

The Great Grid Upgrade

Grimsby to Walpole

Preliminary Environmental Information Report

Volume 2 Part B Section Specific Assessments

Section 7 New Walpole B Substation

Chapters 1 to 13

June 2025



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Grimsby to Walpole

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Preface

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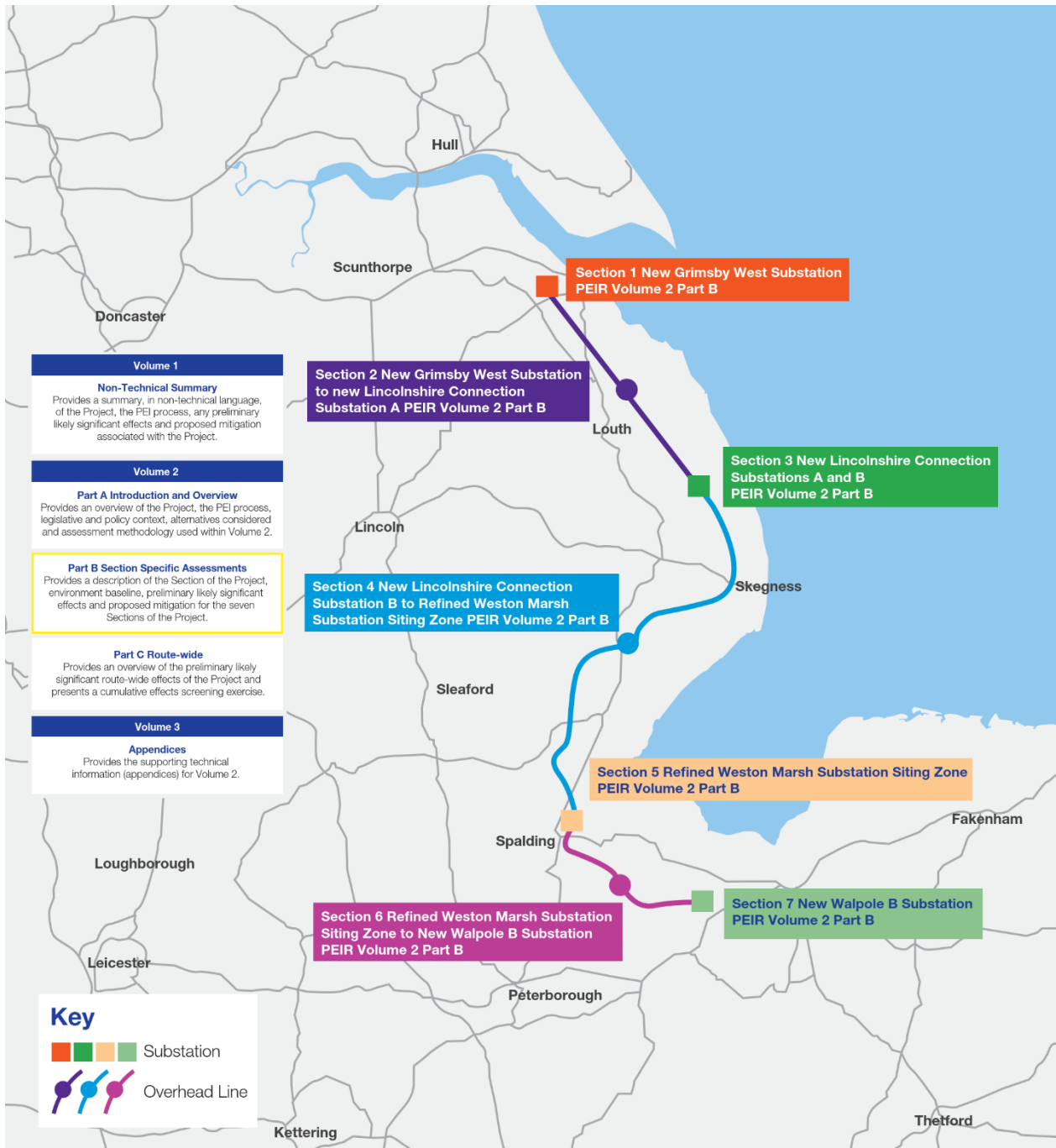
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1. Part B Preface

1.1 Structure and Context of the Preliminary Environmental Information Report

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



References

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

1. Overview of the Section and Description of the Project

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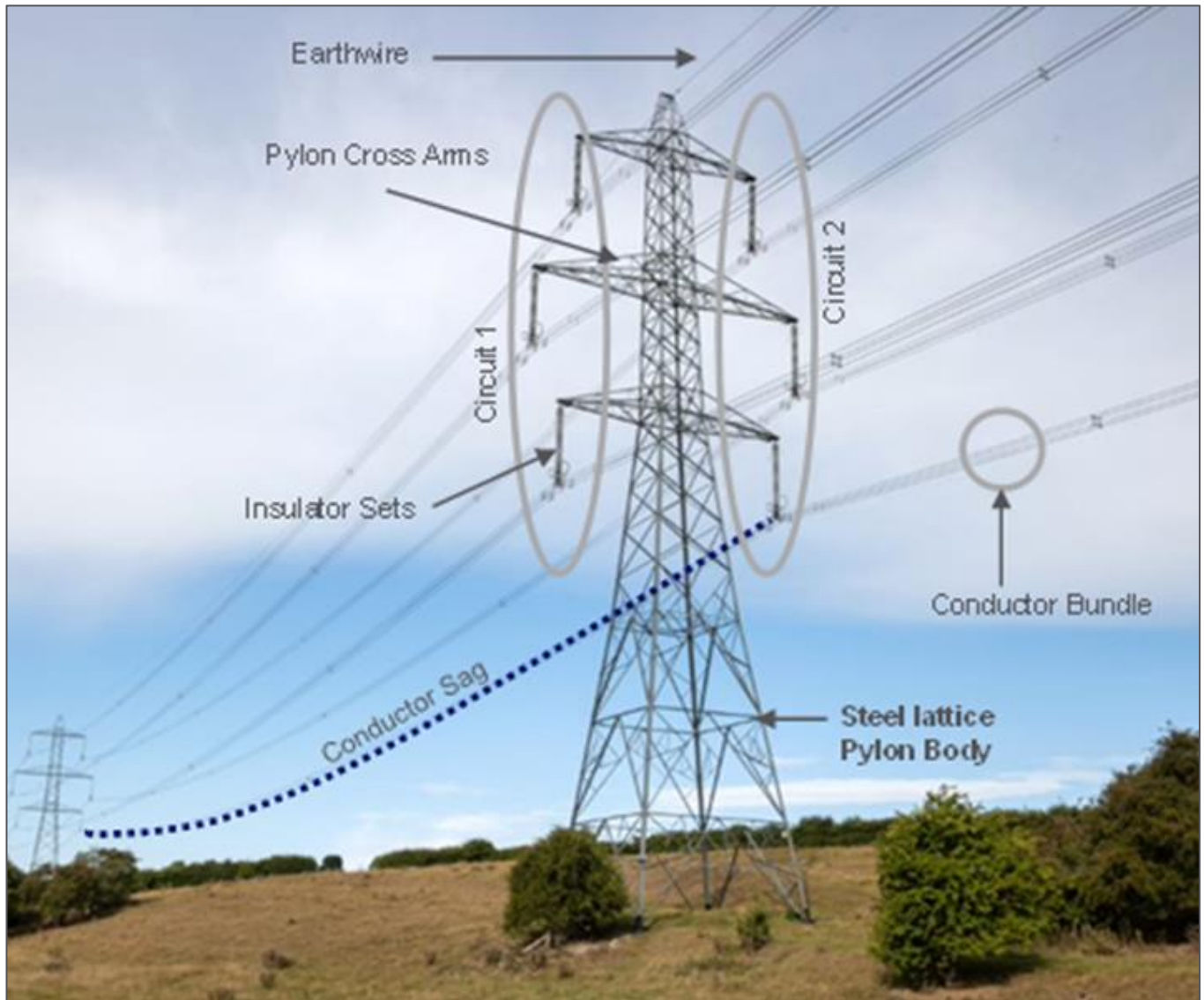
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1. Overview of the Section and Description of the Project

1.1 Overview of the Section

- 1.1.1 This chapter presents an overview of the Grimsby to Walpole Project (the Project) within Section 7 New Walpole B Substation (Section 7) and has informed the preliminary environmental assessments reported in subsequent Chapters 2 to 13 of Preliminary Environmental Information (PEI) Report Volume 2 Part B Section 7.
- 1.1.2 Section 7 is located at the southern end of the Project and principally comprises the proposed new Walpole B Substation. Section 7 also includes a short section of the new 400 kilovolt (kV) overhead line from the section break between Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation (Section 6) and Section 7, as well as modifications to an existing 400 kV overhead line (known as the 4ZM route).
- 1.1.3 Section 7 is located north of Lynn Road and Salts Road and west of West Drove North. The Section is located within the local authority area of Kings Lynn and West Norfolk. The draft Order Limits for Section 7 are presented in **PEI Report Volume 2 Part B Section 7 Figure 1.1 Draft Order Limits**. It should be noted that page 2 of the figure shows areas of potential highway improvements, located just north of the rest of the extents of the draft Order Limits for Section 7.
- 1.1.4 In summary, within Section 7, the Project includes the following components and activities:
- an approximately 0.5 km long section of the new 400 kV overhead line from the Route Section break between Section 6 and Section 7 just before pylon no. SW82 to the proposed new Walpole B Substation;
 - the proposed new Walpole B Substation located west of West Drove North;
 - modifications to approximately 1.2 km of existing 4ZM 400 kV overhead line, in order to connect it to the proposed new Walpole B Substation; and
 - a Cable Sealing End (CSE) compound located to the immediate east of the proposed new Walpole B Substation, to facilitate connection of the existing 4ZM 400 kV overhead line by underground cables to the substation.
- 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 7 is provided in section 1.2 below. For the purpose of this PEI Report, pylons located within Section 7 have been assigned a nominal code with the prefix 'SW', followed by a number. These can be seen on **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features**.

Image 1.1 Components of a typical transmission connection



1.2 Proposed Project

Proposed New Walpole B Substation

Design and Overview

- 1.2.1 Substations play a key role in the electricity transmission system, helping to manage and control electricity flows as well as connecting generators and/or connecting to the electricity distribution network at grid supply points.
- 1.2.2 The proposed new Walpole B Substation is located west of West Drove North and is the southern-most connection of the Project with the national electricity transmission system. The proposed new Walpole B Substation is a necessary component of the network reinforcement provided by the Project as it would enable a number of planned energy generation and storage developments to connect to the electricity transmission system. Customers currently contracted to connect into the proposed new Walpole B Substation include:
 - i. Eastern Green Link (EGL) 3;

- ii. EGL 4; and
- iii. Walpole Flexible Energy Generation.

- 1.2.3 There would also be a need for transformers due to Distribution Network Operator (DNO) requirements in the area.
- 1.2.4 The proposed new Walpole B Substation is in proximity to the siting areas for the converter stations for EGL 3 and 4 and is also where the High Voltage Direct Current (HVDC) links for EGL 3 and 4 would connect to the national electricity transmission system.
- 1.2.5 For the purposes of the preliminary environmental assessment and consistent with paragraph 2.5.6 of the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 1), it has been assumed that the proposed new Walpole B Substation would be an Air Insulated Switchgear (AIS) substation. AIS substations use air as the insulation medium for electrical equipment meaning that equipment is predominantly located outdoors. The proposed new Walpole B Substation would be located within a secured fenced compound. The total footprint of the proposed Walpole B Substation would be 15.4 ha, including a 5 m buffer around the fence line, with dimensions for the main compound of approximately 793 m x 190 m (approximately 15 ha), plus a 90 m x 41 m (approximately 0.4 ha) extra area near the entrance for ancillary equipment and car parking. An additional area of approximately 56 m x 52 m for a CSE compound is located to the immediate east of the proposed new Walpole B substation, which would be constructed as part of the Project. As part of the works at Section 7, a short section of new underground cable approximately 0.6 km in length would be routed southwards from the CSE compound to the proposed new Walpole B Substation. Within the proposed new Walpole B Substation there would be a range of specialist electrical equipment, including transformers and reactors. The maximum height for High Voltage (HV) plant and buildings within the substation is 12.5 m, and the maximum height for gantries, which connect the new and modified overhead lines to it, is assumed to be 15 m.
- 1.2.6 During operation, lighting would be required at the substation sites to allow for safe movement and the operation of equipment. Security lighting would also be required. All lighting would be designed in accordance with the appropriate design standards and National Grid technical specifications. For the purpose of the PEI Report, it is assumed that the security lighting would be event activated (i.e. would not be continuous) and would be designed to be environmentally sensitive (e.g. directional and low light not exceeding 50 lux). Further information regarding substation lighting design will be provided within the project description within the Environmental Statement. An overview of the proposed substation design is provided in **PEI Report Volume 2 Part B Section 7 Figure 1.4 New Walpole B Substation Layout**.
- 1.2.7 Further detail on the evolution of the design of the Project, and the design of Section 7, can be found in the **Grimsby to Walpole Design Development Report**.

Mitigation Measures

- 1.2.8 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.
- 1.2.9 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.
- 1.2.10 Additional environmental mitigation measures that have been incorporated into the design of Section 7 include the following:
- i. S7-ECO-01: to the north and west of the substation there is land proposed for ditch mitigation;
 - ii. S7-ECO-02: creation of space for Water Vole mitigation lies immediately north of the substation;
 - iii. S7-L+V-01, S7-L+V-07, S7-L+V-09, and S7-L+V-10: planting of native hedgerows with trees to aid landscape integration;
 - iv. S7-L+V-02 to S7-L+V-05 and S7-L+V-08: planting of woodland around the substation to provide visual screening; and
 - v. S7-ECO-03: a management regime for grassland to the north west of the substation to provide habitat for Skylark.

Construction

- 1.2.11 Subject to gaining development consent in 2028, it is anticipated that construction of the Project would commence in 2029, starting with enabling works. It is expected that the main construction works (construction of substations and overhead line) would continue through to 2033 (four years).
- 1.2.12 Construction of the proposed new Walpole B Substation includes the following key stages and activities:
- i. site establishment;
 - ii. site preparation and earthworks;
 - iii. civil works;
 - iv. construction of buildings;
 - v. installation of electrical equipment;
 - vi. site reinstatement and landscaping; and
 - vii. commissioning.

- 1.2.13 One temporary construction compound would be required within Section 7. It would be located to the east of the proposed new Walpole B Substation, with an area of 4.2 ha.
- 1.2.14 The land on which construction compounds are located would be reinstated upon completion of construction.
- 1.2.15 Construction and permanent access for the proposed new Walpole B Substation connects to West Drove North.
- 1.2.16 **PEI Report Volume 2 Part B Section 7 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 7 in place as part of construction and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on the what the construction of the proposed new Walpole B Substation entails.

Operation

- 1.2.17 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.
- 1.2.18 The proposed new Walpole B Substation within Section 7 forms part of this reinforcement by enabling a number of planned energy generation and storage developments to connect to the electricity transmission system, and providing a connection point for the new overhead line to link with the existing transmission network. Once operational, on-site activity at the proposed new Walpole B Substation would generally be limited to regular inspection and maintenance.
- 1.2.19 **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 7 in place as part of operation of the Project, including for the proposed new Walpole B Substation and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on the what the operation of the proposed new Walpole B Substation entails.

Proposed Overhead Line Route

Design and Overview

- 1.2.20 A short section of the proposed new overhead line route measuring approximately 0.5 km is included within Section 7, this extends in a south east direction from the Route Section break between Section 6 and Section 7 just before pylon no. SW82 to the proposed new Walpole B Substation.
- 1.2.21 Along the approximately 0.5 km long section of the new 400 kV overhead line in Section 7 there are four structures. This includes two gantries at a height of up to 15 m which are located within the proposed new Walpole B Substation, and two pylons at heights of approximately 52 m and approximately 57 m. The span distances between pylon no. SW85 and SW83 and pylon no. SW84 and SW83 is approximately 70 m, with a longer span distance of approximately 400 m between pylon no. SW82 and SW83.

- 1.2.22 The pylons along the proposed new 400 kV overhead line route within Section 7 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.
- 1.2.23 Within the design of the Project, there is a need for some flexibility, which has been accounted for in the assessments within this PEI Report. The horizontal Limits of Deviation (LoD) applied either side of the full length of the overhead line centreline is 50 m, for a total width of 100 m. Where the LoD is 100 m, the extent of movement of any pylon is limited by the span length and conductor swing. At a maximum span length, the centre of the pylon could move approximately 20 m either side of the centreline subject to topography and local conditions.
- 1.2.24 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.
- 1.2.25 The vertical LoD applied along the length of the overhead line is 6 m to allow for the pylon height to be increased in order to increase ground clearances.

Construction

- 1.2.26 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.

- 1.2.27 Detail on the location of construction compounds in regard to Section 7 is provided above under construction of the proposed new Walpole B Substation.
- 1.2.28 Construction access for the overhead line within Section 7 is via an access point that falls within Section 6.
- 1.2.29 **PEI Report Volume 2 Part B Section 7 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 7 in place as part of construction, including 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

- 1.2.30 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.
- 1.2.31 The overhead line within Section 7 forms part of this reinforcement by providing a high capacity power transmission route between the Route Section break between Section 6 and Section 7 and the proposed new Walpole B Substation. Overhead lines require minimal maintenance during operation and would be monitored and regularly inspected for signs of fatigue. Subject to planting within the vicinity of Section 7, it is assumed that there would be an ongoing vegetation management regime. Overall, once operational, the overhead line would not generate significant activity beyond ordinary inspection and maintenance.
- 1.2.32 **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 7 in place as part of operation, including 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.

Proposed Modifications to the Existing Overhead Line Route

Design and Overview

- 1.2.33 An existing 400 kV overhead line (known as the 4ZM route) is routed in a south east direction, located to the east of the proposed new Walpole B Substation. As part of the Project the existing overhead line would be diverted and connected to the proposed new Walpole B Substation. To facilitate this, temporary diversions would be constructed to allow replacement pylons to be constructed near the existing

overhead line, and a short new section of the 4ZM route would be constructed to connect into the new substation. This would allow a short redundant section of the existing line to be dismantled. Furthermore, as part of the works at Section 7, one of the circuits in the existing 4ZM route would connect into the CSE compound to facilitate connection of the existing 4ZM 400 kV overhead line by underground cables, approximately 0.6 km in length, to the new substation.

- 1.2.34 As part of the modifications to the existing 4ZM route, the following would be carried out:
- i. two pylons would be dismantled along approximately 0.3 km of the 4ZM route, with replacement in close proximity along the same alignment; and
 - ii. eight new structures would be constructed along approximately 0.5 km of the existing 4ZM route, and approximately 0.3 km of new overhead line, including:
 - four gantries at a height of up to 15 m; and
 - four pylons ranging from a height of approximately 49 m to 56 m.

Construction

- 1.2.35 During construction, temporary diversions of the 4ZM route would take place. This would include construction of temporary pylons and temporary overhead line. Within Section 7, there are two temporary pylons at a height of approximately 51 m along approximately 1.1 km of temporary overhead line. Detail around how construction of new overhead line would be carried out is provided above under construction of the proposed overhead line route.
- 1.2.36 The phasing of these construction works would consist of the following:
- i. temporary diversion of the 4ZM route;
 - ii. construction of the new substation;
 - iii. permanent works on the 4ZM route in parallel to the construction of the new proposed overhead line; and
 - iv. construction of the CSE compound to facilitate the connection of one of the circuits in the 4ZM route to the new substation by underground cables.
- 1.2.37 Detail on the location of construction compounds in regard to Section 7 is also provided above under construction of the proposed new Walpole B Substation.
- 1.2.38 Construction access for the modifications to the existing 4ZM route connects to West Drove North, utilising the same permanent and construction access point which would be used for the proposed new Walpole B Substation.
- 1.2.39 **PEI Report Volume 2 Part B Section 7 Figure 1.2 Temporary and Construction Features** outlines the temporary features within Section 7 in place as part of construction, including for the modifications to the 4ZM route and **PEI Report Volume 2 Part A Chapter 5 Project Description** provides further information on the what the construction of the modifications to the 4ZM route entails.

Operation

- 1.2.40 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.

- 1.2.41 Overhead lines require minimal maintenance during operation and would be monitored and regularly inspected for signs of fatigue. Subject to planting within the vicinity of Section 7, there may also be an ongoing vegetation management regime. Overall, once operational, the overhead line would not generate significant activity beyond ordinary inspection and maintenance.
- 1.2.42 **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features** outlines the permanent features within Section 7 in place as part of operation, including for the modifications to the 4ZM 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 modifications to the 4ZM route entails.

References

- Ref 1 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].

