutory bodies.
River lamprey and sea lamprey, which are qualifying features of the Humber Estuary SAC and Ramsar, could potentially be impacted by works within or adjacent to watercourses which are hydrologically linked to the Humber Estuary.			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)
Functionally linked land and an assemblage of herons associated with Muckton Wood Site of Special Scientific Interest (SSSI) may be impacted by construction activities causing disturbance and/or loss of habitat of constituent main component species.	<p>The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction impacts will be managed through the measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed.</p> <p>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>	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 further assessment.</p>
The Humber Estuary SSSI may be impacted by construction activities within functionally linked land, potentially resulting in temporary displacement and/or habitat degradation and associated effects upon the bird assemblage. River lamprey and sea lamprey are also features of the Humber Estuary SSSI and could potentially be impacted by works within or adjacent to watercourses which are hydrologically linked to the Humber Estuary.	<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>Use of clear span bridges where crossings of sensitive water courses (e.g. main rivers) would be required.</p> <p>Construction impacts will be managed through the</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)
	measures outlined within the Preliminary CoCP.			
<p>The Bradley and Dixon Wood Local Nature Reserve (LNR) may be impacted by construction activities resulting in degradation of habitats and/or disturbance of habitats and any fauna associated with these sites.</p>	<p>The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction impacts will be managed through the measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed. These measures will be informed by ongoing survey and assessment and are likely to include the creation of replacement habitats where required to avoid significant effects.</p>	<p>Significant adverse effects cannot be excluded at this stage</p>	<p>Low - Survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures</p>
<p>The Local Wildlife Sites (LWS) listed below may be impacted by construction activities causing degradation of habitats and/or disturbance of habitats and any fauna associated with these sites.</p> <ul style="list-style-type: none"> • The Mother and Greenfield Woods LWS; • Bradley and Dixon's Woods LWS; • Grange Plantation LWS; • Aby LWS; • Long Eau West LWS; • Great Eau LWS; • Laceby Beck North LWS; • Withern Ings LWS; • Withern Wood LWS; • River Freshney Headwaters LWS; • Waithe Beck East LWS. 			<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)
Habitats				
Areas of Habitat of Principal Importance (HPI) including the Coastal and Floodplain Grazing Marsh in the Withern area may be impacted directly or indirectly by construction activities, resulting in potential loss and/or degradation of habitats.	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 will 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 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 valued at Local level may be impacted directly or indirectly by construction activities associated with the overhead line, including the establishment of the construction compound and haul roads, resulting in potential loss, severance and/or degradation of habitats.			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
Aquatic habitats would be directly or indirectly impacted by construction activities associated with the new overhead line, including watercourse crossings required to facilitate temporary haul roads, resulting in potential loss, severance and/or degradation of habitats.	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. Use of clear span	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	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>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>	and may include the creation of replacement habitats where required to avoid significant effects.		

Protected and 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 	<p>The positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.</p> <p>Construction impacts will be managed through the</p>	<p>Additional mitigation in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. Initial measures include the creation of replacement habitats where required</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"> • Wintering and breeding birds • Badgers • Bats • Water voles • Otters • Fish • Aquatic macroinvertebrates • Aquatic macrophytes 	measures outlined within the Preliminary CoCP.	to avoid significant effects.		