2. Landscape

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2. Landscape

2.1 Introduction

- 2.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Landscape assessment of the New Walpole B Substation Section (Section 7) 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 7 (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 7 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 7, 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 7 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 Supporting Documentation	
PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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 7 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 7 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 7 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 7 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 7 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 7 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 7 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 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, the details of which are 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. Fenland Local Plan (Adopted May 2014) (Ref 1)
 - Policy LP16: Delivering and Protecting High Quality Environments across the District seeks to ensure development will be managed in such a way that it protects and improves the diverse natural environment of the District and preserves and enhances its rich built and cultural heritage.
- ii. Fenland Local Plan 2021-2040 Draft Local Plan Consultation (August 2022) (Ref 2)
 - Policy LP6: Renewable and Low Carbon Energy Infrastructure states that proposals will identify, manage and mitigate any existing or proposed risks to the landscape as a result of the project; and
 - Policy LP28: Landscape seeks to ensure that development protects and where possible enhances the intrinsic value of the landscape.
- iii. King's Lynn and West Norfolk Local Plan 2021 - 2040 (Adopted March 2025) (Ref 3)
 - Policy LP18 - Design and Sustainable Development: seeks to ensure that all new development in the borough should be of high quality design and will be required to demonstrate ability to respond to the context and character of places in West Norfolk by ensuring that the scale, density, layout and access will enhance the quality of the environment. Measures should include provision of green space to safeguard wildlife; and
 - Policy LP19 - Environmental Assets: states proposals for development will be informed by and seek opportunities to reinforce the distinctive character areas and potential habitat creation areas identified in the King's Lynn and West Norfolk Landscape Character Assessment and other character assessments.
 - Policy LP21 - Environment, Design and Amenity: states that development must protect and enhance the amenity of the wider environment and identified criteria against which proposals will be assessed.
 - Policy LP24 - Renewable Energy: states that developments will be assessed to determine whether the energy benefits outweigh the impact individually or cumulatively upon sites of landscape importance.

- Policy LP26 – Protection of Local Open Space: When assessing planning applications for development, the Council will have careful regard to the value of any area of open space, based upon factors including visual amenity and landscape character.

2.3 Scope of Assessment

- 2.3.1 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 Landscape chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 2.3.2 Non statutory consultation feedback is summarised 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 For completeness and to provide further context to the assessment, the relevant National Character Areas (NCA) as defined by Natural England (Ref 6) 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.
- 2.3.1 Kings Lynn and West Norfolk LCA E4: Marshland St. James is located within the Study Area but has been scoped out due to distance from the Project and because the potential for significant effects is unlikely.
- 2.3.2 Where a receptor is impacted by multiple sections of the Project, section 2.7 describes the impact upon the receptor within this Section first. It then provides an aggregated assessment of all impacts across all Sections upon the receptor to assess how the cumulative effect of the Project as a whole impacts the receptor from a landscape perspective.

2.4 Assessment Methodology

- 2.4.1 The assessment methodology, relevant guidance, key assumptions and limitations for the Landscape assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.

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

Approach

- 2.4.2 As explained in paragraph 5.1 of GLVIA3 (Ref 7), “*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 7), 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 7) 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 7), 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 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 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 which need to be considered and given different weight according to site-specific and location-specific considerations.
- 2.4.11 Levels of landscape effect are identified as major, moderate, minor, or negligible and the direction of change as beneficial or adverse. Effects judged to be moderate or major are considered significant in the context of the EIA Regulations (Ref 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

- 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 7.
- 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 7 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

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.

survey and professional judgment, and is considered sufficient to capture the likely significant landscape effects of the Project. Although the ZTV indicates potential visibility beyond 5 km in certain directions, based on previous experience of similar schemes, significant landscape impacts are highly unlikely to arise beyond this distance.

- 2.5.2 The preliminary cumulative Landscape assessment Study Area extends 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 7 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.

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. Fenland Local Plan (Adopted May 2014) (Ref 1);
 - vii. Fenland Local Plan 2021-2040 Draft Local Plan Consultation (August 2022) (Ref 9);
 - viii. King's Lynn and West Norfolk Borough Council Local Development Framework Core Strategy (Adopted July 2011) (Ref 3);
 - ix. King's Lynn and West Norfolk Landscape Character Assessment (Ref 10).
 - x. Natural England National Character Area Profiles (Ref 6); and

- 2.5.7 Site surveys were carried out during several visits under differing weather conditions between spring 2023 and summer 2024.

Existing Baseline

- 2.5.8 The following section outlines the Landscape baseline and should be read in conjunction with **PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline**. The appendix provides a description of the landscape, including its elements, features, and overall character, with reference to the landscapes and landscape character areas listed below. It also includes judgements on the landscape's relative value and its susceptibility to change resulting from the Project.
- 2.5.9 The baseline section should also be read in conjunction with the following supporting Figures, as found within **PEI Report Volume 2**:
- i. **PEI Report Volume 2 Part B Section 7 Figure 2.1 Landscape Designations and Features;**
 - ii. **PEI Report Volume 2 Part B Section 7 Figure 2.2 Landform and Drainage;**
 - iii. **PEI Report Volume 2 Part B Section 7 Figure 2.3 National Character Areas;**
 - iv. **PEI Report Volume 2 Part B Section 7 Figure 2.4 Regional and Local Landscape Character Areas;** and
 - v. **PEI Report Volume 3 Part B Appendix 2A Landscape Character Baseline.**
- 2.5.10 **PEI Report Volume 2 Part B Section 7 Figure 2.1 Landscape Designations and Features** shows the distribution of woodland across the Study Area.

Designated Landscapes

- 2.5.11 There are no designated landscapes in the Study Area for the Project in Section 7.

Landscape Character

- 2.5.12 The following landscape character areas cover the Study Area for Section 7:
- i. Natural England - National Character Area Profiles (NCA)
 - NCA 46 The Fens
 - ii. East Midlands Regional Landscape Character Types (RLCT)
 - RLCT 2A Settled Fens and Marshes which is considered to be of medium value and medium susceptibility to the Project.
 - iii. Kings Lynn and West Norfolk Landscape Character Areas (LCA)
 - LCA D2 Walpole Terrington and Clenchwarton which is considered to be of medium value and medium susceptibility to the Project.
 - LCA D3 Terrington St John which is considered to be of medium value and medium susceptibility to the Project.
 - LCA D4 Emneth, West Walton and Walsoken which is considered to be of medium value and medium susceptibility to the Project.

Future Baseline

- 2.5.13 The future baseline relates to known or foreseeable changes to the current baseline in the future, against which the effects of the Project during construction and operation are assessed. Specifically, it accounts for anticipated changes including those caused by changing climatic conditions, policy, legislation, advances in technology and by other confirmed development projects which will be complete prior to construction of the Project.
- 2.5.14 At this preliminary stage, a full assessment of the implications of any 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.
- 2.5.15 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 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 11), applicable to routeing of new overhead lines and the 'Horlock Rules' (Ref 12), 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 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.
- 2.6.2 Following the selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- Locating the New Walpole B Substation close to areas of existing vegetation which would help to provide some immediate screening and filtering of views of the new substation and also help to integrate the substation into the wider landscape; and
 - Amendments to locations of access tracks and bellmouths and overhead line alignment to minimise loss of mature vegetation, which in turn would help to retain existing landscape character.

- 2.6.3 The Project has also committed to producing an Outline Landscape Environmental Management Plan (LEMP) (commitment GG06), which will set out the measures to protect existing vegetation and details regarding the reinstatement and additional planting. This will also account for biodiversity net gain targets (see **PEI Report Volume 2 Part B Sections 1-7 Chapter 4 Ecology and Biodiversity**) and will accompany the ES and DCO application.
- 2.6.4 A detailed mitigation plan for Section 7 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 7 include:
- i. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.
 - ii. LV02: The contractor(s) will apply the relevant protective principles set out in BS 5837:2012: Trees in relation to design, demolition, and construction. This will be applied to trees within the Order Limits which will be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. An ACoW will ensure the suitability of tree protection before and during the construction phase. All works to high grade trees, including trees under Tree Preservation Orders and veteran trees, will be undertaken, or supervised by a suitably qualified arboriculturist.
 - iii. LV03: A five-year aftercare period will be established for all reinstatement and mitigation planting, details of which will be set out in the LEMP.
 - iv. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.
 - v. B08: Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are necessary, 'dead hedging' should be used, where practicable, in the interim periods to retain connectivity during construction. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.
 - vi. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set

working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the Construction Environmental Management Plans (CEMP).

Additional Mitigation Measures

- 2.6.6 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 2.6.7 Potential additional mitigation measures which may be required to reduce the effects of the Project on the Landscape are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. These typically include additional measures which specifically serve a mitigation function, to reduce the scale of potential impacts.
- 2.6.8 As set out within **PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 7 for Landscape include areas of woodland planting and tree planting on field boundaries around the New Walpole B Substation to provide visual screening, which would help with landscape integration for Section 7.
- 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 7.
- 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 2.2**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 2.7.4 The Landscape effects of maintenance activities during operation are scoped out of the assessment as agreed in the Scoping Opinion adopted by the Secretary of State on 10 September 2024 (Ref 4).
- 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 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 reinstated².

Designated Landscapes

- 2.7.10 There are no designated landscapes in the Study Area for Section 7 of the Project.

King's Lynn and West Norfolk Landscape Character Areas

LCA D3 Terrington St John

- 2.7.11 LCA D3 Terrington St John which is located within the Study Area for Section 7 is also located in Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation.
- 2.7.12 The preliminary assessment of the effects on LCA D3 Terrington St John presented below considers the part of the LCA that is located within the Study Area for Section 7.
- 2.7.13 LCA D3 Terrington St John would be directly impacted by construction of the New Walpole B Substation, two construction compounds, a haul road and pylons SW82 and SW83, which would extend across the southern part of the LCA. Works to modify the existing 4ZM 400 kV overhead line would also affect the landscape with the presence of temporary pylons and construction of new line entries to the substation. The character of the LCA is already impacted by proximity to settlement, the existing

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

Walpole Substation, several overhead lines, and other discordant elements and features. The size/scale of change resulting from the works would further diminish the rural character of this relatively small LCA. The overall magnitude of predicted change is medium. Combined with the landscape's medium value and susceptibility, this would result in a likely significant effect on the part of the RLCT in Section 7.

- 2.7.14 When considering the construction phase of the Project, in its entirety across all Sections, the overall magnitude of predicted change increases but remains in the medium category. Combined with the medium value and medium susceptibility of LCA D3 Terrington St John, the Project would result in a likely significant effect.

Operation

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

Designated Landscapes

- 2.7.16 There are no designated landscapes in the Study Area for Section 7 of the Project.

King's Lynn and West Norfolk Landscape Character Areas

LCA D3 Terrington St John

- 2.7.17 LCA D3 Terrington St John which is located within the Study Area for Section 7 is also located within Section 6: Refined Weston Marsh Substation Siting Zone to New Walpole B Substation.
- 2.7.18 The preliminary assessment of the effects on LCA D3 Terrington St John presented below considers the part of the LCA that is located within the Study Area for Section 7.
- 2.7.19 LCA D3 Terrington St John would be directly impacted by the presence of the Project. The new 400 kV overhead line (pylons SW82 and SW83) and Walpole Substation B would be in its south eastern corner. The character of the LCA is already adversely affected by the presence of multiple overhead lines and the existing Walpole Substation as well as other discordant elements. The size/scale of change resulting from the presence of the new 400 kV overhead line and the New Walpole B Substation would further diminish the rural character of this relatively small LCA. The overall magnitude of predicted change is medium. Combined with the landscape's medium value and susceptibility, this would result in a likely significant effect on the part of the RLCT in Section 7.
- 2.7.20 Over time, the maturing mitigation planting associated with the New Walpole B Substation would provide some screening of the infrastructure. This may slightly reduce the overall effects on the landscape, but due to the size and scale of the Project, the effects would remain significant.
- 2.7.21 As a result of 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 medium value and susceptibility of LCA D3: Terrington St John, the Project would result in a likely significant effect.

Likely Non-Significant Effects

- 2.7.22 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.
- 2.7.23 The preliminary assessment of effects below considers receptors that are not significantly affected in Section 7 but, when evaluated as a whole across all the Sections in which they are located, would experience a likely significant effect.

Construction

East Midlands Regional Landscape Character Assessment

RLCT 2A Settled Fens and Marshes

- 2.7.24 RLCT 2A Settled Fens and Marshes which is located within the Study Area for Section 7 is also located within:
- Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A;
 - Section 3 New Lincolnshire Connection Substations A and B;
 - Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone;
 - Section 5 Refined Weston Marsh Substation Siting Zone; and
 - Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation.
- 2.7.25 The preliminary assessment of the effects on RLCT 2A Settled Fens and Marshes presented below considers the part of the RLCT that is located within the Study Area for Section 7.
- 2.7.26 There would be no direct impacts on RLCT 2A Settled Fens and Marshes other than some very minor road works to facilitate access along King John Bank which forms the eastern boundary of the RLCT. While construction of the new 400 kV overhead line may be present in views out from the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to the existing Walpole Substation, several existing overhead lines, and other discordant elements and features, which reduces the overall 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 7 are unlikely.
- 2.7.27 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.

Operation

East Midlands Regional Landscape Character Types

RLCT 2A Settled Fens and Marshes

- 2.7.28 RLCT 2A Settled Fens and Marshes which is located within the Study Area for Section 7 is also located within:
- i. Section 2 New Grimsby West Substation to New Lincolnshire Connection Substation A;
 - ii. Section 3 New Lincolnshire Connection Substations (LCS) A and B;
 - iii. Section 4 New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone;
 - iv. Section 5 Refined Weston Marsh Substation Siting Zone; and
 - v. Section 6 Refined Weston Marsh Substation Siting Zone to New Walpole B Substation.
- 2.7.29 The preliminary assessment of the effects on RLCT 2A Settled Fens and Marshes presented below considers the part of the RLCT that is located within the Study Area for Section 7.
- 2.7.30 RLCT 2A Settled Fens and Marshes would not be directly impacted by the Project in Section 7. While the new 400 kV overhead line may be present in views out from the RLCT, they would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to settlement, the existing Walpole Substation, several overhead lines, and other discordant elements and features, which reduces the overall 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 7 are unlikely.
- 2.7.31 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.

Table 2.2 Preliminary summary of non-significant Landscape effects – Section 7

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
East Midlands Regional Landscape Character Types					
RLCT 2A: Settled Fens and Marshes	Indirectly affected by construction of pylons SW82 and SW83	Value – Medium Susceptibility – Medium	Construction - small	Construction - not significant	There would be no direct impacts on RLCT 2A Settled Fens and Marshes other than some very minor road works to facilitate access along King John Bank which forms the eastern boundary of the RLCT. While construction of the new 400 kV overhead line may be present in views out from the RLCT, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to the existing Walpole Substation, several overhead lines, and other discordant elements and features, which reduces the overall 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 7 are unlikely.
	Indirectly affected by operation of pylons SW82 and SW83	Value – Medium Susceptibility – Medium	Operation - small	Operation - not significant	There would be no direct impacts on RLCT 2A Settled Fens and Marshes. While the new 400 kV overhead line may be present in views out from the RLCT, they would not fundamentally change the character or perception of the landscape. This is because it is

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					already affected by proximity to settlement, the existing Walpole Substation, several overhead lines, and other discordant elements and features, which reduces the overall 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 7 are unlikely.

Kings Lynn and West Norfolk Landscape Character Areas

LCA D2: Walpole Terrington and Clenchwarton	Indirectly affected by construction of Walpole B Substation and pylons SW82 and SW83	Value – Medium Susceptibility – Medium	Construction – very small	Construction - not significant	There would be no direct impacts on this LCA. While construction activity may be present in views out from the LCA, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to settlement, the existing Walpole Substation, several overhead lines, and other discordant elements and features, which reduces the overall size/scale of change. The overall magnitude of predicted change is very small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 7 are unlikely.
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Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
	Indirectly affected by operation of Walpole B Substation and pylons SW82 and SW83	Value – Medium Susceptibility – Medium	Operation – very small	Operation - not significant	There would be no direct impacts on this LCA. While New Walpole B Substation and the new 400 kV overhead line may be present in views out from the LCA, they would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to settlement, the existing Walpole Substation, several overhead lines, and other discordant elements and features, which reduces the overall size/scale of change. The overall magnitude of predicted change is very small. Combined with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 7 are unlikely.
LCA D4: Emneth, West Walton and Walsoken	Indirectly affected by construction of Walpole B Substation and pylons SW82 and SW83	Value – Medium Susceptibility – Medium	Construction – small	Construction - not significant	There would be no direct impacts on this LCA apart from some minor road works to facilitate access along Lynn Road. While construction activity may be present in views out from the LCA, it would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to settlement, several overhead lines, and other discordant elements and features, which reduces the overall size/scale of change. The overall magnitude of predicted change is small. Combined

Receptor	Impact	Value and susceptibility of the landscape	Magnitude of Change	Significance	Rationale
					with the landscape's medium value and susceptibility, significant effects on the part of the RLCT in Section 7 are unlikely.
	Indirectly affected by operation of Walpole B Substation and pylons SW82 and SW83	Value – Medium Susceptibility – Medium	Operation - small	Operation - not significant	There would be no direct impacts on this LCA. While New Walpole B Substation and the new 400 kV overhead line may be present in views out from the LCA, they would not fundamentally change the character or perception of the landscape. This is because it is already affected by proximity to settlement, the existing Walpole Substation, several overhead lines, and other discordant elements and features, which reduces the overall 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 7 are unlikely.

2.8 Monitoring

- 2.8.1 No Landscape monitoring is currently proposed for Section 7, 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 Fenland District Council (2014), Fenland Local Plan (Adopted 2014). [online] Available at: https://www.fenland.gov.uk/media/10010/Fenland-Local-Plan/pdf/Fenland_Local_Plan1.pdf [Accessed 19 December 2024]
- Ref 2 Fenland District Council. (2022). Fenland Local Plan 2021 – 2040 Draft Local Plan Consultation. [online] Available at: https://fenland.gov.uk/media/18814/Draft-Local-Plan-August-2022/pdf/Draft_Local_Plan_for_Consultation_Aug_2022.pdf [Accessed 19 December 2024]
- Ref 3 Borough Council of King's Lynn & West Norfolk (2025). King's Lynn and West Norfolk Local Plan 2021-2040 (Adopted March 2025) [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 24 April 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 18 October 2024].
- Ref 5 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 6 Natural England (2024) National Character Area Profiles [online]. Available at: <https://nationalcharacterareas.co.uk/> [Accessed 20 September 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 Fenland District Council (2022). Fenland Local Plan 2021-2040 Draft Local Plan Consultation [online]. Available at: https://fenland.gov.uk/media/18814/Draft-Local-Plan-August-2022/pdf/Draft_Local_Plan_for_Consultation_Aug_2022.pdf [Accessed 20 December 2024].
- Ref 10 Borough Council of King's Lynn and West Norfolk (2007). King's Lynn and West Norfolk Landscape Character Assessment [online] Available at: https://www.west-norfolk.gov.uk/downloads/download/77/landscape_character_assessment [Accessed 20 December 2024].
- 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 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 14 British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction – Recommendations.

3. Visual

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3. Visual

3.1 Introduction

- 3.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Visual assessment for the New Walpole B Substation Section (Section 7) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:
- i. An introduction to the topic (section 3.1);
 - ii. Identification of key local and regional policy relevant to the assessment (section 3.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented in **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
 - iii. A summary of the assessment scoping process and subsequent scope of the Visual assessment (section 3.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
 - iv. A high-level summary of the methodology of the Visual assessment within Section 7 (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 7 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 7 Study Area, based upon the assessment completed to date (section 1.7); 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 7 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 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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 7 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 7 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 7 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 7 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 7 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 7 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 7 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 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for

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

3.2 Legislation and Policy Framework

Legislation and National Policy

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

Regional and Local Policy

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

- i. Fenland Local Plan (Adopted May 2014) (Ref 1);
 - Policy LP16: Delivering and Protecting High Quality Environments across the District: seeks to ensure development will be managed in such a way that it protects and improves the diverse natural environment of the District and preserves and enhances its rich built and cultural heritage.
- ii. Fenland Local Plan 2021-2040 Draft Local Plan Consultation (August 2022) (Ref 2); and
 - Policy LP28: Landscape: seeks to ensure that development protects and where possible enhances the intrinsic value of the landscape.
- iii. King's Lynn and West Norfolk Local Plan 2021 - 2040 (Adopted March 2025) (Ref 3).
 - Policy LP18 Design and Sustainable Development: seeks to ensure that all new development in the borough should be of high quality design and will be required to demonstrate ability to respond to the context and character of places in West Norfolk by ensuring that the scale, density, layout and access will enhance the quality of the environment. Measures should include provision of green space to safeguard wildlife;
 - Policy LP19 Environmental Assets: states proposals for development will be informed by, and seek opportunities to reinforce the distinctive character areas and potential habitat creation areas identified in the King's Lynn and West Norfolk Landscape Character Assessment and other character assessments;
 - Policy LP21 Environment, Design and Amenity: states that development must protect and enhance the amenity of the wider environment and identified criteria against which proposals will be assessed;
 - Policy LP24 Renewable Energy: states that developments will be assessed to determine whether the energy benefits outweigh the impact individually or cumulatively upon sites of landscape importance; and
 - Policy LP26 – Protection of Local Open Space: When assessing planning applications for development, the Council will have careful regard to the value of any area of open space, based upon factors including visual amenity and landscape character.

3.3 Scope of Assessment

- 3.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 4) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 5). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Visual chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 3.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 3.3.3 The scope of the construction and operation assessment covers the following receptor groups:
- 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.

3.4 Assessment Methodology

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

Approach

- 3.4.2 As explained in paragraph 6.1 of GLVIA3 (Ref 6), “*An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity*”. Changes in views can be experienced by individuals at various locations within the Study Area, including from static positions (typically assessed using representative viewpoints) and while moving through the landscape (commonly referred to as sequential views, such as those experienced from roads and footpaths).
- 3.4.3 Visual receptors are individuals or groups of people who may be affected by changes in views and visual amenity. As noted in paragraphs 6.31 - 6.32 of GLVIA3 (Ref 6), they are usually grouped by their occupation or activity (e.g. residents, motorists, recreational users, tourists visiting a specific location or area) and the extent to which their attention is focused on the view.
- 3.4.4 The visual assessment is based on communities within the jurisdiction boundaries of parishes (also referred to in this assessment as community areas) and the

preliminary baseline for the community areas is presented in **PEI Report Volume 3 Part B Appendix 3B Visual Baseline**.

- 3.4.5 The visual assessment also includes consideration of the effects on sequential views from nationally designated and regionally promoted long distance footpaths and cycleways.
- 3.4.6 The visual assessment is informed by a series of publicly accessible viewpoint locations. These have been carefully chosen to provide a representative overview of the Project's potential visibility. Each viewpoint has been visited, with photography captured in line with TGN 06/19 (Ref 7) to document the existing visual characteristics of Section 7. The baseline for the representative viewpoints is presented in the Visual section of **PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints**.
- 3.4.7 In accordance with GLVIA 3 (Ref 6), the assessment of visual effects involves evaluating both the nature of the visual receptors (their sensitivity) and the nature of the effects on those receptors (the magnitude of effect). These factors are then considered together to form an overall judgment regarding the significance of visual effects.
- 3.4.8 The Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** describes the methodology used to evaluate sensitivity and magnitude and how the judgements on sensitivity and magnitude of effect are combined to make an informed professional assessment on the significance of each visual effect. A summary of the approach is set out below.

Establishing Visual Sensitivity

- 3.4.9 In accordance with paragraph 6.31 of GLVIA3 (Ref 6), evaluations of the sensitivity of a visual receptor to change are based on consideration of the judgements on the value attached to the existing view (which is established and reported as part of the baseline) and the susceptibility of the receptor to changes in the view arising from the Project. These judgements are guided by the indicative criteria set out in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Judgements on value and susceptibility are recorded as either very high, high, medium or low.

Predicting the Magnitude of Change

- 3.4.10 In accordance with paragraph 6.38 of GLVIA3 (Ref 6), judgements on the magnitude of visual change are based on consideration of the judgements on size/scale, geographical extent, duration and reversibility of the predicted change. They are guided by the indicative criteria set out in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Judgements on the magnitude of visual change are recorded as large, medium, small and very small.

Judging Levels of Visual Effect and Significance

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

- 3.4.12 In accordance with paragraph 6.43 of GLVIA3 (Ref 6), the evaluations of the individual aspects set out above (susceptibility, value, size and scale, geographical extent, duration and reversibility) are considered together to provide an overall profile of each identified visual effect, guided by the indicative criteria set out in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 3.4.13 Professional judgement and experience are applied to take on board the many different variables which need to be considered, and given different weight according to site-specific and location-specific considerations.
- 3.4.14 Levels of visual effect are identified as major, moderate, minor, or negligible and the direction of change as beneficial or adverse. Effects judged to be moderate or major are considered significant in the context of the EIA Regulations (Ref 9). The general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels, which will be presented in the ES.

Assessment Assumptions and Limitations

- 3.4.15 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 7.
- 3.4.16 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

3.5 Baseline Conditions

Study Area

- 3.5.1 The Study Area for the preliminary Visual assessment is shown on **PEI Report Volume 2 Part B Section 7 Figure 3.1 Visual Receptors and Viewpoints**. The extent of the Study Area for the preliminary visual assessment (based on the same approach which will be adopted when defining the EIA study area), extends 5 km from the Limits of Deviation (LoD) for the new 400 kV overhead line¹. This distance was informed by the ZTV, the scale and appearance of the pylons (as detailed in **PEI Report Volume 2 Part A Chapter 5 Project Description**), field survey and professional judgment, and is considered sufficient to capture the likely significant visual effects of the Project. Although the ZTV indicates potential visibility beyond 5 km in certain directions, based on experience of similar schemes, significant visual impacts are highly unlikely to arise beyond this distance.

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

- 3.5.2 The preliminary cumulative Visual assessment Study Area extends to 10 km from the LoD for the new 400 kV overhead line. This radius was established to evaluate potential cumulative landscape impacts in conjunction with other committed developments.
- 3.5.3 The ZTV map, which incorporates screening elements such as buildings and woodland, is presented in **PEI Report Volume 2 Part B Section 7 Figure 3.2 Zone of Theoretical Visibility (ZTV)**. Based on pylon locations provided by design engineers, the ZTV identifies areas where the proposed 400 kV overhead line may theoretically be visible. It also helps determine the extent of the Study Area for the visual assessment. The theoretical visibility of individual pylons is limited to a maximum distance of 10 km, as beyond this distance the pylons would be almost imperceptible. This also covers the full extent of the Study Area for the cumulative assessment.
- 3.5.4 Further information on Study Area definition and ZTV production is presented in the Visual section of **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 3.5.5 To ensure that all likely significant effects are captured in the assessment, the extent of the Study Area will continue to be reviewed in the light of feedback received during statutory consultation, ongoing site surveys, and following the production of updated ZTVs as the Project develops.

Data Collection

- 3.5.6 The following data has been used to inform the baseline conditions:
- Ordnance Survey (OS) 1:10,000, 1:25,000, 1:50,000 and 1:250,000 base mapping;
 - OS Terrain® 50 mid-resolution and LIDAR Composite 2017 – 50 cm Digital Terrain Model (DTM);
 - Google Earth Pro aerial photography, and Google Maps Street View;
 - Base mapping from ArcGIS Map Service;
 - Open source Geographic Information System (GIS) data;
 - Fenland Local Plan (Adopted May 2014) (Ref 1);
 - King's Lynn & West Norfolk Borough Council Local Development Framework Core Strategy (Adopted July 2011) (Ref 3);
 - Natural England National Character Area Profiles (Ref 8); and
 - East Midlands Regional Landscape Character Assessment (Ref 10).
- 3.5.7 Site surveys were carried out during several visits under differing weather conditions between spring 2023 and summer 2024.

Existing Baseline

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

- i. **PEI Report Volume 2 Part B Section 7 Figure 3.1 Visual Receptors and Viewpoints;**
- ii. **PEI Report Volume 2 Part B Section 7 Figure 3.2 Zone of Theoretical Visibility (ZTV);**
- iii. **PEI Report Volume 3 Part B Appendix 3A Proposed Viewpoints; and**
- iv. **PEI Report Volume 3 Part B Appendix 3B Visual Baseline.**

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

Communities

3.5.10 The following communities, defined by parish jurisdictional boundaries are considered receptors within the Study Area for Section 7. The viewpoint numbers refer to the representative viewpoints used to inform the assessment.

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

- i. Marshland St James;
- ii. Terrington St Clement;
- iii. Terrington St John;
- iv. Tilney St Lawrence;
- v. Walpole (VP105, VP105);
- vi. Walpole Cross Keys;
- vii. Walpole Highway (VP103, VP104); and
- viii. West Walton (VP101, VP102).

3.5.12 Descriptions of the baseline visual amenity of these community areas are provided in **PEI Report Volume 3 Part B Appendix 3B Visual Baseline**. This includes a description of the community area and its key visual receptors as well as a judgment on the value of the views currently experienced.

Recreational Routes and Receptors

3.5.13 The following recreational routes and receptors have been identified within Section 7.

- i. National Cycle Route 1 – A 2000 km cycle route between Dover and John O’Groats up the eastern side of England and Scotland. The route is located within Sections 2, 4, 5, 6 and 7 of the Project. In Section 7, the route crosses the flat landscape between Wisbech and King’s Lynn. It follows the minor road network, passing beneath the existing 400 kV overhead line at Walton Highway. Pylons are visible from varying distances across the landscape for people using the cycle route in this Section. As views contribute to the landscape setting enjoyed by people using these sections of the cycle route, their susceptibility to the Project is high. Views are considered to be of medium value due to the presence of existing detractors. Viewpoint VP103 represents views from the route in Section 7.

Future Baseline

- 3.5.14 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.
- 3.5.15 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.
- 3.5.16 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 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 11), which apply to the routing of new overhead lines, and the 'Horlock Rules' (Ref 12), 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 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.
- 3.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the Visual assessment include:
- i. Locating the New Walpole B Substation close to areas of existing vegetation which would help to provide immediate screening and filtering for visual receptors; and
 - ii. Amendments to locations of access tracks and bellmouths, and the overhead line alignment to minimise loss of mature vegetation, which in turn would help to screen and filter views of the Project.
- 3.6.3 The Project has also committed to producing an Outline Landscape Environmental Management Plan (LEMP) (commitment GG06), which will set out the measures to

protect existing vegetation and details regarding the reinstatement and additional planting. This will also account for biodiversity net gain targets (see **PEI Report Volume 2 Part B Sections 1-7 Chapter 4 Ecology and Biodiversity**) and will accompany the ES and DCO application.

- 3.6.4 A detailed mitigation plan for Section 7 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 7 include:
- i. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.
 - ii. LV02: The contractor(s) will apply the relevant protective principles set out in BS 5837:2012: Trees in relation to design, demolition, and construction (Ref 14). 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 7 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 7 for Visual includes areas of woodland planting and tree planting on field boundaries around Walpole B Substation to provide visual screening and reduce the effects for visual receptors, integrating the substation into the surrounding landscape.
- 3.6.9 Any measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 3.6.10 Finalised additional mitigation measures will be detailed within the ES.

3.7 Preliminary Assessment of Effects

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

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

Likely Significant Effects

Construction

- 3.7.8 Changes in the character and perception of a view could occur during construction due to the physical effects on landscape character. Effects would arise from activities such as vegetation removal and presence of construction compounds, storage areas, access tracks, plant (including mobile cranes), vehicles and personnel. However, these effects would be temporary and reversible once the works are complete, and the site is reinstated².

Communities

- 3.7.9 Two communities have been identified as experiencing likely significant effects during construction of the Project in Section 7. All other communities would experience effects which have been judged to be not significant and are included in **Table 3.2**. There may be individual properties within community areas that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the Residential Visual Amenity Assessment (RVAA).

Walpole Highway

- 3.7.10 The community of Walpole Highway 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.
- 3.7.11 The parish would be indirectly affected by the construction of Walpole B Substation including construction compounds and access tracks which would be visible to the west. The parish would be directly impacted by the main access to the construction compound which is located on the edge of this community area from West Drove North and would introduce construction traffic into views. Works to modify the existing 4ZM 400 kV overhead line would also affect views with the presence of temporary pylons and construction of new line entries to the substation. Views out of the parish to the west would be affected by construction activities associated with the proposed 400 kV overhead line in the Refined Weston Marsh Substation Siting Zone to New

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.

Walpole B Substation Section (Section 6). Overall, this would result in a medium magnitude of change and likely significant effects.

West Walton

- 3.7.12 West Walton Parish is located within Section 7, however a large part of the community, including the settlements of West Walton and Ingleborough, are also located within Section 6. The preliminary assessment of the effects on people living and moving around West Walton Parish presented below considers the part of the Community that is located within the Study Area for Section 7.
- 3.7.13 The community of West Walton 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.
- 3.7.14 This community area would be directly impacted by construction of Walpole B Substation including construction compounds, access tracks, and approximately 500 m of overhead line including pylons SW82 and SW83 and would therefore have close proximity views of the Project, as well as indirectly affected by views towards construction activity associated with pylons in Section 6 to the west. Works to modify the existing 4ZM 400 kV overhead line would also affect views with the presence of temporary pylons and construction of new line entries to the substation. Works would be viewed in close proximity and overall this would result in a large magnitude of change and likely significant effects.
- 3.7.15 When considering the construction phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains large. This is due to the effects associated within construction of Walpole B Substation. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

Recreational Routes and Receptors

- 3.7.16 No significant effects for recreational routes or receptors have been identified in Section 7 during construction. Effects which have been judged to be not significant are included in **Table 3.2**.

Operation

- 3.7.17 The potential effects that 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 high-voltage electricity infrastructure and introduction of landscape elements such as trees and hedgerows. The effects would be long-term and are considered permanent.

Communities

- 3.7.18 Two communities have been identified as being significantly affected during operation of the Project in Section 7. All other communities would experience effects which have been judged to be not significant and are included in **Table 3.2**. There may be individual properties within community areas that would experience a greater effect from the Project. These will be identified and reported at the ES stage as part of the RVAA.

Walpole Highway

- 3.7.19 The community of Walpole Highway 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.
- 3.7.20 Views within Walpole Highway Parish would be affected by the presence of Walpole B Substation, while views out of the parish to the west would also be affected by pylons in Section 6 and 7. While the new 400 kV overhead line would add to the existing overhead lines in these westerly views, it would not be an entirely new element, moderating the scale of change. The most notable visual impact would come from the presence of Walpole B Substation. Although mitigation planting would help soften its effects over time, the substation would remain a visible feature in the landscape. Overall, this would result in a medium magnitude of change and likely significant effects.

West Walton

- 3.7.21 West Walton Parish is located within Section 7, however a large part of the community, including the settlements of West Walton and Ingleborough, are also located within Section 6. The preliminary assessment of the effects on people living and moving around West Walton Parish presented below considers the part of the Community that is located within the Study Area for Section 7.
- 3.7.22 The community of West Walton 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.
- 3.7.23 Views from this parish would be affected by the presence of Walpole B Substation and approximately 500 m of overhead line including pylons SW82 and SW83 and would therefore have close proximity views of the Project, as well as by pylons in Section 6 to the west of the River Nene. There would be close-range views of the new substation from Strattons Farm and from properties on West Drove North. While mitigation planting would help reduce the substation's visual impact over time, it would remain noticeable to those nearby. Views across and out from West Walton already feature several existing overhead lines, meaning the Project would not fundamentally alter the overall visual character of the parish but overall, the changes introduced would still result in a medium magnitude of change and likely significant effects.
- 3.7.24 When considering the operation phase of the Project in its entirety across all Sections, the overall magnitude of predicted change remains medium. Although Walpole B Substation may be located within this parish, mitigation planting would help to screen views from visual receptors within the community. When combined with the medium value and high susceptibility, the Project would give rise to a likely significant effect.

Recreational Routes and Receptors

- 3.7.25 No significant effects for recreational routes or receptors have been identified in Section 7 during operation. Effects which have been judged to be not significant are included in **Table 3.2**.

Likely Non-Significant Effects

- 3.7.26 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 7

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
Communities					
Marshland St James	Indirectly affected by the construction and operation of Walpole B Substation and pylons in Section 6 and 7.	Value of Views – Medium Susceptibility – High	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - very small	Operation - not significant	At 3.5 km, the new overhead line may be perceptible but would be seen in the context of the existing overhead lines which pass through this community area. The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Terrington St Clement	Indirectly affected by the construction and operation of Walpole B Substation and pylons in Sections 6 and 7.	Value of Views – Medium Susceptibility – High	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - very small	Operation - not significant	At 4.5 km, the new overhead line may be perceptible but would be seen in the context of

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					the existing overhead lines which pass through and to the south of this community area. The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Terrington St John	Indirectly affected by the construction and operation of Walpole B Substation and pylons in Sections 6 and 7.	Value of Views – Medium Susceptibility – High	Construction – very Small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - very small	Operation - not significant	At 2.8 km, the new overhead line may be perceptible but would be seen in the context of the existing overhead lines which pass through and to the south of this community area. The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.
Tilney St Lawrence	Indirectly affected by the construction and operation of Walpole B Substation and pylons in Sections 6 and 7.	Value of Views – Medium Susceptibility – High	Construction – very Small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - very small	Operation - not significant	At 4.2 km, the new overhead line may be perceptible but would be seen in the context of

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>the existing overhead lines which pass through and to the south of this community area.</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>
Walpole (VP105, VP106)	Indirectly affected by the construction and operation of Walpole B Substation and pylons in Sections 6 and 7.	Value of Views – Medium Susceptibility – High	Construction - small	Construction – not significant	<p>Construction will be perceptible from the majority of the community area due to the open views, however not in close proximity to the majority of visual receptors. There may be glimpses of taller equipment associated with the works to the existing overhead line and substation but this would be temporary in nature. Access to construction passes through the community area but would be temporary in nature.</p> <p>The magnitude of change is considered to be small and effects on this community area would likely be not significant during construction.</p>
			Operation - small	Operation - not significant	<p>The new overhead line may be perceptible but would be seen in the context of the numerous 400 kV and 132 kV which pass through this community area, radiating from the existing Walpole Substation. Proposed mitigation planting would help to screen and filter views of the substation, with the substation potentially visible to a small number of receptors to the very south of the area. The Project would not fundamentally change the character of views across the wider community area which already</p>

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					has views of several overhead lines and a substation. The magnitude of change is considered to be small and effects on this community area during operation would likely be not significant.
Walpole Cross Keys	Indirectly affected by the construction and operation of Walpole B Substation and pylons in Sections 6 and 7.	Value of Views – Medium Susceptibility – High	Construction – very small	Construction – not significant	The tops of taller construction equipment may be perceptible but would be very temporary in nature and at distance. The magnitude of change is considered to be very small and effects on this community area during construction would likely be not significant.
			Operation - very small	Operation - not significant	At 4.5 km, the new overhead line may be perceptible but would be seen in the context of the existing overhead lines which pass to the south of this community area. The magnitude of change is considered to be very small and effects on this community area during operation would likely be not significant.

Recreational Receptors

National Cycle Route 1	Indirectly affected by construction and operation of Walpole B Substation and pylons in Sections 6 and 7.	Value of Views – Medium Susceptibility – High	Construction – small	Construction – not significant	Views of access roads and working areas associated with the works to the existing 400 kV overhead line and Walpole B Substation would be largely filtered by roadside vegetation and vegetation around Walton Highway in Section 7. Taller equipment may be visible above vegetation but would be temporary in nature.
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Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
					As only a very short section would be in close proximity and views filtered by vegetation, the magnitude of change is considered to be small and effects on people using the cycle route would likely be not significant during construction.
			Operation - small	Operation - not significant	<p>Although the Project would introduce pylons into views from the cycle route within Sections 6 and 7, these would be seen in the context the numerous 400 kV and 132 kV which radiate from the existing Walpole Substation. Proposed mitigation planting would help to screen and filter views of the substation. The Project would not fundamentally change the character of views from the cycle route.</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>

3.8 Monitoring

- 3.8.1 No Visual monitoring is currently proposed for Section 7, 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 Fenland District Council. (2014). Fenland Local Plan (Adopted 2014). [online] Available at: https://www.fenland.gov.uk/media/10010/Fenland-Local-Plan/pdf/Fenland_Local_Plan1.pdf [Accessed 19 December 2024].
- Ref 2 Fenland District Council. (2022). Fenland Local Plan 2021 – 2040 Draft Local Plan Consultation. [online] Available at: https://fenland.gov.uk/media/18814/Draft-Local-Plan-August-2022/pdf/Draft_Local_Plan_for_Consultation_Aug_2022.pdf [Accessed 19 December 2024].
- Ref 3 Borough Council of King's Lynn & West Norfolk. (2025). King's Lynn and West Norfolk Local Plan 2021-2040 (Adopted March 2025) [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 24 April 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 18 October 2024].
- Ref 5 National Grid Electricity Transmission. (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 6 Landscape Institute and Institute for Environmental Management and Assessment (IEMA) (2013) Guidelines for Landscape and Visual Impact Assessment – 3rd Edition (GLVIA3).
- Ref 7 Landscape Institute. (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 8 Natural England. (2024). National Character Area Profiles [online]. Available at: <https://nationalcharacterareas.co.uk/> [Accessed 20 September 2024].
- Ref 9 His Majesty's Stationary Office (HMSO) (2017), Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) [online] Available at: <https://www.legislation.gov.uk/uksi/2017/572/contents> [Accessed 20 September 2024].
- Ref 10 Natural England. (2010). East Midlands Regional 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 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 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 14 British Standard (BS) 5837:2012: Trees in relation to Design, Demolition and Construction – Recommendations.

4. Ecology and Biodiversity

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4. Ecology and Biodiversity

4.1 Introduction

- 4.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Ecology and Biodiversity assessment for the New Walpole B Substation Section (Section 7) 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 7 (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 7 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 7, based upon the assessment completed to date (section 4.7); and
 - viii. An outline of the likely monitoring requirements in relation to Ecology and Biodiversity (section 4.8).
- 4.1.2 Further supporting information is set out in **Table 4.1** below, including supporting figures and technical appendices.

Table 4.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 7 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 Non-Statutorily Designated for their County Biodiversity Importance</p>
PEI Report Volume 3 Part B Section 7 Appendix 4A Bird Survey Data 2024	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 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, including permanent infrastructure, temporary construction works, and operational activities.
PEI Report Volume 3 Part A Appendix 2A Key Legislation	A list of identified environmental legislation considered relevant to the Project, which will be updated and amended as required to inform of the Environmental Statement (ES).
PEI Report Volume 3 Part A Appendix 2B National and Regional Planning Policy	A list of National and regional policies generally applicable to the assessment principles which underpin the PEI Report and ES.
PEI Report Volume 3 Part A Appendix 2Ci Local Plan Policy: Section Specific	An outline of the potentially relevant local planning policy allocations affecting each of the specific sections of the Project.
PEI Report Volume 3 Part A Appendix 2Cii Local Plan Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	Provides a summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.