Historic Environment

Designated Assets

<p>The following Scheduled Monuments 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"> • Round Barrow Cemetery with outlying barrow to the west of Tetney and north of the Waithe Beck (NHLE 1469975) • North Cockerington Hall moated site (NHLE 1004988) • Castle Hill motte and bailey castle, Castle Carlton (NHLE 1016783) • The scheduled Moated Site immediately west of Hall Farm (NHLE 1019070) 	<p>Temporary impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, haul 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</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Moderate-Major adverse effects</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)
<ul style="list-style-type: none"> • Toot Hill motte and bailey castle (NHLE 1016782) • Castle Hill: moated site with Civil War earthworks (NHLE 1019067) 	measures outlined within the Preliminary CoCP.			
<p>The following Scheduled Monuments would be permanently impacted by the presence of pylons and overhead line within the open agricultural landscape, resulting in permanent impacts upon their setting:</p> <ul style="list-style-type: none"> • Round Barrow Cemetery with outlying barrow to the west of Tetney and north of the Waithe Beck (NHLE 1469975) • North Cockerington Hall moated site (NHLE 1004988) • Castle Hill motte and bailey castle, Castle Carlton (NHLE 1016783) • Toot Hill motte and bailey castle (NHLE 1016782) • Castle Hill: moated site with Civil War earthworks (NHLE 1019067) 	Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate-Major adverse effects	High
<p>The following Listed Buildings 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"> • Grade II listed Manor House (NHLE 1062994) 	Impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons, haul roads, construction compounds and	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)
<ul style="list-style-type: none"> Grade II Little Laceby Farmhouse (NHLE 1161227) Grade I The Church of St Martin (NHLE 1359965) Salter Fen Lock (NHLE 1063081), 	<p>temporary structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			
<p>The following Listed Buildings would be permanently impacted by the presence of pylons and overhead line within the open agricultural landscape, resulting in permanent changes to their setting:</p> <ul style="list-style-type: none"> grade II listed Manor House (NHLE 1062994) Grade I The Church of St Martin (NHLE 1359965) 	<p>Permanent impacts on the setting of heritage assets may be lessened or avoided through consideration of the detailed design of individual pylons. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application.</p>		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)
--	-----------------------------------	---	--	---------------------------------------

Non-Designated Assets

The former site of RAF Manby (MLI43396), a non-designated historic environment asset, 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:	Impacts on the setting of the heritage asset may be lessened or avoided through consideration of the detailed design of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the historic environment chapter of the ES submitted with the DCO application. Construction impacts would be managed through the measures outlined within the Preliminary CoCP.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
--	--	---	-------------------------	------

Water Environment and Flood Risk

No likely significant effects are predicted during the construction phase of the Project, based upon the preliminary assessment.

Geology and Hydrogeology

No likely significant effects are predicted during the construction phase of the Project, based upon the preliminary 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)
Agriculture and Soils				
Agricultural Land Classification				
582.3 ha of agricultural land (assumed to be BMV land) would be temporarily impacted by construction activities including establishment of haul roads, working areas 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 reduce impacts to agricultural operations.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate adverse effect	High
117.8 ha of agricultural land (assumed to be BMV land) would be permanently impacted by construction of overhead line infrastructure (pylon footings and foundations) resulting in the permanent loss of agricultural land.	Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).	No additional mitigation measures have been identified for this preliminary assessment.	Major adverse effect	High
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	The Project has been designed to minimise the extent of land take required to construct, maintain and operate the proposed assets and	No additional mitigation measures have been identified for this preliminary assessment.	Major - 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>position infrastructure (such as towers and access routes) as close as is practicable to field boundaries to reduce impacts to agricultural operations.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>			
<p>117.8 ha of soils would be permanently impacted by construction of overhead line infrastructure (pylon footings and foundations) resulting in loss of soil quality and ecosystem services.</p>	<p>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.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Major adverse effect</p>	<p>Moderate – the magnitude of impacts may be reduced if it is practicable to beneficially re-use the soil resources.</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)
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 the most appropriate alternative route. Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).	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 analysis has been undertaken.
Bus passengers would be impacted by increases in construction traffic flows causing delays due to congestion.	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	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 analysis has been undertaken.

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>minimum and diversions would be via the most appropriate alternative route.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).</p>			
<p>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.</p>	<p>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 the most appropriate alternative route.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary Code of Construction Practice (CoCP).</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Significant adverse effects cannot be excluded at this stage</p>	<p>Moderate- Baseline data for some of the identified construction traffic routes is not currently available. For these routes a qualitative analysis has been undertaken.</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)
Noise and Vibration				
No likely significant effects are predicted during the construction phase of the Project, based upon the preliminary assessment.				
Socioeconomics, Recreation and Tourism				
<p>The following four solar farms, which are either existing or are assumed to be operational in advance of construction of the Project commencing, could be directly impacted by the construction of pylons and overhead line within Section 2, potentially resulting in both temporary and permanent loss of land during construction:</p> <ul style="list-style-type: none"> • Yarburgh Grove Solar Farm; • Laceby Solar Farm; • Low Farm Solar Farm; • Bradley Road Solar Farm. 	<p>Impacts on the operation of these receptors 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.</p> <p>Construction impacts would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Adverse effect</p>	<p>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.</p>
Air Quality				
<p>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</p>	<p>Maximising separation between sensitive receptors and the proposed temporary haul roads as far as reasonably practicable.</p> <p>Construction impacts would be managed through the measures</p>	<p>No additional mitigation measures have been identified for this preliminary assessment.</p>	<p>Significant adverse effects cannot be excluded at this stage</p>	<p>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.</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)
concentrations during the construction phase.	outlined within the Preliminary CoCP.			
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	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.