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

4.1.3 There are 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 7 Chapter 6 Water Environment and Flood Risk** includes an assessment of effects upon sensitive surface water features, including Water Framework Directive (WFD) waterbodies, which are relevant to the assessment of impacts upon important ecological features, such as wetland Habitats of Principal Importance (HPI) and aquatic fauna.
- ii. **PEI Report Volume 2 Part B Section 7 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 7 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 7 Chapter 10 Noise and Vibration** includes detail of the potential noise and vibration effects within Section 7 which are used to inform assessment of effects upon sensitive ecological features.
- v. **PEI Report Volume 2 Part B Section 7 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 7 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 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, detail of which is 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. King's Lynn & West Norfolk Borough Council Local Plan 2021-2040 (Adopted March 2025) (Ref 1):
 - Policy LP19 Environmental Assets - Green Infrastructure, Landscape character, Biodiversity and Geodiversity: which notes that proposals incorporating nature-based solutions such as natural capital and/or green infrastructure to protect and enhance biodiversity will be encouraged. This policy stipulates that development should comply with the mitigation hierarchy, to avoid, mitigate or compensate adverse impacts on biodiversity, as well as seeking to enhance sites through the creation of features of new biodiversity interest.

Proposals for development will be informed by, and seek opportunities to reinforce the distinctive character areas and potential habitat creation areas identified in the King's Lynn and West Norfolk Landscape Character Assessment and other character assessments.
 - Policy LP23 Green Infrastructure: all new development must ensure there is no adverse effect on a European Protected Site through the provision of appropriate measures, in accordance with Policy LP27. All development will contribute proportionally to the delivery of green infrastructure;
 - Policy LP27 Habitats Regulations Assessment (HRA): proposals for development must not adversely affect the integrity of European sites either alone, or in-combination with other plans and projects, unless the tests set out under the Conservation of Habitats and Species Regulations (2017) (as amended) are met.

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 2) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). The scope has also been informed by consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Ecology and Biodiversity chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 4.3.2 Non statutory consultation feedback 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 7 includes consideration of the effects of construction and operation/maintenance of the Project. A summary of the sensitive receptors and potential impacts considered is provided below:
- i. Sites statutorily designated for their biodiversity value – habitat loss, habitat modification/degradation, fragmentation, and direct and indirect changes in surface water quality and quantity, and effects on qualifying features/notified species;
 - ii. Sites non-statutorily designated for their biodiversity value – habitat loss, habitat modification/degradation, fragmentation and direct and indirect changes in surface water quality and quantity, and effects on qualifying features/notified species;
 - iii. Ancient Woodland - habitat loss, habitat modification and fragmentation and change in surface water quality and air quality;
 - iv. Aquatic and terrestrial habitats present within the Ecology and Biodiversity Study Area, including HPI - habitat loss, habitat modification, fragmentation and change to surface water quality or flows;
 - v. Protected or notable species (e.g. Species of Principal Importance (SPIs)) which are either confirmed present or potentially present within the Section 7 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 (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal and Marine (Ref 4).
- 4.4.3 Where possible, nationally recognised standard survey methods have and will continue to be used to inform biodiversity evaluation and impact assessment. The explanation of the methods and status of surveys are summarised in **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 7.
- 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 Area and Survey Areas

- 4.5.1 The desk Study Areas for the Ecology and Biodiversity assessment of Section 7 have been informed by published guidance and professional judgement. They include the area within the draft Order Limits and a zone of potential influence. This zone represents the areas within which effects could reasonably occur as a result of the Project and associated activities. It should be noted that in relation to each assessed receptor, the Project's zone of influence can vary, for example depending on the importance or sensitivity of the identified designated ecological sites. This could for example relate to where the features that define a given site are mobile or there could be connectivity between the proposed Project and a given site. The Study Areas will be reviewed and, as appropriate, refined for the assessment presented in the ES.
- 4.5.2 The desk Study Areas for different ecological features (hereafter referred to as 'the Study Areas') relevant to this assessment are set out in **Table 4.2** below.
- 4.5.3 The field Survey Areas for the Ecology and Biodiversity assessment of Section 7 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 (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 7

Study Area (distance from Section 7 draft Order Limits)	Feature
30 km	Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites where bats or bird species with large foraging ranges are noted as, or one of, the qualifying features.
10 km	Statutory designated sites of international nature conservation importance e.g. SAC, SPA and Ramsar sites (as well as proposed or potential sites).
5 km	Statutory designated sites of up to national conservation importance e.g. Sites of Special Scientific Interest (SSSI) (also referencing Natural England Impact Risk Zones for SSSIs on the 'Multi-Agency Geographic Information for the Countryside' (MAGIC) website (Ref 5), National Nature Reserves (NNR) and Local Nature Reserves (LNRs)).

Study Area (distance from Section 7 draft Order Limits)	Feature
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. HPis (Ref 6).
2 km	Records of protected and notable species received from Local Environmental Records Centres (LERC), including general ornithological records and INNS.

Data Collection

- 4.5.5 Desk study data sources have comprised LERCs including Cambridgeshire and Peterborough Environmental Records Centre (CPERC) and Norfolk Biodiversity Information Services (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 7) for information on statutory designated sites of nature conservation interest;
 - the MAGIC website (Ref 5) 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 8) 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 9); and
 - EA Catchment Data Explorer for data on WFD water bodies and water catchments (Ref 10).
- 4.5.7 In addition to these desk-based data, field survey data are in the process of being collected, and this work is 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 the surveys undertaken. This is due to specific survey

requirements (such as optimal timing of surveys) and/or where only partial access to land has been secured in advance of the PEI Report being developed. The survey data being collected is as follows:

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

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

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

Existing Baseline

4.5.10 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 7 Figure 4.1 Sites Statutorily Designated for their International Biodiversity Importance;**
- ii. **PEI Report Volume 2 Part B Section 7 Figure 4.2 Sites Statutorily designated for their National and County Biodiversity Importance;**
- iii. **PEI Report Volume 2 Part B Section 7 Figure 4.3 Sites Non-Statutorily Designated for their County Biodiversity Importance;** and
- iv. **PEI Report Volume 3 Part B Section 7 Appendix 4A Bird Survey Data 2024.**

Section Overview

4.5.11 A description of the works within Section 7 is provided within **PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project**. In summary, Section 7 includes the new Walpole B substation, an approximately 0.5 km long section of the new 400 kV overhead line and modifications

to approximately 1.2 km of existing 4ZM 400 kV overhead line and a Cable Sealing End (CSE) compound located to the immediate east of the proposed new Walpole B Substation. The proposed works are located to the east of the River Nene between the settlements of Walton Highway and Walpole St Peter.

- 4.5.12 The habitats within this Section are dominated by arable farmland with boundary hedgerows, ditches and watercourses. There are scattered trees associated with the urban habitats of Ingleborough and Mill Road and Walton Highway. Land within the Section 7 Study Area is below 30 m above sea level.

Designated Sites

- 4.5.13 No site (nor part of any site) statutorily or non-statutorily designated for its biodiversity value is present within the draft Order Limits for Section 7. There are however a small number of 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 7 Study Area is provided in **Table 4.3**, which includes a summary of the main qualifying features and their relative distances from the Section 7 draft Order Limits at the closest point.
- 4.5.14 The Wash SPA and Ramsar site and The Wash and North Norfolk Coast SAC fall within 10 km of the Section 7 draft Order Limits. In addition, The Nene Washes SPA and Ramsar site, and Ouse Washes 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 7 draft Order Limits.
- 4.5.15 There are no nationally designated sites within 5 km of the Section 7 draft Order Limits. However, the Impact Risk Zones (IRZs) for Islington Heronry SSSI and Wiggshall St Germans SSSI partially overlap with the Section 7 draft Order Limits.
- 4.5.16 There are four sites non-statutorily designated for their biodiversity value as County Wildlife Sites (CWSs) within the 2 km Study Area.

Table 4.3 Sites designated for their biodiversity value, their qualifying features and distance from the draft Order Limits of Section 7

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Internationally Designated (Statutory)				
Nene Washes	SPA	1,519	<p>Qualifying features of the SPA:</p> <ul style="list-style-type: none"> • Bewick's swan (<i>Cygnus columbianus bewickii</i>) – non-breeding • Black-tailed godwit (<i>Limosa limosa limosa</i>) – breeding • Gadwall (<i>Mareca strepera</i>) – breeding • Gadwall (<i>Mareca strepera</i>) – non-breeding • Garganey (<i>Anas querquedula</i>) – breeding • Pintail (<i>Anas acuta</i>) – non-breeding • Shoveler (<i>Spatula clypeata</i>) – breeding • Shoveler (<i>Spatula clypeata</i>) – non-breeding • Teal (<i>Anas crecca</i>) – non-breeding Wigeon (<i>Mareca penelope</i>) – non-breeding 	13.9 km south-west
Nene Washes	Ramsar site	1,519	<p>Designated under:</p> <p>Ramsar Criterion 2: Important assemblage of nationally rare breeding birds. A wide range of raptors throughout the year. Nationally scarce plants and invertebrates.</p> <p>Ramsar Criterion 6: Species/populations occurring at levels of international importance.</p> <p>Species with peak counts in winter:</p> <p>Bewick's swan (<i>Cygnus columbianus bewickii</i>)</p> <p>Species/populations identified subsequent to designation for possible future consideration under Criterion 6</p> <p>Species with peak counts in spring/autumn:</p> <p>Black-tailed godwit (<i>Limosa limosa islandica</i>)</p>	13.9 km south-west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> Northern pintail (<i>Anas acuta</i>) 	
Ouse Washes	SPA	2,403	<p>Qualifying features of the SPA include:</p> <ul style="list-style-type: none"> Bewick's swan (<i>Cygnus columbianus bewickii</i>) – non-breeding Black-tailed godwit (<i>Limosa limosa limosa</i>) – breeding Gadwall (<i>Mareca strepera</i>) – breeding Garganey (<i>Anas querquedula</i>) – breeding Hen harrier (<i>Circus cyaneus</i>) – non-breeding Mallard (<i>Anas platyrhynchos</i>) – breeding Pintail (<i>Anas acuta</i>) – non-breeding Ruff (<i>Calidris pugnax</i>) – breeding Shoveler (<i>Spatula clypeata</i>) – breeding Shoveler (<i>Spatula clypeata</i>) – non-breeding Teal (<i>Anas crecca</i>) – non-breeding Whooper swan (<i>Cygnus cygnus</i>) – non-breeding Wigeon (<i>Mareca penelope</i>) – non-breeding Breeding bird assemblage Waterbird assemblage 	16.4 km south-west
Ouse Washes	Ramsar site	2,403	<p>Designated under:</p> <p>Ramsar Criterion 1: one of the most extensive areas of seasonally-flooding washland of its type in Britain.</p> <p>Ramsar Criterion 2: The site supports several nationally scarce plants, including small water pepper (<i>Polygonum minus</i>), whorled water-milfoil (<i>Myriophyllum verticillatum</i>), greater water parsnip (<i>Sium latifolium</i>), river waterdropwort (<i>Oenanthe fluviatilis</i>),</p>	16.4 km south-west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<p>fringed water-lily (<i>Nymphoides peltata</i>), long-stalked pondweed (<i>Potamogeton praelongus</i>), hair-like pondweed (<i>Potamogeton trichoides</i>), grass-wrack pondweed (<i>Potamogeton compressus</i>), tasteless water-pepper (<i>Polygonum mite</i>) and marsh dock (<i>Rumex palustris</i>). Invertebrate records indicate that the site holds relict fenland fauna, including the British Red Data Book species large darter dragonfly (<i>Libellula fulva</i>) and the rifle beetle (<i>Oulimnius major</i>). The site also supports a diverse assemblage of nationally rare breeding waterfowl associated with seasonally-flooding wet grassland.</p> <p>Ramsar Criterion 5: Assemblages of international importance Species with peak counts in winter: 59133 waterfowl (5 year peak mean 1998/99-2002/2003)</p> <p>Ramsar Criterion 6: Species/populations occurring at levels of international importance. Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Bewick's swan (<i>Cygnus columbianus bewickii</i>) • Pintail (<i>Anas acuta</i>) • Shoveler (<i>Spatula clypeata</i>) • Teal (<i>Anas crecca</i>) • Whooper swan (<i>Cygnus cygnus</i>) • Wigeon (<i>Mareca penelope</i>) • Gadwall (<i>Anas strepera strepera</i>) <p>Species/populations identified subsequent to designation for possible future consideration under Criterion 6 Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Mute swan (<i>Cygnus olor</i>) • Common pochard (<i>Aythya ferina</i>) 	

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> Black-tailed godwit (<i>Limosa limosa islandica</i>) 	
The Wash	SPA	63,135	<p>Qualifying features of the SPA:</p> <ul style="list-style-type: none"> Bar-tailed godwit (<i>Limosa lapponica</i>) – non-breeding Bewick's swan (<i>Cygnus columbianus</i>) – non-breeding Black-tailed godwit (<i>Limosa limosa islandica</i>) – non-breeding Common scoter (<i>Melanitta nigra</i>) – non-breeding Common tern (<i>Sterna hirundo</i>) – breeding Curlew (<i>Numenius arquata</i>) – non-breeding Dark-bellied brent goose (<i>Branta bernicla bernicla</i>) – non-breeding Dunlin (<i>Calidris alpina alpina</i>) – non-breeding Gadwall (<i>Mareca strepera</i>) – non-breeding Wigeon (<i>Mareca penelope</i>) – non-breeding Goldeneye (<i>Bucephala clangula</i>) – non-breeding Grey plover (<i>Pluvialis squatarola</i>) – non-breeding Knot (<i>Calidris canutus</i>) – non-breeding Little tern (<i>Sternula albifrons</i>) - breeding Oystercatcher (<i>Haematopus ostralegus</i>) – non-breeding Pink-footed goose (<i>Anser brachyrhynchus</i>) – non-breeding Pintail (<i>Anas acuta</i>) – non-breeding Redshank (<i>Tringa totanus</i>) – non-breeding Sanderling (<i>Calidris alba</i>) – non-breeding Shelduck (<i>Tadorna tadorna</i>) – non-breeding Turnstone (<i>Arenaria interpres</i>) – non-breeding Waterbird assemblage 	6.6 km north

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
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>Species with peak counts in winter:</p> <p>292541 waterfowl (5 year peak mean 1998/99-2002/2003)</p> <p>Ramsar Criterion 6 – species/populations occurring at levels of international importance.</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Oystercatcher (<i>Haematopus ostralegus</i>) – Wintering • Grey plover (<i>Pluvialis squatarola</i>) - Wintering • Knot (<i>Calidris canutus</i>) – Wintering • Sanderling (<i>Calidris alba</i>) • Curlew (<i>Numenius arquata arquata</i>) – Breeding • Redshank (<i>Tringa totanus</i>) • 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>) 	6.6 km north

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
			<ul style="list-style-type: none"> • 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 	
The Wash and North Norfolk Coast	SAC	107,718	<p>Designated features of the SAC:</p> <ul style="list-style-type: none"> • H1110 Sandbanks which are slightly covered by sea water all the time • H1140 Mudflats and sandflats not covered by seawater at low tide • H1150 Coastal lagoons • H1160 Large shallow inlets and bays • H1170 Reefs • H1310 Salicornia and other annuals colonising mud and sand • H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) • H1420 Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) • S1355 Otter, <i>Lutra lutra</i> • S1365 Harbour (common) seal, <i>Phoca vitulina</i> 	6.6 km north

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
Nationally Designated (Statutory)				
Islington heronry	SSSI	1.2	A small, isolated stand of mature oaks surrounded by fenland which supports the largest colony of grey herons (<i>Ardea cinerea</i>) in Norfolk. There is an average of about 80 occupied nests each year and the adjacent dykes provide ideal feeding conditions for the birds. Several species of woodland birds, such as great spotted woodpecker (<i>Dendrocopos major</i>), are also present in the wood and represent isolated populations separated from nearby woods by many kilometres of farmland.	7.2 km east
Wiggenhall St-Germans	SSSI	5.10	One of the first sites in Britain to be investigated for sea-level studies using pollen and foraminifera analyses. The sequence of deposits is dominated by fine-grained clastic sediments intercalated by three peat layers and with a thin basal peat. The site is important both historically and for future research. Detailed analysis of the whole sequence of deposits together with radiocarbon dating will provide much useful palaeoenvironmental and chronological information.	8.7 km east
County Designated (Non-statutory)				
North Level Main Drain at Tydd Gote	County Wildlife Site (CWS)	11.5	The site qualifies as CWS because it supports at least 0.05 ha of NVC MG5 grassland. It also supports frequent numbers of at least 3 strong neutral grassland indicator species and a population of a locally rare plant species, autumn lady's-tresses (<i>Spiranthes spiralis</i>).	1.7 km north-west
River Nene	County Wildlife Site (CWS)	N/A	A major river which is not grossly modified by canalisation. At least three species of pondweed (<i>Potamogeton</i>) which are nationally scarce are found within along with other species rare in the county.	1.6 km west

Site	Status	Area (ha)	Brief description of site	Distance and direction from draft Order Limits
The White House	County Wildlife Site (CWS)	1.15	Site is listed as traditional orchard habitat.	1.5 km east
Honnington House Farm	CWS	10.11	Grazing marsh is present at this location.	2 km west

Habitats

Habitats of Principal Importance

4.5.17 The following HPI have been identified within the Section 7 Study Area:

- i. Traditional orchard; and
- ii. Hedgerows.

Ancient Woodland

4.5.18 Based upon available data sources, no ancient woodland is present within the Section 7 Study Area.

Terrestrial Habitats

4.5.19 Where the UKHab surveys have been completed within the Section 7 Survey Area, the main habitat area identified was cropland, which is of negligible ecological importance.

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

4.5.21 The proposed site of the substation consists of cropland. Access routes along the alignment of the existing overhead lines to the north and south of the substation are also located within agricultural areas, with the linear nature of these elements crossing a number of hedgerows and small watercourses which are of Local importance.

4.5.22 Some areas of intensively farmed orchard were identified within the Study Area which do not meet the criteria for Traditional Orchard HPI and are of negligible importance. Three parcels of Traditional Orchard were present outside the draft Order Limits adjacent to the southern boundary of Section 7, where access routes and haul routes are proposed nearby. Traditional Orchard is a HPI and is assessed as being of County importance.

4.5.23 Other parcels of modified grassland recorded in the east of the Study Area where an existing campsite is located were assessed to be of negligible importance.

4.5.24 Survey work will continue in 2025 to characterise the terrestrial habitat types which are present within the Section 7 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.

Aquatic Habitats

4.5.25 No Main Rivers are located within the Section 7 Study Area. A network of smaller ditches/drains are present within the Section 7 Study Area which are of Local importance and are traversed by the substation and/or associated overhead line routes.

4.5.26 No ponds were present within the draft Order Limits, however a small number were located within the Survey Area to the south and east and were considered to be of Local importance.

- 4.5.27 Survey work will continue through 2025 to characterise the aquatic habitat types which are present within the Section 7 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

- 4.5.28 No WFD waterbodies are crossed by the Section 7 draft Order Limits.
- 4.5.29 Further details of the water environment baseline are provided within **PEI Report Volume 2 Part B Section 7 Chapter 6 Water Environment and Flood Risk**.

Protected and Notable Species

- 4.5.30 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 7 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

- 4.5.31 The habitats within the Section 7 Survey Area largely comprise agricultural land which is of limited value to terrestrial invertebrates. However, traditional orchard and hedgerow are also recorded within the Section 7 draft Order Limits and provide potential for a more diverse assemblage of terrestrial invertebrates.
- 4.5.32 Any areas within the Section 7 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 full assessment reported in the ES, and any specific mitigation requirements.

Great Crested Newt (GCN)

- 4.5.33 The desk study records indicate presence of GCN at ponds beyond the draft Order Limits, with the nearest record north of Tydd St Giles, which lies approximately 3.5 km west from the Section 7 draft Order Limits.
- 4.5.34 GCN surveys to date have included Habitat Suitability Index (HSI) assessments and analysing water samples from ponds for great crested newt eDNA.¹
- 4.5.35 The results of the HSI indicate poor suitability of the waterbodies in this area.
- 4.5.36 Of the ten waterbodies within the 500 m Survey Area, only one was accessible for eDNA survey which returned a negative result.

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.

- 4.5.37 Seasonal survey work will continue in 2025 to confirm the status of great crested newt and the survey results will be used to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

Reptiles

- 4.5.38 Desk study research has indicated that there are no records for reptile species within the Section 7 Study Area.
- 4.5.39 The traditional orchard and hedgerow habitats in the Section 7 Study Area have potential for common reptiles, however, the general habitats within the remaining Section 7 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 7 is considered to be of no more than Local importance for reptile species.
- 4.5.40 Survey work will continue in 2025 to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

Wintering birds

- 4.5.41 The nearest Vantage Point (VP) to Section 7 is located 5.8 km to the north of the Section. Representative transects for the Project at a route-wide scale did also not cover Section 7. Consequently, there is no data within the Survey Area for Section 7.
- 4.5.42 Further avian work was undertaken during winter 2024/25 and will be analysed (along with all of the avian survey data) to inform the full assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES.

Breeding birds

- 4.5.43 Surveys for breeding birds were carried out between March 2024 and July 2024. Transect 16 is the only transect within Section 7 Study Area.
- 4.5.44 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 12) Section 41 species (Ref 13), and Schedule 1 species of the Wildlife and Countryside Act 1981.
- 4.5.45 Breeding season data, showing the species and the numbers of territories recorded are presented in **Section 7 Appendix 4A Bird Survey Data 2024, Table 4A.1**. Rook (*Corvus frugilegus*) was the most abundant species recorded nesting, followed by skylark (*Alauda arvensis*). Other farmland specialists recorded included corn bunting (*Emberiza calandra*), linnet (*Linaria cannabina*), whitethroat (*Curruca communis*), and yellowhammer (*Emberiza citrinella*). Five Red-listed species and eight Amber-listed species were recorded. No Schedule 1 species were recorded. Seven Section 41 species were recorded.
- 4.5.46 All of the recorded species are considered to be of Local importance (see Section 7 Appendix 4A Bird Survey Data 2024, Table 4A.2).
- 4.5.47 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 7 Appendix 4A Bird Survey Data 2024 are incomplete. Once available, the full survey results will be presented and assessed within the ES.

- 4.5.48 It is important to note that this section considers the importance of a species in the context of the geographical extent of Section 7 only. An initial route-wide assessment is included in **PEI Report Volume 2 Part C Route-wide Chapter 3 Ecology and Biodiversity**.

Badger

- 4.5.49 Desk study records included fewer than 10 records of badger within the Section 7 Study Area. These included recorded setts and badger casualties on roads throughout the area.
- 4.5.50 Surveys for badger were conducted between November 2024 and March 2025 and incidental records of badger field signs have been recorded during other species and habitat surveys.
- 4.5.51 No badger setts were recorded within the Section 7 Survey Area. The results of the badger surveys (including the locations of the setts) will be presented in a Confidential Appendix to the ES.
- 4.5.52 Given its common status and widespread distribution within the county, badger is assessed as being of Local importance.
- 4.5.53 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

- 4.5.54 Local Records Centre data for the Section 7 Study Area returned no records of bat roosts.
- 4.5.55 There are no records for European Protected Species Mitigation Licenses (EPSML) for bats within the Section 7 Study Area.
- 4.5.56 Initial surveys for bats were carried out between May and October 2024.
- 4.5.57 The field surveys completed to date have confirmed that bat species present within the Section 7 Survey Area include common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Myotis sp., Nathusius' pipistrelle (*Pipistrellus nathusii*), noctule (*Nyctalus noctula*) and brown long-eared (*Plecotus auritus*). The activity surveys indicate that hedgerows and woodland edges are being utilised by foraging and commuting bats within the Survey Area.
- 4.5.58 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 will be presented within the ES. It should be noted that at the time of writing this PEI Report, results from the winter 2024/2025 surveys were not available.
- 4.5.59 At this stage no buildings or structures are known to be within the Section 7 draft Order Limits. If any buildings or structures are identified within the order limits, and potential impacts to bats identified, these will be surveyed accordingly.

Otter

- 4.5.60 Desk study records did not include any records of otter within the Section 7 Study Area.
- 4.5.61 Initial surveys for otter were carried out between March 2024 and October 2024.
- 4.5.62 Within the Section 7 Survey Area, no breeding or resting sites were recorded.
- 4.5.63 Where suitable otter habitat exists, surveys will be completed to confirm presence/absence.
- 4.5.64 Given its recovering status and importance within the county, where otter is present, the species is assessed as being of County importance.
- 4.5.65 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

- 4.5.66 The waterbodies located within the Section 7 Study Area are limited to ditches along field boundaries and no notable and/or protected fish species were identified within the desk study.
- 4.5.67 Survey work will be conducted in 2025 to confirm the status of fish within the Section 7 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

- 4.5.68 No notable and/or protected aquatic macroinvertebrates species were identified within the Section 7 Study Area based upon the completed desk study.
- 4.5.69 Survey work will be undertaken in 2025 to confirm the status of aquatic macroinvertebrates, to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented within the ES.

Aquatic Macrophytes

- 4.5.70 No notable and/or protected aquatic macrophyte species were identified within the Section 7 Study Area based upon the completed desk study.
- 4.5.71 Survey work will be undertaken in 2025 to confirm the status of aquatic macrophytes, to inform the full assessment of impacts and effects and the details of appropriate mitigation measures to be presented within the ES.

Water Vole

- 4.5.72 Desk study records included fewer than 10 records of water vole within the Section 7 Study Area. These included sightings of individuals throughout the area.
- 4.5.73 Initial surveys for water vole were carried out between March 2024 and October 2024.
- 4.5.74 Within the Section 7 Survey Area, water vole were found to be present in at least four locations along watercourses including Harfords Dyke. Evidence included numerous field signs of water vole including latrines, burrows and feeding signs.

- 4.5.75 Where suitable water vole habitat exists, surveys will be completed to confirm presence/absence. Given its declining status and importance within the county, where water vole is present, the species is assessed as being of County importance.
- 4.5.76 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

- 4.5.77 The desk study returned records for brown hare (*Lepus europaeus*) and hedgehog (*Erinaceus europaeus*) within the Section 7 Study Area.
- 4.5.78 Habitats within the Section 7 Survey Area are suitable for SPI including brown hare and hedgehog which are of Local importance.
- 4.5.79 Survey work will continue in 2025 to inform the design of any appropriate mitigation and the assessment of impacts and effects presented within the ES.

Invasive Non-Native Species

- 4.5.80 Desk study research has identified the presence of a total of three INNS plants within the Section 7 Study Area. These are: Nuttall's waterweed (*Elodea nuttallii*), Japanese rose (*Rosa rugosa*) and variegated yellow archangel (*Lamium galeobdolon* subspecies *argentatum*), all of which are listed under Schedule 9 of the Wildlife and Countryside Act 1981 with the exception of Nuttall's waterweed which is listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019.
- 4.5.81 The desk study also identified the presence of four animal INNS within the Section 7 Study Area: Egyptian goose (*Alopochen aegyptiaca*), grey squirrel (*Sciurus carolinensis*), American mink (*Mustela vison*) and Muntjac deer (*Muntiacus reevesi*). All of these species are listed on Schedule 9 of the Wildlife and Countryside Act; and Egyptian goose, grey squirrel and Muntjac deer are additionally listed on the Invasive Alien Species Order.
- 4.5.82 No specific INNS survey has been undertaken; however field observations have been made during other ecological surveys undertaken within the Survey Area. No INNS have been recorded within the Section 7 Survey Area to date.
- 4.5.83 Further planned habitat and species surveys, such as those for aquatic habitats and invertebrates, will include the recording of invasive non-native species. The results of these further surveys will be presented in the ES.

Future Baseline

- 4.5.84 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.
- 4.5.85 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and**

Scope Annex A Developments for Consideration Within the Future Baseline.

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

- 4.5.86 Habitats within the Section 7 draft Order Limits and Study Area comprise mainly arable farmland currently under cultivation.
- 4.5.87 In addition to the main habitat coverage, field boundaries are commonly defined by hedgerows, ditches and farm tracks.
- 4.5.88 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.
- 4.5.89 Relative to the current baseline, the value of priority ecological features present within the Section 7 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.
- 4.5.90 Due to development pressure year on year within the wider landscape, protected and notable species and habitats are likely to remain priorities for conservation within future baseline scenarios.

4.6 Design, Control and Additional Mitigation Measures

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

Design Mitigation Measures

- 4.6.2 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 14) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 15) which apply to design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 16) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 4.6.3 The Section 7 draft Order Limits on which this assessment is based have been located to avoid designated sites, HPI's and important receptors as far as practicable. This is in accordance with the Planning Inspectorate's Advice on Habitats Regulations Assessment relevant to nationally significant infrastructure projects (September 2024) (Ref 17), the Habitats Regulations 2017 (Ref 18).
- 4.6.4 Following selection of the preferred route corridor, as outlined in the CPRSS, ecological specialists have been integral to ongoing design refinement of works within Section 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Examples of such measures include

the positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees.

- 4.6.5 At sensitive crossing locations (e.g. rivers), existing access routes would be used as far as practicable and the width of any required working area minimised. If access upgrades are required, large or sensitive watercourses, for example those designated as a Main River, and those with WFD status, will be crossed using clear span bridges. Where culverts are implemented, these will either be arch culverts, leaving the natural bed undisturbed, or as far as reasonably practicable, they would be installed with the invert set below the natural bed level for a semi-natural bed to establish within the culvert.
- 4.6.6 Wherever practicable, areas of temporary habitat loss will be reinstated back to the type of baseline habitat affected or improved/enhanced. The ES will also include proposals for enhancing existing habitats. Areas of permanent habitat loss will be considered during the siting and design of measures required to achieve a net gain in biodiversity value.

Control Mitigation Measures

Construction

- 4.6.7 A Preliminary CoCP is included within **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. General control measures included within the Preliminary CoCP relevant to the Ecology and Biodiversity assessment include:
- i. GG01: The proposed Project will be compliant with all relevant legislation, consents and permits. (*i.e. The Conservation of Habitats and Species Regulations 2017 and The Wildlife and Countryside Act 1981. See **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy** for more detail on relevant legislation, consents and permits*).
 - ii. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works (EnvCoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
 - iii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
 - pollution prevention and pollution incident response;
 - dust management and control measures;
 - location and protection of sensitive environmental sites and features;
 - adherence to protected environmental areas around sensitive features;
 - working hours and noise and vibration reduction measures;

- working with potentially contaminated materials;
 - waste management and storage;
 - flood risk response actions;
 - agreed traffic routes, access points, etc.;
 - soil management; and
 - drainage management.
- iv. GG05: A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities, prior to works commencing. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
 - v. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP) and a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (OWSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), Drainage Management Plan (DrMP) along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans'.
 - vi. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans
 - vii. GG08: Land used temporarily will be reinstated where practicable to its pre-construction condition (including Agricultural Land Classification ((ALC)) grade) and use. Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, in consultation with the landowner.
 - viii. GG09: Where sensitive features such as ancient woodland and protected habitats are to be retained within or immediately adjacent to the Order Limits, an appropriate protective area will be established using appropriate fencing and signage and will be inspected, repaired, and replaced as necessary. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.
 - ix. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
 - x. GG15: Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. Where practicable, they will be stored >15 m from watercourses, ponds and groundwater dependent terrestrial ecosystems. Where it is not practicable to maintain a >15 m distance, additional measures will be identified. All refuelling, oiling and greasing of construction plant and equipment

will take place above drip trays and also away from drains as far as is reasonably practicable. Vehicles and plant will not be left unattended during refuelling. Appropriate spill kits will be made easily accessible for these activities. Potentially hazardous materials used during construction will be safely and securely stored including use of secondary containment where appropriate. Stored flammable liquids such as diesel will be protected either by double walled tanks or stored in a bunded area with a capacity of 110 per cent of the maximum stored volume. Spill kits will be located nearby.

- xi. GG16: Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There will be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of an emergency).
- xii. GG17: Wash down of vehicles and equipment will take place in designated areas within construction compounds. Wash water will be prevented from passing untreated into watercourses and groundwater. Appropriate measures will include use of sediment traps, daily checks and ongoing monitoring.
- xiii. GG19: Earthworks and stockpiled soil will be managed as per the SMP.

4.6.1

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. Active nests of wild birds are protected at all times and therefore the same measures will be put in place if an active nest is identified at any time of year.
- iii. B03: Where there will be a risk of animal entrapment, a means of escape will be installed into all excavations left open overnight.
- iv. B04: To control the spread of invasive weeds in accordance with the Wildlife and Countryside Act 1981, any plant or machinery that has been used in areas contaminated or infested with invasive species (both terrestrial and aquatic), such as Japanese knotweed and Himalayan balsam, will be thoroughly cleaned. Water used to clean vehicles will be discharged or emptied into the contaminated area controlled to prevent the spread of the plant (through plant propagules, e.g. seeds, rhizomes, fragments, etc.). The area will be cordoned off to prevent any inadvertent spreading. Any plant material or soil contaminated with plant propagules if removed from a site is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste

Transfer documentation, and must comply with Section 34 of the Environmental Protection Act 1990. Further detail will be set out in a Biosecurity Management Plan.

- v. B05: Subject to the location and scale of impact, suitable habitat for common reptiles will be subject to two-stage habitat manipulation that will take place between mid-March and mid-October. Firstly, vegetation will be cut to approximately 150 mm (with the arisings removed) under the supervision of an Ecological Clerk of Works (ECoW) and the site left for a minimum of two days to allow reptiles to naturally disperse from the area. Secondly, vegetation will be cleared down to ground level under the supervision of an ECoW. Vegetation will be cleared using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of mortality or injuring reptiles. Construction works could commence immediately after completion of the second stage. Reptile hibernacula will be retained and protected during construction where practicable. If unavoidable, the removal of vegetation and groundworks at hibernacula will be timed to avoid the hibernation season (late October to early March). Replacement hibernacula and refugia will be provided prior to clearance of any suitable habitat.
- vi. B06: Alternative roost structures (bat boxes) will be installed, prior to felling of trees with bat roost potential (with landowner consent), on retained trees within the Order Limits or areas outside of the Order Limits agreed with landowners. Unless specified otherwise by the provisions of any protected species licence for bats, two boxes will be provided for each tree to be felled where Potential Roost Features (PRF) on that tree are classified as PRF-I bat roost potential. Five boxes will be provided for each tree with PRF-M bat roost potential to be felled.
- vii. B07: Alternative barn owl breeding sites (barn owl boxes) will be installed, prior to removal of nesting sites, (with landowner consent) on retained trees or poles within the Order Limits or areas outside of the Order Limits agreed with landowners.
- viii. B08: Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are necessary, 'dead hedging' should be used, where practicable, in the interim periods to retain connectivity during construction. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.
- ix. B09: Habitat translocation or any species translocation (if required) that is not covered by protected species licences will be undertaken in accordance with a strict method statement. The method statement will be specific to the habitat type or species affected and will detail the appropriate construction methods, timing, management, receptor site preparation and post-construction habitat management and monitoring. The receptor site will be clearly identified and prepared in advance of translocation.
- x. B10: Where any in channel watercourse works are required, works will be completed outside of fish spawning season (16 March to 16 June inclusive) and fish migratory seasons (species specific, dependant on the waterbody) subject to likely fish presence confirmed through pre-construction fish surveys.

- xi. B11: Where works require dewatering of waterbodies known to contain fish, fish removal and relocation will be required (which will require appropriate permits such as an FR2 licence from the EA).
- xii. B12: A method statement to ensure works within watercourse crossings include suitable measures to allow the passage of otters, water vole and fish throughout construction (i.e., during fluctuating water levels).
- xiii. B13: In the first instance reasonable avoidance measures will be incorporated to avoid impacting known otter holts/couches, badger setts and/or trees identified as having bat roosting potential and suitable buffer zones implemented.
- xiv. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.
- xv. LV02: The contractor(s) will apply the relevant protective principles set out in British Standard (BS) 5837:2012: Trees in relation to design, demolition, and construction. This will be applied to trees within the Order Limits which will be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. An Arboricultural Clerk of Works (ACoW) will ensure the suitability of tree protection before and during the construction phase. All works to high grade trees, including trees under Tree Preservation Orders and veteran trees, will be undertaken, or supervised by a suitably qualified arboriculturist.
- xvi. LV03: A five-year aftercare period will be established for all reinstatement and mitigation planting, details of which will be set out in the LEMP.
- xvii. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.
- xviii. W01: All works affecting watercourses or within the relevant permitting stand-off distance from the top of bank or landward toe of a flood defence on main rivers and IDB-maintained watercourses will be in accordance with a method approved under consents issued under the Environmental Permitting Regulations 2016, Land Drainage Act 1991, IDB Byelaws (where relevant) or the protective provisions of the DCO for the benefit of the Environment Agency, LLFAs and IDBs. Where possible, a stand-off distance from the top of bank of all watercourses/waterbodies will be established (with the exception of crossings and where existing field access roads are already located adjacent to watercourses are to be utilised). To align with Environment Agency and IDB consenting requirements, it is proposed that this will be: 16 m for tidal main rivers; 8 m for non-tidal main rivers; and 9m for IDB-maintained watercourses. No statutory stand-off distances are specified for ordinary watercourses, but any works liable to cause an obstruction to flow would be subject to consent under the Land Drainage Act 1991. Appropriate stand-off distances should also be implemented where Project construction activities coincide with water supply and sewerage infrastructure. These are to be agreed on a case-by-case basis.

For any instances where the stand-off distances stated above cannot be achieved between construction works and watercourses, these works would be subject to the appropriate consent by the relevant drainage authority (FRAP for main rivers, OWC for ordinary watercourses).

- xix. W02: For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will include but not be limited to, where practicable:
- reducing the working width for open cut crossings of a main or ordinary watercourse whilst still providing safe working;
 - installation of a pollution boom downstream of open cut works;
 - the use and maintenance of temporary lagoons, tanks, bunds, silt fences or silt screens as required;
 - have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident;
 - the use of all static plant such as pumps in appropriately sized spill trays;
 - prevent refuelling of any plant or vehicle within 15 m of a watercourse;
 - prevent storing of soil stockpiles within 15 m of a main river;
 - inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and
 - reinstating the riparian vegetation and natural bed of the watercourse, using the material removed when appropriate, on completion of the works and compacting as necessary. If additional material is required, appropriately sized material of similar composition will be used.
- xx. W03: Riverbank and in-channel vegetation will be retained where not directly affected by installation works. Natural substrate will be provided through temporary watercourse crossings culverts.
- xxi. W04: Where watercourses are to be crossed by construction traffic, measures to be applied include the use of temporary culverts or temporary spanned bridges. Once the temporary culvert is installed, the area above the temporary culvert will be backfilled and construction mats placed over the backfilled area to permit the passage of plant, equipment, materials, and people. Temporary culverts will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge. Specific detailed designs for each watercourse crossing, consistent with these design principles, will be prepared by the construction contractor. These will be subject to the appropriate consent by the relevant drainage authority (Flood Risk Activities Permit from the EA for main rivers, Ordinary Watercourse Consent from the Lead Local Flood Authority or Internal Drainage Board for ordinary watercourses).
- xxii. W05: The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This will particularly be with regard not only to volumes and discharge rates, but also to

water quality (particularly suspended solids, pH and hydrocarbons) and will include discharges to land, water bodies or third-party drains/sewers.

- xxiii. W10: Severance of existing land drainage routes, including agricultural field drainage systems would be managed during construction through provision of temporary alternative drainage routes, and these drainage systems would be permanently reinstated to ensure their existing function is maintained.
- xxiv. W11: Appropriate control of runoff from working areas will be achieved through implementation of a DrMP for the construction phase. The DrMP will use sustainable urban drainage systems (SuDS) principles, promoting infiltration of runoff wherever possible and specifying appropriate treatment and attenuation storage to ensure any discharges to watercourses are uncontaminated and limited to greenfield rates. The DrMP will cover all aspects of construction works and temporary infrastructure. Drainage measures will be phased to be completed before the commencement of earthwork operations, in a specific area, and will be retained until the drainage system of the completed Project is fully operational, or site restoration works are completed. This will include the temporary diversion of existing agricultural drainage around working areas, if required, followed by reinstatement on completion of works. At this stage of the design process, preliminary work has already been done to identify runoff treatment and attenuation requirements for temporary access tracks and working areas associated with overhead line construction, including defining potential locations of water treatment areas and discharge outfalls. Further work is required to develop drainage strategies for substations, considering arrangements for both construction and operational phases of the Project, which will be reported as part of the ES chapter and FWRA in submission with the DCO application.

- 4.6.2 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

- 4.6.3 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).
- 4.6.4 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.
- 4.6.5 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.
- 4.6.6 Additionally, habitats created or enhanced by the Project and embedded within the design, will be managed in accordance with the LEMP.

Additional Mitigation

- 4.6.7 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.
- 4.6.8 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.
- 4.6.9 As set out within **PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operation Features**, initial measures within Section 7 include:
- i. Potential bird mitigation areas (mitigation requirements to be confirmed following surveys);
 - ii. Ditch habitats;
 - iii. Potential water vole mitigation areas (mitigation requirements to be confirmed following surveys); and
 - iv. Potential skylark mitigation areas (mitigation requirements to be confirmed following surveys).
- 4.6.10 Any mitigation and compensation measures to be included within the Project will be informed by further design development and consultation with the relevant stakeholders, including engagement with the statutory consultees.
- 4.6.11 Finalised additional mitigation or compensation measures will be detailed within the ES.

4.7 Preliminary Assessment of Effects

- 4.7.1 The following section presents the findings of the preliminary assessment of effects upon the ecological receptors identified within the Section 7 Study Area, as a result of construction, maintenance and/or operational activities.
- 4.7.2 As discussed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**, only features of local importance and above, where there is the potential for the project to impact them directly or indirectly, will be 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 4.4**, 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 sites are The Wash SPA and Ramsar site and the Wash and North Norfolk Coast SAC, which are located 6.6 km north of the Section 7 draft Order Limits at their closest points.
- 4.7.8 In addition, Nene Washes SPA and Ramsar site and Ouse Washes SPA and Ramsar site (where bird species with large foraging ranges are noted as, or one of, the

qualifying features) are present within 13.9 km and 16.4 km of the Section 7 draft Order Limits respectively, at their closest points.