Table 13.3 Summary of significant effects during the operation and maintenance phase – Section 2

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				
The Landscape Character Type (LCT) Wooded Open Farmland would be directly impacted by the operation of approximately 10 km of overhead line, (including pylons GL4-GL34), causing adverse impacts on the landscape character of the area.	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. Use of low height pylons between Barnoldby le Beck and Waithe (pylons GL180GL36 inclusive).	<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
The LCT Sloping Farmland would be indirectly impacted by the operation of overhead line in the vicinity of the LCT, causing adverse impacts on the landscape character of the area.			Adverse effect	High
The Regional Landscape Character Type (RLCT) 2C Fen and Marsh Margin Farmlands would be directly impacted by the operation of approximately 30 km of overhead line, causing adverse impacts on the landscape character of the area.			Adverse effect	High
The RLCT 7A Chalk Wolds would be directly impacted by the operation and presence of overhead line (including pylons GL36-GL120), causing adverse impacts on the landscape character of the area.			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)
Visual				
<p>Visual receptors within the following 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"> • Aby with Greenfield Parish • Alvingham Parish • Aylesbury Parish • Barnoldby le Beck • Brackenborough with Little Grimsby Parish • Brigsley Parish • Claythorpe Parish • Covenham St Bartholomew Parish • Covenham St Mary Parish • East Ravendale Parish • Elkington Parish • Fotherby Parish • Fulstow Parish • Gayton le Marsh Parish • Grainsby Parish • Great Carlton Parish • Hawerby cum Beesby • Holton le Clay Parish • Keddington Parish 	<p>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.</p> <p>Use of low height pylons between Barnoldby le Beck and Waithe (pylons GL180GL36 inclusive).</p>	<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

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"> • Laceby Parish • Legbourne Parish • Little Carlton Parish • Ludborough Parish • Muckton Parish • North Cockrington • North Ormsby • North Thoresby • Reston • South Cockrington • Stewton Parish • Strubby with Woodthorpe Parish • Utterby Parish • Waithe Parish • Waltham Parish • Withern with Stain • Wyham cum Cadeby • Yarburgh Parish 				
<p>Although views in a number of these communities 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 receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Ecology and Biodiversity				
Designated Sites				
Bird species which are qualifying features of The Humber Estuary SPA, Ramsar site and SSSI, The Wash SPA and Ramsar Site, Muckton Wood SSSI and Saltfleetby-Theddlethorpe Dunes SSSI may be impacted by the presence of pylons and 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.	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 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.
The European designated sites within Section 2 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.	The positioning of pylons and haul roads has sought to avoid or reduce direct and indirect impacts on high value aquatic habitats. Where new culverts are unavoidable, these would either be arch culverts, leaving the natural bed	No additional mitigation measures have been identified for this preliminary assessment.	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

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>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>other statutory bodies will inform completion of habitat regulations assessment.</p>
<p>Wintering and breeding birds may be impacted by the presence of pylons and overhead line resulting in collision mortality.</p>	<p>Embedded measures include the positioning of pylons to avoid or reduce direct and indirect impacts on notable species and habitats as far as reasonably practicable</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 use of bird diverters to reduce collision risk.</p>	<p>Significant adverse effects cannot be excluded at this stage</p>	<p>Low - Survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures. Additionally, discussions with Natural England other statutory bodies will inform completion of habitat regulations assessment.</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)
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.				
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.				

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				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				

National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom

Registered in England and Wales
No. 4031152
nationalgrid.com