- 4.7.9 According to Natural England guidance (Ref 19), only those main component species of Internationally designated sites, which have an overlapping IRZ with the Section 7 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 SAC/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 Wash SPA and Ramsar site includes birds as qualifying features. The IRZ for the SPA and Ramsar site overlaps with the Section 7 draft Order Limits, in relation to primarily wintering Bewick's swan, whooper swan, and pink-footed goose. Further assessment is required once bird surveys are completed and data assessed, to consider potential impacts upon the qualifying species and the waterbird assemblage of these Internationally designated sites. The potential for likely significant effects (LSE) upon these sites will be assessed within the Report to Inform the HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage of the assessment.
- 4.7.11 The Wash and North Norfolk Coast SAC is designated for its habitats, such as seedbanks, mudflats and coastal lagoons, and also includes otters as qualifying features. Potential pathways of effect include changes in water quantity, level and flow and works within or adjacent to watercourses which are hydrologically linked to the SAC have the potential to impact otter species. The potential for LSE upon this site will be assessed within the Report to Inform HRA, and significant effects cannot be excluded at this stage in the assessment.
- 4.7.12 Species of the Nene Washes SPA and Ramsar site includes birds as qualifying features. The IRZ for the SPA and Ramsar site overlaps with the Section 7 draft Order Limits, in relation to primarily wintering pink-footed goose. Further assessment is required once bird surveys are completed and data assessed, to consider potential impacts upon the qualifying species and the waterbird assemblage of these Internationally designated sites. The potential for LSE upon these sites will be assessed within the Report to Inform the HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.13 Species of the Ouse Washes SPA and Ramsar site includes birds as qualifying features. The IRZ for the SPA and Ramsar site overlaps with the Section 7 draft Order Limits, in relation to primarily wintering pink-footed goose. Further assessment is required once bird surveys are completed and data assessed, to consider potential impacts upon the qualifying species and the waterbird assemblage of these Internationally designated sites. The potential for LSE upon these sites will be assessed within the Report to Inform the HRA (to be submitted with the ES), and significant effects cannot be excluded at this stage in the assessment.
- 4.7.14 The Impact Risk Zones (IRZ's) for the nationally designated Islington Heronry SSSI (designated for its colony of grey herons) and Wiggenhall St Germans SSSI (designated for its geological interest) partially overlap with the Section 7 draft Order Limit.

- 4.7.15 Islington Heronry SSSI is located 7.2 km east of the Section 7 draft Order Limits. It is anticipated that the heron colony 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.
- 4.7.16 Taking into account the pollution prevention measures within the Preliminary CoCP (such as GG15, GG16, GG17), impacts upon Wiggshall St Germans SSSI would be unlikely to result in significant effects. Therefore assessment of this site is included within **Table 4.4**.
- 4.7.17 Due to the distances from the Section 7 draft Order Limits and embedded control measures set out within the Preliminary CoCP, no significant effects are anticipated upon the 5 CWS within the Section 7 Study Area and therefore these sites are included within **Table 4.4**.

Habitats

Terrestrial Habitats

- 4.7.18 Initial habitat results indicate that the majority of Section 7 is cultivated cropland with low biodiversity value. Agricultural fields are typically surrounded by hedgerows and ditches. Areas of these habitats will be lost during construction of the proposed substation, pylons (including stringing areas) and to create temporary haul roads for construction
- 4.7.19 It is not anticipated that any areas of the HPI Traditional Orchard would be directly affected by the proposed works, assuming a suitable buffer can be implemented around these habitats in accordance with control measure GG09. There is potential for indirect effects on these receptors, but standard pollution control measures would be implemented and secured through the CoCP. Further assessment of potential indirect impacts, such as changes in air quality, will be undertaken to confirm likely effects on these receptors, and will be reported within the ES.
- 4.7.20 Hedgerows and arable field margins valued at a Local level would be crossed by the proposed overhead line route. Temporary severance of hedgerows would occur during construction, where the haul roads are proposed. Existing tracks and roads would be utilised where practicable, however these may require widening. Those habitats which would be directly impacted by the establishment of haul roads and/or stringing works would be reinstated upon completion of construction.
- 4.7.21 Survey work will continue through 2025 to characterise the terrestrial habitat types, and their constituent flora and fauna, within the Section 7 Survey Area. These surveys 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.
- 4.7.22 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects on terrestrial habitats within the Section 7 Study Area cannot be excluded at this stage of the assessment.

Aquatic Habitats

- 4.7.23 There are a number of watercourses , ditch networks and ponds located within or close to the Section 7 draft Order Limits.
- 4.7.24 Direct impacts upon aquatic habitats within the Section 7 Study Area would include those associated with the construction of the substation and overhead line works. However, these impacts have been minimised through the setting back of pylons from the channel and marginal habitats. The stringing of the overhead line could potentially result in temporary loss or damage to watercourses and ditches within the Draft Order Limits, however the stringing methodology would seek to minimise any potential direct impacts to watercourses during construction and any associated impacts are therefore likely to be temporary.
- 4.7.25 Within Section 7, the construction of approximately seven temporary access crossings associated with haul roads would result in direct impacts upon watercourses. The design of these elements will seek to minimise impacts through reducing the footprint of these works as far as practicable and appropriate culvert design. Based upon the implementation of best practice construction methods and reinstatement of the impacted habitats post construction (see Preliminary CoCP measures W01 to W11), associated effects are likely to be temporary.
- 4.7.26 Drainage installations for any 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 7 includes at least three Sustainable Drainage (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.
- 4.7.27 As noted above, survey work will continue through to 2025 to characterise the aquatic habitat types, and their constituent flora and fauna, within the Section 7 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.
- 4.7.28 In the absence of supplementary survey findings and confirmed additional mitigation measures, significant effects on aquatic habitats within the Section 7 Study Area cannot be excluded at this stage of the assessment.

Protected or Notable Species

Terrestrial Invertebrates

- 4.7.29 Survey results to date indicate that the majority habitats (i.e. cropland) within the Section 7 Survey Area have limited value to terrestrial invertebrates. However, woodland and hedgerow habitats also recorded within the Section 7 Survey Area may have suitability to support a more diverse invertebrate assemblage.
- 4.7.30 Potential impacts upon terrestrial invertebrates therefore include habitat loss, habitat fragmentation and death/injury through the loss of habitats and severance of hedgerows.
- 4.7.31 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).

- 4.7.32 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.
- 4.7.33 On a precautionary basis, significant effects on terrestrial invertebrates cannot be excluded at this stage of the assessment.

Great Crested Newt

- 4.7.34 Results to date for ponds within the Study Area located south of the Section 7 draft Order Limits indicate that great crested newt is likely absent from these ponds.
- 4.7.35 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 and the substation. 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.
- 4.7.36 Where impacts upon great crested newt cannot be avoided, a licence from Natural England would be required to permit derogation (as outlined in Preliminary CoCP management measure B01). Indicative locations for mitigation are illustrated on **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operation Features**.
- 4.7.37 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).
- 4.7.38 Survey work will continue in 2025 to inform the assessment of impacts and effects and the details of appropriate mitigation to be presented in the ES. Further survey findings will also be used to confirm any licencing and enhancement requirements.
- 4.7.39 On a precautionary basis, significant effects on great crested newt cannot be excluded at this stage of the assessment.

Reptiles

- 4.7.40 The majority of habitats within the Section 7 draft Order Limits suitable for reptiles are limited in extent, being confined to field boundaries and the margins of ditches.
- 4.7.41 Nevertheless, there are still potential impacts through habitat loss and risk of killing and/or injury of reptiles during construction.
- 4.7.42 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).
- 4.7.43 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).

4.7.44 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.

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

Birds: Breeding and Wintering

4.7.46 No data were available at this stage for Section 7 in relation to wintering birds.

4.7.47 The surveys for breeding birds, carried out between March 2024 and July 2024, indicated use of the Section 7 draft Order Limits by a range of breeding farmland species, including seven Section 41 species. Further details are provided in **PEI Report Volume 2 Part B Section 7 Appendix 4A Bird Survey Data, Table 4A.1 and Table 4.A2.**

4.7.48 Although measure B02 in the Preliminary CoCP would ensure the impacts of construction works upon active nests would be mitigated, the construction works within the Section 7 draft Order Limits are likely to result in a loss of breeding and wintering habitat and disturbance to birds through noise, construction traffic movements and increased human presence on-site.

4.7.49 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).

4.7.50 It should be noted that bird surveys are incomplete, and survey work has continued over the winter of 2024/2025 and will be undertaken in spring/summer of 2025 to confirm the status of wintering and breeding birds respectively, and to inform the assessment of impacts and effects and the design of appropriate mitigation and enhancement, which will be further developed and presented within the ES.

4.7.51 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

4.7.52 Within the Section 7 Survey Area, no main badger setts were recorded. It is however possible that there might be nearby existing badger setts or setts created in the future prior to construction. Therefore there is potential for construction works to result in the loss of setts.

4.7.53 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.

4.7.54 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.

- 4.7.55 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).
- 4.7.56 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.
- 4.7.57 On a precautionary basis, significant effects on badger cannot be excluded at this stage of the assessment.

Bats

- 4.7.58 Surveys in 2024 confirmed that the bats were foraging and commuting in the Section 7 Survey Area and indicated that bats were associated with hedgerows and woodland edges around the Walpole substation site.
- 4.7.59 There is potential for both permanent and temporary loss of roosting, foraging and commuting habitat for bats and severance of commuting routes, and would likely be impacts from disturbance such as noise, vibration and lighting during construction. Specifically, hedgerow habitats would require clearance during construction to establish haul roads within the footprint of the proposed Walpole B Substation and new pylons.
- 4.7.60 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).
- 4.7.61 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).
- 4.7.62 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 7 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.
- 4.7.63 On a precautionary basis, significant effects on bats cannot be excluded at this stage of the assessment.

Otter

- 4.7.64 Initial surveys for otter carried out in 2024 did not find any field signs of otter within the Section 7 Survey Area and no breeding or resting sites were recorded.
- 4.7.65 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.

- 4.7.66 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).
- 4.7.67 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.
- 4.7.68 Survey work will continue in 2025 to confirm the status of otter and will be used to inform the assessment of impacts and effects, and the details of any appropriate mitigation and enhancement, which will be developed fully and presented within the ES.
- 4.7.69 On a precautionary basis, significant effects on otter cannot be excluded at this stage of the assessment.

Water Vole

- 4.7.70 Initial surveys indicate that water vole are present within several watercourses within the Section 7 Survey Area.
- 4.7.71 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).
- 4.7.72 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).
- 4.7.73 Additional relevant measures within the Preliminary CoCP which would reduce potential impacts include pollution control measures (GG15, GG16, GG17 and W01 to W11), implementation of Management Plans (GG06), establishment of protective areas (GG09) and lighting restrictions (LV04). Measure B12 requires a method statement to be in place to ensure works within watercourse crossings include suitable measures to allow the passage of water vole.
- 4.7.74 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.
- 4.7.75 On a precautionary basis, significant effects on water vole cannot be excluded at this stage of the assessment.

Operation and Maintenance

Designated Sites

- 4.7.76 The Wash SPA and Ramsar site, Nene Washes SPA and Ramsar site, Ouse Washes SPA and Ramsar site and Islington Heronry SSSI are 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.
- 4.7.77 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.
- 4.7.78 European designated sites within the Zol of the Project are sensitive to changes in flow regimes, including the volume of water supplied, water depth and water flow rates. In SACs, the potential impact of altered flow regimes can directly affect the qualifying habitats and hydrological changes may impact SAC/SPA species indirectly. The potential for LSE upon these sites will be assessed within the Report to Inform HRA, and significant effects cannot be excluded at this stage in the assessment.

Protected and Notable Species

Birds: Breeding and Wintering

- 4.7.79 As noted above in relation to designated sites, the collision risk with the overhead line within the Section 7 Study Area will be fully assessed once further wintering and breeding bird data have been collected.
- 4.7.80 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

- 4.7.81 For completeness, **Table 4.4** 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 4.4 Preliminary summary of non-significant Ecology and Biodiversity effects – Section 7

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Construction					
Wiggenhall St-Germans SSSI	Habitat loss	National	Permanent or Temporary	Due to the nature of the designation and distance of this site from the Section 7 draft Order Limits, there would be no habitat loss within this nationally designated site.	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
White House CWS, River Nene CWS, Honnington House Farm CWS. North Level Main Drain at Tydd Gate CWS	No impact	County	Permanent or Temporary	Due to the distances between these receptors and the Section 7 draft Order Limits and also the lack of ecological or hydrological connectivity, there is not considered to be a pathways to effect. Therefore no mitigation would be required.	Not significant
Fish	Habitat loss, incidental harm or mortality, disturbance	TBC following baseline surveys	Permanent or Temporary	The following control measures detailed within the Preliminary CoCP would prevent harm to fish during construction: GG06, GG09, B10, B12 and LV04.	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
	Habitat degradation as a result of contamination during construction and changes in water quality	TBC following baseline surveys	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
Aquatic macroinvertebrates	Habitat loss, incidental harm or mortality, disturbance	TBC following baseline surveys	Permanent or Temporary	Due to lack of Main Rivers and generally dry and uniform habitats within the Section 7 Study Area the population of species present is unlikely to be significant. The following control measures detailed within the Preliminary CoCP would prevent harm to aquatic macroinvertebrates during construction: GG06, GG09 and LV04.	Not significant
	Habitat degradation as a result of contamination during construction and changes in water quality	TBC following baseline surveys	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
Aquatic macrophytes	Habitat loss, incidental mortality	TBC following baseline surveys	Permanent or Temporary	The following control measures detailed within the Preliminary CoCP would prevent harm to aquatic macrophytes during construction: GG06 and GG09.	Not significant
	Habitat degradation as a result of contamination during construction	TBC following baseline surveys	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management (such as	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
	changes in water quality			Preliminary CoCP pollution prevention measures GG15, GG16 and GG17).	
Hedgehog, brown hare	Habitat loss, incidental harm or mortality	Local	Temporary or Permanent	The following control measures detailed within the Preliminary CoCP would prevent harm to hedgehog and brown hare during construction: GG06, B01, B03. Habitats impacted temporarily during construction would also be reinstated post construction (GG08).	Not significant
Invasive Non-Native Species (INNS)	Spread of INNS during maintenance activities	N/A	Permanent	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					
Wiggenhall St-Germans SSSI	No impact	National	Temporary	Due to the distance between this receptor and the Section 7 draft Order Limits and also the lack of ecological or hydrological connectivity, there is not considered to be a pathways to effect. Therefore no mitigation is required.	Not significant
White House CWS, River Nene CWS, Honnington House Farm CWS. North Level Main Drain at Tydd Gate CWS	No impact	County	Permanent or Temporary	Due to the distance between these receptors and the Section 7 draft Order Limits and also the lack of ecological or hydrological connectivity, there is not considered to be a pathways to effect. Therefore no mitigation is required.	Not significant

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Habitats: Traditional orchard HPI	Contamination during maintenance works	County	Temporary	The likelihood of contamination is considered to be minimal assuming appropriate management. During the operation and maintenance of the Project, National Grid operatives would be required to adhere with National Grid best practice requirements during the completion of routine maintenance activities, such as the management of vegetation within and adjacent to assets (e.g. substations, pylons, access routes).	Not significant
Habitats - arable field margins, hedgerows, ditches	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 potential impacts 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 potential impacts 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).	

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

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

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

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

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

Receptor	Impact	Receptor Importance	Duration	Embedded Mitigation/Rationale	Likely Significance of Effect
Invasive Non-Native Species (INNS)	Spread of INNS during maintenance activities	N/A	Permanent	National Grid would identify and notify the presence of invasive species within the operational areas of the site. National Grid or their appointed Contractor would be required to appoint an ecologist during any maintenance or refurbishment works to ensure that ecological constraints present at the time would be identified and potential impacts mitigated accordingly.	Not significant

4.8 Monitoring

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

References

- Ref 1 Borough Council of King's Lynn and West Norfolk (2025). King's Lynn & West Norfolk Local Plan 2021-2040 [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed October 2024].
- Ref 2 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 3 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 4 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 5 Multi-Agency Geographic Information for the Countryside (MAGIC) website [online]. Available at: <https://magic.defra.gov.uk/> [Accessed 18 October 2024].
- Ref 6 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 7 Natural England Designated Sites View [online]. Available at: <https://designatedsites.naturalengland.org.uk/> [Accessed October 2024].
- Ref 8 Joint Nature Conservation Committee (JNCC) website [online]. Available at: <https://jncc.gov.uk/> [Accessed 3 October 2024].
- Ref 9 Environment Agency Ecology & Fish Data Explorer [online]. Available at: <https://environment.data.gov.uk/ecology/explorer/> [Accessed October 2024].
- Ref 10 Environment Agency Catchment Data Explorer [online]. Available at: <https://environment.data.gov.uk/catchment-planning/> [Accessed October 2024].
- Ref 11 UKHab (2018.2022). The UK Habitat Classification System [online]. Available at: <https://ukhab.org/> [Accessed 01 March 2024].
- Ref 12 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 13 IUCN. (2022). The IUCN Red List of Threatened Species. Version 2022-2 [online]. Available at: <https://www.iucnredlist.org> [Accessed 3 June 2024].

- Ref 14 National Grid. The Holford Rules [online] Available at: Microsoft Word - The Holford Rules.doc [Accessed 15 October 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%20Holford%20Rules.pdf> [Accessed 15 October 2024].
- Ref 16 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 17 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 18 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 19 Natural England (2019) Impact Risk Zones Guidance Summary: Sites of Special Scientific Interest Notified for Birds. Version 1.1.

5. Historic Environment

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5. Historic Environment

5.1 Introduction

- 5.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Historic Environment assessment of the New Walpole B Substation (Section 7) 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 of the Historic Environment assessment within (section 5.3). Further detail is provided within **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**;
 - iv. A high-level summary of the methodology of the Historic Environment assessment within Section 7 (section 5.4). A detailed description of the assessment methods and scope, applicable to the whole Project, is contained in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**;
 - v. A description of the environmental baseline within the Section 7 Study Areas relevant to the Historic Environment assessment (section 5.5).
 - vi. A description of mitigation measures included for the purposes of the Historic Environment assessment reported within the PEI Report (section 5.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
 - vii. The likely significant and non-significant Historic Environment effects arising during construction and operation of the Project within the Section 7 Study Area, based upon the assessment completed to date (section 5.7);
 - viii. An outline of the proposed monitoring requirements in relation to Historic Environment (section 5.8).
- 5.1.2 Further supporting information is set out in **Table 5.1** below, including figures and technical appendices.

Table 5.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 7 Figures	Figure 5.1 Designated Heritage Assets; Figure 5.2 Non-designated Heritage Assets
PEI Report Volume 3 Part B Section 7 Appendix 5A Known Heritage Assets	A list of all identified heritage assets with the assessment Study Area. This will be updated and amended as required to inform the Environmental Statement (ES).
PEI Report Volume 3 Part B Section 7 Appendix 5B Preliminary Summary of Likely Non-Significant effects	A table summarising the preliminary assessment of likely non-significant effects on heritage assets within the assessment Study Areas. The assessment of likely non-significant effects will be updated and amended as required for the ES.
PEI Report Volume 3 Part B Section 7 Appendix 5C Detailed Gradiometer Survey Report	A technical report detailing the results of geophysical survey (detailed gradiometer) completed for the proposed new Walpole B Substation site.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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.

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

- 5.1.3 There are also interrelationships between the potential effects on the Historic Environment and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B**:
- i. **PEI Report Volume 2 Part B Section 7 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;
 - ii. **PEI Report Volume 2 Part B Section 7 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;
 - iii. **PEI Report Volume 2 Part B Section 7 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;
 - iv. **PEI Report Volume 2 Part B Section 7 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.

5.2 Legislation and Policy Framework

Legislation and National Policy

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

Regional and Local Policy

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

- i. King's Lynn and West Norfolk Local Plan 2021 - 2040 (Adopted March 2025) (Ref 1):
 - Policy LP19 Environmental Assets - Green Infrastructure, Landscape character, Biodiversity and Geodiversity: This policy stipulates that development should comply with the mitigation hierarchy, to avoid, mitigate or compensate adverse impacts on biodiversity, geodiversity and heritage, as well as seeking to enhance sites through the creation of features of new biodiversity interest.
 - Policy LP20 Environmental Assets - Historic Environment: stipulates that the historic environment will be conserved and enhanced through high quality design which sustains, and where appropriate, enhances the special interest, character and significance of assets and their settings. Amongst other factors, the impact of development proposals on the significance of heritage assets and their setting will be considered in accordance with case law, legislation and the National Planning Policy Framework (NPPF).
 - Policy LP24 - Renewable Energy: states that developments will be assessed to determine whether the energy benefits outweigh their impact, individually or cumulatively, upon aspects including designated and un-designated heritage assets, including their setting.

5.3 Scope of Assessment

- 5.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 2) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). 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 7 Study Area); and
 - ii. Non-designated heritage assets (e.g. buried archaeological remains, earthwork remains, non-designated historic buildings and structures, non-designated historic parks and gardens, tracks/routeways and artefact scatters).
- 5.3.4 The scope of the operation assessment covers the following heritage assets:
 - i. Designated heritage assets (scheduled monuments, listed buildings, conservation areas and registered parks and gardens, noting that no World Heritage Sites or registered battlefields are located within the Section 7 Study Area); and

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

5.4 Assessment Methodology

- 5.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Historic Environment assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. It includes a description of how heritage value, magnitude of impact and significance of effects are all defined and assigned to the assessment. A summary of the key components are outlined below.
- 5.4.2 Designated and non-designated heritage assets identified from the baseline data as having the potential to be impacted by the Project have been selected for inclusion in the preliminary assessment. The preliminary assessment follows four key stages:
 - i. The assessment of a heritage 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 4) with reference to the NPPF Annex 2 Glossary (Ref 5), consultation, regional variation and individual qualities;
 - ii. Identification of the magnitude of impact arising from the construction of the new Walpole B Substation and connecting overhead line, and operation of the Project. Impacts can affect the physical fabric of a heritage asset or affect its setting and can be temporary or permanent. The degree of impact is expressed in terms of a four-point scale set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope** and takes into account any Project design mitigation (embedded mitigation);
 - iii. The classification of the significance of the effects arising from the Project on each heritage asset. The significance of effect is determined using the matrix provided in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. Effects can be neutral, adverse, or beneficial; and
 - iv. Finally, the application of additional mitigation measures identified at this preliminary stage, to reduce likely significant adverse effects on heritage assets is used to determine the effects arising from the Project.
- 5.4.3 The preliminary assessment reports on the significance of effect in accordance with EIA methodology. Major and moderate effects are considered to be significant, whilst minor and negligible effects are considered to be not significant. Professional judgement will be applied in reaching conclusions as to the significance of effects.

Assessment Assumptions and Limitations

- 5.4.4 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 7.

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

5.5 Baseline Conditions

Study Area

- 5.5.1 The preliminary assessment for the Historic Environment utilises the following Study Areas, comprising the area directly affected by the Project and a buffer around the draft Order Limits, as detailed further in **PEI Report Volume 3 Part A Appendix 4B EIA 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 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 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. Norfolk Historic Environment Record (HER) for non-designated heritage assets;
 - iii. Historic Landscape Characterisation (HLC) mapping provided by the Norfolk HER;
 - iv. geological mapping held by the British Geological Survey (BGS);
 - v. The detailed magnetometer survey report for the new Walpole B Substation site provided at **PEI Report Volume 3 Part B Section 7 Appendix 5C Detailed Gradiometer Survey Report**; and
 - vi. various online sources including:
 - Historic Ordnance Survey maps held by the National Library of Scotland (which also covers England);
 - Historic England's Aerial Archaeology Mapping Explorer; and
 - local authority conservation area appraisals and management documents and their mapping.

Existing Baseline

- 5.5.4 The following section outlines the Historic Environment baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:
- i. **PEI Report Volume 2 Part B Section 7 Figure 5.1 Designated Heritage Assets;**
 - ii. **PEI Report Volume 2 Part B Section 7 Figure 5.2 Non-designated Heritage Assets;**
 - iii. **PEI Report Volume 3 Part B Section 7 Appendix 5A Known Heritage Assets;** and
 - iv. **PEI Report Volume 3 Part B Section 7 Appendix 5C Detailed Gradiometer Survey Report.**
- 5.5.5 Designated heritage assets are referenced with their NHLE reference number (e.g. NHLE 1010947).
- 5.5.6 Non-designated assets are referenced using the Norfolk HER unique identifier numbers (e.g. MNF2207).
- 5.5.7 Non-designated heritage assets identified by the preliminary assessment that are not yet recorded on the Norfolk HER (e.g. possible archaeological remains identified by geophysical survey), have been assigned a unique identifier using an AEC prefix (e.g. AEC700).

Geology and topography

- 5.5.8 Section 7 is located in National Character Area 46 - The Fens, characterised by low-lying, flat and expansive landscape, with wide views to the horizon (Ref 7). The topography of the Study Area is essentially flat, lying at approximately 2m Above Ordnance Datum (AOD).
- 5.5.9 The British Geological Survey (Ref 8) records the bedrock of Section 7 as comprising Jurassic mudstone of the Ampthill Clay Formation (formed between 163.5 and 157.3 million years ago), overlain by superficial Holocene Tidal Flat deposits formed between 11.8 thousand years ago and the present.

Designated Heritage Assets

- 5.5.10 There are no World Heritage Sites, Scheduled Monuments, Registered Battlefields, Registered Park and Gardens or Conservation Areas within the 3 km or 5 km Section 7 Study Areas.
- 5.5.11 Located within the 3 km Section 7 Study Area, there are 25 designated heritage assets, as summarised in **Table 5.2**, with none located within the draft Order Limits.

Table 5.2 Designated heritage assets within the 3 km Section 7 Study Area

Designation	Number of assets within Study Area	Number of assets within draft Order Limits
Scheduled monument	0	0
Conservation area	0	0
Grade I listed building	2	0
Grade II* listed building	1	0
Grade II listed building	22	0
Registered parks and gardens	0	0

5.5.12 Four designated heritage assets of high value have been identified located within the 3-5 km Section 7 Study Area and their designations are listed in **Table 5.3**.

Table 5.3 Designated heritage assets of high value within the 3-5 km Section 7 Study Area

Designation	Number of assets within Study Area
Scheduled monument	1
Grade I listed building	1
Grade II* listed building	2
Grade I registered park and garden	0
Grade II* registered park and garden	0

5.5.13 No designated heritage assets of high value located beyond 5 km have been identified by the preliminary assessment as potentially being impacted by the Project.

Non-designated Heritage Assets

5.5.14 A total of 89 non-designated heritage assets and findspots have been identified within the 1 km Section 7 Study Area. This includes 79 non-designated heritage assets and findspots recorded by the Norfolk HER and a further ten previously unknown non-designated archaeological assets that have been identified by geophysical survey. Of the total 89 non-designated heritage assets identified by this preliminary assessment, 20 are located within, or overlap with, the draft Order limits. A summary of the types of non-designated heritage assets identified is provided in **Table 5.4** and discussed, where appropriate, in the archaeological and historical background below.

Table 5.4 Non-designated heritage assets within the 1 km Section 7 Study Area

Asset Type	Number of assets within Study Area	Number of assets within draft Order Limits
Cropmarks	2	0
Earthworks (including roddons and sea defences)	4	1
Saltern Site	3	0
Settlement site	4	0
Deserted medieval village	0	0
Moated Site	3	0
Mill	0	1
Ridge and Furrow	0	0
Parkland/Garden	1	0
Buildings/structures	2	0
Military Remains	0	1
Roads/trackways	1	0
Woodland/Covert	0	0
Ecclesiastical sites	2	0
Find spot	45	7
Negative Evidence	2	0
Geophysical Anomalies – possible archaeology	0	10

- 5.5.15 It should be noted that find spots are locations where artefacts have generally been removed from their primary archaeological context and often represent residual material 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

- 5.5.16 Evidence of Palaeolithic (500,000 to 10,000 BC) activity is rare nationally, with in situ remains particularly rare and the slightly more frequent find spots of stone tools providing most of the evidence for a human presence during the period.

- 5.5.17 Whilst evidence of prehistoric activity is relatively rare within the 1 km Section 7 Study Area, a likely Early Iron Age ditched enclosure (MNF58809) has been recorded approximately 100 m south of the draft Order Limits.
- 5.5.18 Roman activity within Norfolk is extensive, with several substantial settlements at Great Yarmouth and Caistor St Edmund. Roman activity within the 1 km Section 7 Study Area, however, is limited to find spots of Roman pottery sherds recovered during fieldwalking undertaken by the Fenland Survey in fields to the north east and east of the draft Order Limits (MNF30047, MNF23524, MNF23523, MNF22138, MNF22137, MNF20158, MNF19864, MNF19863, MNF19696, MNF19624, and MNF18601). Several sherds of Roman pottery (MNF19052) were also recovered approximately 230 m south-west of the draft Order Limits. These finds may indicate the presence of Roman settlement in the vicinity and the manuring of Roman fields with domestic rubbish.
- 5.5.19 Evidence for early medieval activity has been recorded within the 1 km Section 7 Study Area immediately north of the draft Order Limits where a dispersed scatter of Ipswich ware pottery fragments and moderate quantities of animal bone, associated with a roddon, suggest the location of a small Middle Saxon settlement (MNF21325). The roddon and finds scatter continued northwards (MNF22145) where excavation revealed a number of substantial linear ditches, circular and sub-rectangular pits, from which Middle Saxon finds including Ipswich ware pottery, fired clay (possibly briquetage), butchered bone, fragments of bone combs, a possible iron spear head and a bronze coin were recovered. Findspots of early medieval pottery have also been identified during fieldwalking of the fields adjacent to the Middle Saxon settlement (MNF19665, MNF19666).
- 5.5.20 A probable Late Saxon and medieval sea defence, known as The Sea Bank (MNF2187) extends through the 1 km Section 7 Study Area immediately north of the draft Order Limits. This earthen bank appears to have been constructed on the boundary between the lower salt marsh and the mud flat.
- 5.5.21 During the medieval period, the landscape surrounding West Walton and Walpole consisted of low-lying agricultural land with a pattern of small, nucleated settlements. A number of the settlements in the 1 km Section 7 Study Area were recorded in the Domesday Book, 1086, including West Walton, Walpole St Andrew and Walpole St Peter. The Domesday entries for these settlements include fisheries as well as saltmarshes in West Walton. Evidence of medieval industry was recorded within the settlement of Walton, with the remains of a medieval mill (MNF16338) recorded.
- 5.5.22 Moated manorial sites were occupied by the landed gentry and often overlooked associated agricultural land across the wider landscape. Located immediately east of the draft Order Limits lie the remains of a medieval moated enclosure and great house (MNF2207). The site dates to at least 1450 and may have been the mansion of the Rochford family, who also controlled the now demolished chantry Chapel of St Edmunds (MNF14903) located approximately 230 m to the east of the draft Order Limits. The moated site survives as the earthwork remains of a rectangular moat within which archaeological investigations have identified the buried archaeological remains of a medieval brick building, including a demolished wall laying on the sloped moat edge, possible interior or wall foundation, and spreads of brick rubble and fired clay. Finds recovered during the excavation include pottery sherds dated to between 1450-1650, two complete handmade pre-Tudor bricks, floor tiles and ceramic building materials. Post-medieval pottery and a glass bottle, dated to approximately 1680,

may indicate that the mansion was occupied into the 17th century. The moat itself was confirmed as being approximately 8 m wide and at least 2 m deep.

- 5.5.23 Further evidence for the medieval landscape surrounding the moated manorial site (MNF2207), in the form of an earthen and associated trackway (MNF19805), was recorded in the field immediately adjacent to the draft Order Limits.
- 5.5.24 Two further medieval moated manors are recorded within the 1 km Section 7 Study Area, the first comprising a moat, enclosed earthworks and a pond (MNF19728), which is located 60 m east of the draft Order Limits. The second was recorded just north of the settlement of Walton, with a second moat (MNF62220), located approximately 615 m south-west of the draft Order Limits, recorded in Walton Highway on the First Edition Ordnance Survey maps. Archaeological evaluation of the site recorded extensive post-medieval or modern disturbance but did not encounter remains of the moated site.
- 5.5.25 Evidence for medieval settlement within Walton Highway has also been recorded west of the moated site (MNF62220), comprising a moat and the now levelled earthwork remains of probable tofts or paddocks (MNF18580).
- 5.5.26 Salt making was an important industry within the low lying Fen and coastal salt marshes of Norfolk during the medieval period, with saltern sites recorded approximately 620 m north east (MNF58508) and approximately 140m north (MNF74666) of the draft Order Limits.
- 5.5.27 Evidence of medieval ecclesiastical sites is represented within the Section 7 study areas with two Grade I listed medieval churches in the 3 km Section 7 Study Area, the Church of St Peter in Walpole St Peter (NHLE 1264167) and the Church of St Andrew in Walpole St Andrew (NHLE 1264158). Another grade I listed church is located within the 3-5 km Section 7 Study Area, the Church of St John in Terrington St John (NHLE 1264266). Other religious medieval structures include two Grade II listed 15th century sculptures in St Andrew's churchyard (NHLE 1237261 and NHLE 1237302).
- 5.5.28 Thirty-two findspots of medieval pottery have been recorded within the 1 km Section 7 Study Area, suggesting widespread manuring of the former medieval fields associated with the settlement of Walton (MNF18602, MNF18603, MNF18969, MNF18578, MNF18957, MNF19053, MNF19054, MNF19684, MNF19727, MNF19809, MNF19819, MNF19859, MNF19861, MNF19865, MNF19866, MNF19867, MNF19872, MNF19950, MNF19951, MNF19952, MNF19953, MNF20073, MNF20072, MNF20082, MNF20088, MNF20091, MNF20092, MNF20093, MNF20883, MNF20159, MNF22142 and MNF28453), a further five findspots are located within the draft Order Limits (MNF18601, MNF18651, MNF18974, MNF19066 and MNF19067).
- 5.5.29 The landscape of the post-medieval period retained its rural character, developing with the enclosure of the former medieval fields during the 18th and 19th centuries. The established medieval settlements continued to be occupied and grow. Extant buildings form a significant part of the evidence from this period, including houses, agricultural buildings, public buildings and ecclesiastical structures.
- 5.5.30 The majority of extant post-medieval buildings are concentrated within the urban villages of Walpole St Peter and Walpole St Andrew and are mostly grade II listed, such as the Princess Victoria Public House (NHLE 1237262), Daycotts End (NHLE 1264181) and Townsend House (NHLE 1237361). Other early 18th century grade II listed buildings include the Old Post Office (NHLE 1171829), Faulkner House (NHLE

1237331) and Shepherds Cottage (NHLE 1264180). A non-designated former Methodist chapel is also located in the 1 km Section 7 Study Area in Walton Highway (MNF64486). One of five remaining milestones, sited along the former Wisbech, King's Lynn and Cross Keys Wash turnpike, is an 18th century milestone along Lynn Road situated approximately 250 m to the south-east of the draft Order Limits (MNF63139).

- 5.5.31 The historic milling industry in the area is represented through the presence of an 18th century tower mill to the south-east of Walton Highway, now converted into a house (NHLE 1305435) and an early 19th century windmill in Walpole Highway (NHLE 1237329).
- 5.5.32 Evidence of wider post-medieval settlement activity is recorded across the 1 km Section 7 Study Area, including several post-medieval mounds (MNF19860, MNF19868), a post-medieval garden (MNF67223) and several pits (MNF73569). A findspot of several sherds of post-medieval pottery (MNF55113) has also been recorded approximately 400m southeast of the draft Order Limits.
- 5.5.33 The Norfolk HER records two heritage assets of modern date. The first is the Grade II listed First World War Memorial in Walpole St Peter (NHLE 1440076). The reputed location of a potential non-designated World War II aircraft crash site (MNF18977) has also been recorded in the fields within the draft Order Limits, approximately 150 m west of the proposed new Walpole B substation. The aircraft crash site is noted from the verbal testimony of a local landowner, although no evidence for this was recorded during fieldwalking by the Fenland Survey and the exact location of the crash site is still yet to be determined.
- 5.5.34 Several undated cropmarks have been recorded within the 1 km Section 7 Study Area, these include a trackway and enclosures (MNF28050) north of Walton, an undated mound east of Walton (MNF19718) with enclosures east of Ingleborough (MNF2200).

Historic Landscape Character

- 5.5.35 Section 7 is located within the county of Norfolk and is defined by the Norfolk Historic Landscape Characterisation (HLC) data provided by the Norfolk HER. The Norfolk HLC data has identified several broad historic landscape character types within the draft Order Limits which provide context to the historic landscape the Project is situated within.
- 5.5.36 The Project is predominantly located within fields defined as 20th century agriculture as the HLC type, with these 20th century fields identified broadly surrounding the settlements of Ingleborough and Walton and extending across the draft Order Limits. Within these fields the earlier enclosure boundaries have been modified and re-organised in the early to mid-20th century to create larger consolidated fields more suitable for mechanised farming.
- 5.5.37 Within the Study Area to the south of the Project, located to the east of Walton, there are some remnants of 18th and 19th century enclosures. These are remnant field systems of planned enclosure throughout the 18th and 19th centuries and have not been altered in the 20th and 21st centuries.
- 5.5.38 The assessment of the impact of the Project on the historic landscape will be informed by a detailed historic map regression, further research and consultation with

Historic Environment stakeholders, with the results of the assessment being presented in the ES.

Future Baseline

- 5.5.39 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.
- 5.5.40 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.
- 5.5.41 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 9) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 10) 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 11) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 5.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include:
- i. the new Walpole B Substation and associated infrastructure has been designed to avoid direct physical impacts to the medieval moated site (MNF2207) which is potentially of national importance (high heritage value).
 - ii. the location of construction compounds have also been selected to avoid impacts to known buried archaeological remains of medieval date (MNF19860)

- and MNF19805) located in the fields to the north and south of medieval moated site (MNF2207).
- iii. the proposed location of the new Walpole B Substation has been considered and selected to avoid significant impacts to buried archaeological remains identified by the Norfolk HER;
 - iv. Potentially significant impacts on the setting of heritage assets, brought about by the construction of the Project, may be lessened or avoided through consideration of the detailed design and micro-siting of individual pylons, access roads, construction compounds and temporary structures. This will be assessed fully within the Historic Environment chapter of the ES submitted with the DCO application.

Control Mitigation Measures

Construction

5.6.3 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. General control measures included within the Preliminary CoCP relevant to the Historic Environment 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 Clerk of Works (EnvCoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
- ii. GG06: A Construction Environmental Management Plan (CEMP), a Landscape Environmental Management Plan (LEMP), a Material Waste Management Plan (MWMP), a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Right of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (OWSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), Drainage Management Plan (DrMP) along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as 'the environmental control Plans'.
- iii. GG09: Where sensitive features such as ancient woodland and protected habitats are to be retained within or immediately adjacent to the Order Limits, an appropriate protective area will be established using appropriate fencing and signage and will be inspected, repaired, and replaced as necessary. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.

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

- i. H01: Known heritage assets and locations known archaeological interest will have been identified by a programme of desk-based assessment and field evaluation prior to construction. Wherever possible identified heritage assets and archaeological remains will be avoided by the Project design. Where avoidance has not been possible, archaeological mitigation measures comprising the preservation of archaeological remains, or a programme of archaeological investigation will be implemented. Areas of archaeological preservation, or where archaeological work is planned, will be demarcated using appropriate fencing and signage to prevent unintentional damage. The fencing and condition of the areas will be inspected, repaired, and replaced as necessary. The areas of archaeological preservation or investigation will be identified on plans within the OWSI and CEMP.
- ii. H02: Where a previously unknown heritage asset is discovered, or a known heritage asset proves to be more significant than foreseen at the time of application, the Project will inform the relevant authorities and will agree a solution that protects the significance of the new discovery, so far as is practicable, within the Project parameters.
- iii. H03: An outline process for dealing with the unexpected discovery of archaeological remains including human remains and Treasure during construction will be set out in the OWSI and detailed CEMP.
- iv. H04: Where practicable, the Project will maintain elements within the historic landscape such as vegetation and hedgerows (including re-instating hedgerows and fences).
- v. LV01: The contractor(s) will retain vegetation where practicable. Where vegetation is lost and trees cannot be replaced in situ due to the restrictions associated with land rights required for operational safety, native shrub planting approved by National Grid will be used as a replacement, in accordance with the outline vegetation reinstatement plans included within the LEMP. Replacement vegetation will be planted as close by as practicable and will complement landscape character and be sympathetic to the local habitat type in order to provide a high biodiversity value.
- vi. LV04: Construction lighting will be of the lowest luminosity necessary to safely perform tasks. Lighting will be directional and minimised where possible.
- vii. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the CEMP.

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

5.6.6 The archaeological and historic environment control measures required for the Project will be informed by the results of the forthcoming desk-based assessment, aerial photographic and LiDAR assessment, geoarchaeological desk study and the programme of pre-application archaeological evaluation comprising geophysical survey, archaeological trial trenching and geoarchaeological borehole survey. The results of the programme of archaeological evaluation will identify the

presence/absence of buried archaeological assets within Section 7 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 As set out within **PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project** and illustrated on **PEI Report Volume 2 Part B Section 7 Figure 1.3 Permanent and Operational Features** the preliminary additional mitigation measures embedded into the design of Section 7 for Historic Environment includes changes to the draft Order Limits to avoid the high value medieval moated site (MNF2207) and landscape screening vegetation to reduce the visual impact of the proposed substations within the landscape.
- 5.6.11 Where it is not possible to implement embedded mitigation, or to avoid impacts to earthwork remains or buried archaeological deposits, measures to reduce or offset those impacts would be required to manage the historic environment resource and may include (but not be limited to):
- i. An appropriate programme of archaeological investigation and recording with the objective of advancing the understanding of the significance of archaeological remains within the draft Order Limits that may be disturbed or either wholly or partially lost, in accordance with the guidance provided by the Overarching NPS for Energy (EN-1) (Ref 6, section 5.9.17);
 - ii. Appropriate archaeological and geoarchaeological investigation and recording will be undertaken prior to the commencement of construction works wherever possible but may also include archaeological monitoring and recording (watching brief) works during construction; and
 - 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 7 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 5.5**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 5.7.4 A full table summarising the preliminary assessment of likely non-significant effects on individual heritage assets is provided within **PEI Report Volume 3 Part B Section 7 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 7 of the Project is described in this section. The preliminary assessment considers the design, control and additional mitigation measures described in section 5.6.
- 5.7.8 Potential impacts identified during the construction phase include direct physical impacts on heritage assets within the Section 7 draft Order Limits, resulting from construction works, for example, topsoil stripping and groundworks for the new Walpole B substation, cable sealing end compound, access routes, pylon working areas, construction compounds, associated drainage and ecological and landscape mitigation.
- 5.7.9 Setting impacts arising from the construction phase on heritage assets may arise due to:
- Temporary short-term impacts from construction activities, which can be incremental until construction is completed, caused by the movement of mechanical plant, light, noise pollution and dust; and

- ii. 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 one designated heritage asset within the 3 km Section 7 Study Area that has the potential to experience temporary or permanent significant effects. 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 7 Chapter 13 Summary** and the non-significant effects summarised in **Table 5.5**.

Listed Buildings or Structures within the 3 km Section 7 Study Area

- 5.7.11 Faulkner House (NHLE 1237331) is a Grade II listed building located approximately 30 m south-east of the Section 7 draft Order Limits. The Georgian brick house, built in the 18th century, comprises three storeys with a 19th century two storey gabled extension on the rear elevation. The house's principal facade and fenestration faces south over the garden and fields whilst access to the property is gained from the north off March Lane from West Drove North. The house is depicted as an L-shaped plan building on the 1839 tithe map described as Kendal Field House Yards with Joseph Falkner recorded as the landowner. Land parcels to the east, west and south of the property are also apportionments within the ownership of Joseph Falkner in 1839. The land parcels associated with the property include features recorded as non-designated heritage assets, including an undated mound (MNF19718) in Kendall Field to the south and a possible medieval moated enclosure (MNF19728) to the east over which the house may be partially sited on the moat's western arm. These fields form part of the wider landscape setting of Faulkner House (NHLE 1237331) as do the fields to the north and north-west, serving to emphasise the isolated rural position of the property which may originally have been that of a manorial residence for a landowner given its imposing stature in the flat landscape. The addition of large modern sheds within the farm courtyard to the west of Faulkner House (NHLE 1237331) has partially eroded its immediate setting. However, other associated farm buildings and barns, as shown on the 1839 tithe map, remain in situ comprising curtilage structures that contribute to the setting and value of the listed house, as well as group value between them.
- 5.7.12 Whilst the principal fenestration of Faulkner House (NHLE 1237331) faces south, there are windows in the rear elevation facing the driving entrance which provides access to the property and associated buildings via West Drove North. Kinetic views moving through the landscape in the approach to the property from the north and south-west as well as views from the property, within an agricultural landscape that has historically remained largely unchanged, form part of how the property's setting is experienced and the way in which the heritage asset is appreciated. These views will be altered due to the introduction of the proposed new Walpole B Substation, gantries and new pylons in the landscape, impacting how the property is appreciated and understood. The temporary construction works, notably the proposed compound in the field to the north-west of Faulkner House (NHLE 1237331) and the proposed access route for traffic including abnormal loads, for use during both the construction

and operational phases of the Project, along West Drove North, will cause changes to the setting of the asset from noise, lighting, dust and traffic movements. Due to their proximity to the listed building affecting the ability to appreciate and experience the asset, this would have a temporary medium magnitude of impact on an asset of medium value, resulting in a moderate adverse effect, which is significant.

- 5.7.13 The construction of the proposed new Walpole B Substation, as well as some of the new pylons and gantry towers, are within the wider setting of the farmstead and would be visible from Faulkner House (NHLE 1237331). The permanency of the Project infrastructure in the landscape, from construction and throughout the duration of its operation, to the north-west of the property will be partially mitigated by vegetation screening with details of species types and height maturity to be confirmed at ES stage. Whilst screening would reduce the intervisibility with the new infrastructure to some extent once it matures, the substation and pylons will still be visible and will introduce an industrial change to the landscape that is a noticeable change to the wider setting of the listed building. This will have a medium magnitude of impact that will result in a permanent moderate adverse effect that is significant.

High Value Designated Heritage Assets within the 3-5 km Section 7 Study Area

- 5.7.14 No high value designated heritage assets have been assessed where they may experience likely significant effects resulting from the Project.

High Value Designated Heritage Assets beyond the 5 km Section 7 Study Area

- 5.7.15 No assets of high value have been identified beyond the 5 km Section 7 Study Area that would be likely to experience impacts from the Project.

Non-designated Heritage Assets

- 5.7.16 Some non-designated heritage assets may experience significant effects from construction activities and non-significant effects from the permanency of the infrastructure in the landscape, or vice versa. Where this is the case, the assessment for both effects is set out together for the asset in the Likely Significant Effects section, with the significant effects summarised in **PEI Report Volume 2 Part B Section 7 Chapter 13 Summary** and the non-significant effects summarised in **Table 5.5**.

Non-designated Heritage Assets within the draft Order Limits

- 5.7.17 The preliminary assessment has not identified any non-designated heritage assets within the draft Order Limits or 1 km Section 7 Study Area with potential to experience significant effects.

Non-designated assets within the 1 km Section 7 Study Area

- 5.7.18 No non-designated built heritage assets have been identified within the 1 km Section 7 Study Area that may experience significant effects as a result of the Project.
- 5.7.19 The site of a medieval moated enclosure and great house (MNF2207) was identified during consultation with stakeholders as being a non-designated heritage asset of potentially schedulable quality and therefore of national importance. In January 2025 an application to schedule the remains of moated enclosure and great house was received by Historic England, conferring the status and protection of a scheduled

monument to the asset for the duration of the application and as such the remains are considered to be of high heritage value. The asset MNF2207 is comprised of a moated enclosure that survives as a mixture of extant earthworks and buried archaeological remains. It may represent the site of the Rochford family mansion and a focus for medieval settlement along West Drove North. The moat is rectangular in shape, and partially extant, with the north and west sides surviving. The moat survives with an approximate 6 m width and is less than 1m deep. The southern and eastern sides have been infilled and are approximately 0.6m in height. Archaeological investigations within the moat and the immediate surrounding area have identified the foundations of a wall, several layers of demolition material, pottery and brick dating to the late medieval period. There is potential for further surviving archaeological features within the moated area, including ancillary structures and linear features.

- 5.7.20 The field containing the heritage asset has, with the exception of a small belt of land along the south east boundary of the field, been excluded from the draft Order Limits meaning that the remains of the medieval moat and great house will remain undisturbed and will not experience any physical impacts to its fabric.
- 5.7.21 The field within which the non-designated asset MNF2207 is located, also contains the non-designated heritage asset (MNF19805), including an undated mound with medieval debris recorded within the eastern field boundary. The small belt of land along the south east boundary of the field is proposed to use for vegetation screening.
- 5.7.22 The medieval moated enclosure and great house (MNF2207) may have been the focus of a former hamlet of settlement along West Drove North. The setting of the asset comprises the former medieval agricultural landscape including the former settlement which is possibly evidenced by the undated artificial mounds or salterns within the fields adjacent to the moat (MNF189805 and MNF19860), a further undated mound (MNF19868), the site of the former Chapel of St Edmund/St Catherine to the east of West Drove North, an undated mound (MNF19718) to the south across West Drove North, another possible medieval moated site (MNF19728) to the south east and agricultural land along the eastern and western sides of West Drove North. These non-designated heritage assets may be contemporary, spanning a distance of approximately 700m either side of the drove way/road, with their setting contributing to their collective group value. This setting already includes the existing 4ZM high voltage overhead line located west of the asset, which detracts from the wider agricultural setting and mature hedgerow planting to the east and west of the asset. The Project extends through the wider setting of heritage asset MNF2207 as well as the other associated non-designated heritage assets.
- 5.7.23 Construction of the Project may temporarily alter the setting of the high value heritage asset MNF2207 through the installation of construction compounds, and the construction access haul road to the west and south west of the field in which the remains of moated enclosure and great house are located, construction traffic, noise, plant movement and temporary pylons (4ZM330-T and 4ZM331-T) and scaffolds to the west of the heritage asset. These temporary and reversible impacts would have a medium magnitude impact, resulting in a major adverse effect which would be significant. Permanent changes to the setting of the assets would arise from the presence of the proposed new Walpole B Substation, gantries, associated pylons and overhead line infrastructure within the landscape, which would introduce further modern infrastructure in addition to the existing 4ZM overhead line. Landscape mitigation along the existing high hedge, to the west of the heritage asset, would

partially screen and soften views of the proposed new Walpole B Substation and overhead line, to some degree, but would itself change the setting of the asset by restricting views across the open agricultural landscape that forms the wider setting of the assets. This is assessed as a medium magnitude of impact, resulting in a major adverse effect which is significant.

Operation

- 5.7.24 Impacts during the operation of the Project that may affect heritage assets include:
- i. security lighting with motion detectors;
 - ii. operational noise; and
 - iii. restrictions on accessibility to heritage assets.
- 5.7.25 In accordance with the PINS Scoping Response (Ref 2; Section 3.4, ID. 3.4.2), the assessment of physical impacts to, or changes to the settings of heritage assets, as a result of maintenance activities and traffic, have been scoped out of the preliminary assessment as they are unlikely to result in significant effects.
- 5.7.26 Although no additional significant effects are considered likely through operation, over and above those already identified relating to the long-term presence of the Project in the landscape assessed under the construction phase, further assessment of these operational elements will be undertaken in the ES.

Likely Non-Significant Effects

Construction

Designated Heritage Assets

- 5.7.27 A number of designated heritage assets, which may experience non-significant effects, have been identified warranting further explanation of their assessment due to particular sensitivities, such as their high value, designed views, historic setting or their proximity to works proposed within the draft Order Limits. For completeness, **Table 5.5** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant effects.

Listed Buildings or Structures within the 3 km Section 7 Study Area

- 5.7.28 Shepherds Cottage (NHLE 1264180) is a Grade II listed building approximately 200 m east of the Section 7 draft Order Limits. The house was built in the early 18th century of whitewashed brick and a pantile roof. It consists of a single storey and dormer attic with windows, including a central entrance which faces southwards onto Folgate Lane, set within a surrounding garden, with mature hedges along the border. The house is partially screened from views to the south by mature vegetation and a bungalow opposite, but there are views across the flat open countryside to the south with existing pylons and power lines clearly visible to the south and south-west. The setting of the cottage comprises its rural position along the lane and relationship with the hamlet and other nearby buildings, along with the immediate fields to the south and west which contribute to its value, although the presence of existing pylons and power lines in the wider vista which detract from views are incidental rather forming a component of the setting. The proposed construction access haul road to the west

and south, along with the works associated with the proposed new Walpole B Substation, are not within the setting of the property, but there is potential for the asset to experience a temporary change to its setting from increased noise, light and traffic during construction. This would have a temporary small magnitude of impact on an asset of medium value, resulting in a minor adverse effect which is not significant. The permanency of the Project infrastructure in the landscape, which is over 1 km to the south of the property, may be visible in partial views but these do not contribute to the value of the asset. This would have no change to the setting and medium value of the asset, resulting in a neutral effect that is not significant.

High Value Designated Heritage Assets within the 3-5 km Section 7 Study Area

- 5.7.29 The moated site and medieval field system in Church Field, 60 m north of St John's Church (NHLE 1009984) is a scheduled monument, located approximately 4.5 km east of the draft Order Limits, within the parish of Terrington St John. The asset is comprised of a rectangular shaped moated site, measuring approximately 44 m by 40 m in size, and which incorporates a series of four parallel ditches that form a medieval field system. A medieval driveway borders the moated site along its western edge. The four parallel ditches are visible as earthworks, approximately 0.5 m deep, 5 m wide and extend for 80 m in length. Buried remains relating to the manor house are located within the central island, however, these are not visible as earthworks. The setting of the asset comprises the extent of the former medieval settlement of Terrington St John, it's interrelationship with St John's Church and the local agricultural landscape in which it is situated and which it would have served in the medieval period, this includes the parish of Terrington St John. The Project is not located within the parish of Terrington St John and does not form part of the setting of the asset. The Project will not alter the way the asset is appreciated or understood. Therefore, there will be no temporary or permanent change to the setting and high value of the asset which will result in a neutral effect which is not significant.

Non-designated Heritage Assets

Non-designated Assets within the draft Order Limits

- 5.7.30 The preliminary assessment has identified non-designated heritage assets within the draft Order Limits and 1 km Section 7 Study Area that have the potential to experience temporary or permanent non-significant effects. A number of these assets have been identified setting out further explanation of their assessment due to particular sensitivities, such as their historic setting or their proximity to works proposed within the draft Order Limits. The preliminary assessment for these non-designated assets is provided in **Table 5.5**.
- 5.7.31 Individual findspots and spreads of pottery, that have been previously identified through fieldwalking within the draft Order Limits, include MNF18974, MNF18651, MNF19066, MNF19067, MNF18957 and MNF18601. Although removed from the field in which they were found, and therefore not included within the preliminary assessment, these finds do provide potential evidence of prehistoric, Roman and medieval occupation, or manuring practices. Further evaluation is required to understand the location, extent, date and significance of any previously unknown buried archaeological remains associated with these findspots. Any such remains will be assessed in the ES following completion of the forthcoming programme of archaeological evaluation.

- 5.7.32 A further non-designated heritage asset comprises of multi-period remains, including Roman pottery sherds, post-medieval briquetage and the putative location of a World War Two aircraft crash site (MNF18977). The large scatter of Roman pottery and post-medieval briquetage identified through fieldwalking may indicate the presence of buried archaeological remains associated with occupation or salt making and are assessed as being of medium value. The use of the field in which the asset is located as skylark habitat would not impact these remains, resulting in a neutral effect which would not be significant.
- 5.7.33 With regards to the putative location of the World War Two aircraft crash site (MNF18977), the validity of the evidence is still to be determined. The asset will be assessed during the ES stage when further research of the asset will be undertaken.
- 5.7.34 A non-designated heritage asset comprising a scatter of Roman and medieval pottery associated with an undated artificial mound (MNF19805) has been recorded within the field containing the medieval moated site (MNF2207). The mound itself is located outside of the draft Order Limits and may represent a saltern or platform associated with medieval settlement along West Drove North. Further evaluation would be required to understand the location, extent, date and significance of any previously unknown buried archaeological remains associated with this asset that extend within the draft Order Limits. Any buried archaeological remains present may be associated with the medieval moated site or medieval salt working are therefore assessed as being of medium heritage value. Groundworks for the planting of proposed substation screening vegetation may result in the truncation or loss of part of the asset. This is assessed as a negligible magnitude of impact, resulting in a permanent negligible adverse effect which would not be significant.
- 5.7.35 A geophysical survey of the proposed new Walpole B Substation site has identified groups of geophysical anomalies which are interpreted as either being of possible archaeological origin, represent former field boundaries, former natural and artificial drainage channels. Those anomalies within the draft Order Limits and potentially impacted by the Project (AEC700 – AEC709), are included within this preliminary assessment.
- 5.7.36 A small undated U-shaped enclosure (AEC701) has been identified through geophysical survey on land to the west of Stratton Farm. The asset is approximately 2-3 m in width, and its form indicates that it is likely an enclosure. Further archaeological evaluation is required to confirm the extent, date and significance the enclosure, however, for the purpose of the preliminary assessment it has been assessed as being of low value based on its form and likely potential to be of local interest. This is assessed as a large magnitude of impact, resulting in a moderate adverse effect which is significant, prior to the implementation of additional mitigation measures. Additional mitigation measures comprising a programme of archaeological investigation and recording, would reduce this to a permanent minor adverse effect, which would not be significant.
- 5.7.37 Several undated linear anomalies (AEC702) have been identified, forming an L-shaped linear feature on a north to south alignment. These measure approximately 45 m in length. The geophysical survey report interprets the anomaly as a potential large enclosure. Further archaeological evaluation is required to confirm the extent, date and significance of the enclosure and for the purpose of the preliminary assessment it has been assessed as being of medium value, due to the potential relationship with the moated site and potential to contribute to regional research objectives. Topsoil stripping and ground works for the proposed new Walpole B

Substation will result in partial truncation of the asset. This is assessed as a medium magnitude of impact, resulting in a moderate adverse effect, which would be significant prior to the implementation of additional archaeological mitigation measures. Additional mitigation measures comprising a programme of archaeological investigation and recording, would reduce this to a permanent minor adverse effect, which would not be significant.

- 5.7.38 A series of linear anomalies (AEC704) have been identified extending across the draft Order Limits on land to the west of Stratton Farm. Four linear features were recorded on a north-west to south-east alignment and have been interpreted as possible ditches or water management features. Further archaeological evaluation is required to confirm the extent, date and significance of the linear anomalies, which are assessed as being of medium value, due to the potential relationship with the moated site and potential to contribute to regional research objectives. Topsoil stripping and ground works for the construction of an access road, sustainable drainage systems (SUDS) drainage and planting for substation screening, will result in the truncation or loss of a small section of the asset. This is assessed as a small magnitude of impact, resulting in a minor adverse effect which is not significant. The implementation of additional mitigation measures comprising a programme of archaeological investigation and recording, would offset the loss of small part of this asset resulting in a permanent negligible adverse effect, which would not be significant.
- 5.7.39 Further geophysical anomalies have also been identified. These include several linear anomalies (AEC700) possibly interpretable as ditches or former field boundaries, linear anomalies representing former post-medieval field boundaries (AEC703 and AEC705), the remains of the former Walpole West Drain (AEC707) and extensive curvilinear anomalies which comprise silted natural drainage channels across the low-lying marshland (AEC708). Further archaeological evaluation is required to confirm the extent, date and significance of buried archaeological remains, however, the preliminary assessment presented in **Table 5.5** has not identified any significant effects to these assets.

Operation

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

Table 5.5 Preliminary overview of non-significant Historic Environment effects – Section 7

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 Section 7 Study Area							
Grade I listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change or Negligible	1	0	1	Temporary changes to the setting of grade I listed buildings arising from construction of the project have the potential to either have slight or little change, or to result in no change to the value of these assets or how they are appreciated, resulting in minor or neutral effects to these assets of high value. These effects would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change or Negligible	1	0	1	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 or neutral effects to these assets of high value. These effects 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)	
Grade II* listed buildings	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	Negligible	1	0	0	Temporary changes to the setting of this grade II* listed building arising from construction of the project have the potential to have a slight change to the value of this asset or how it is appreciated, resulting in minor adverse effect to this heritage asset of high value. This would result in minor adverse 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	1	0	0	The permanency of the infrastructure in the landscape within the wider setting of this grade II* listed building has the potential to either a slight change to the value of this heritage asset or how it is appreciated, resulting in a minor adverse effect to heritage asset of high value. The minor adverse effect would not be significant.
Grade II listed buildings	Medium	Potential temporary change to setting or value of the assets arising from	No Change, Negligible, or Small	1	4	16	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

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)	
		construction of the Project.					in no change to the value of these assets or how they are appreciated. This would result in minor adverse, negligible adverse or neutral effects to these assets of medium value. These effects would not be significant.
	Medium	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change or Negligible	0	3	18	The permanency of the infrastructure in the landscape within the wider setting of these grade II listed buildings has the potential to have little change, or to result in no change, to the value of these heritage assets or how they are appreciated, resulting in a 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 Section 7 Study Area							
Scheduled Monuments	High	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change	0	0	1	Temporary effects arising from construction of the Project will not alter the value of the scheduled monument or the way in which it is appreciated or understood. This would result in a neutral

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)	
							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.	No Change	0	0	1	The permanency of the infrastructure in the landscape within the wider setting of the scheduled monuments has the potential to result in no change to the value of this heritage assets or how they are appreciated, resulting in a neutral effect to this asset of high value. The neutral effect 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	2	The Project does not form part of the setting of these heritage assets and will not alter their value or way in which they are appreciated or understood. This would result in a neutral effect which would not be significant.
	High	Potential permanent change to setting or value of the assets arising from construction of the Project and	No Change	0	0	2	The Project does not form part of the setting of these heritage asset and will not alter their value or way in which they are appreciated or understood. This would result in a neutral effect which 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)	

throughout its operational duration.

Non-designated heritage assets within the draft Order Limits

Non-designated heritage assets	Medium or Low	Permanent physical construction impacts resulting in the partial loss or disturbance of the asset.	Negligible, Small, Medium or Large	2	7	0	The partial loss or disturbance of non-designated heritage assets of medium or low value, resulting in minor adverse or negligible adverse effects that are not significant. Archaeological mitigation measures i.e. appropriate archaeological investigation and recording would off-set or reduce the significance of the effects to not significant.
	Low	Potential temporary change to setting or value of the assets arising from construction of the Project.	No Change or Negligible	0	1	1	Temporary changes to the setting of these non-designated heritage assets arising from construction of the project have the potential to have little change, or to result in no change, to the value of these heritage assets or how they are appreciated. This would result in negligible adverse or neutral effects to these assets of low value. The negligible adverse

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)	
							or neutral effects would not be significant.
	Low	Potential permanent change to setting or value of the assets arising from construction of the Project and throughout its operational duration.	No Change or Negligible	0	1	1	The permanency of the infrastructure in the landscape within the wider setting of these non-designated heritage assets has the potential to either have little change, or to result in no change to the value of these heritage assets or how they are appreciated, resulting in a negligible adverse or neutral effect to these assets of 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 Borough Council of King's Lynn & West Norfolk (2025). King's Lynn and West Norfolk Local Plan 2021-2040 Adopted March 2025 [online] Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 24 April 2025].
- Ref 2 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 3 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 4 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 5 Department for Levelling Up Homes and Communities (2024). National Planning Policy Framework [online]. Available at: <https://www.gov.uk/guidance/national-planning-policy-framework> [Accessed 17 December 2024]
- Ref 6 Historic England (2015). Historic Environment Good Practice Advice in Planning: 2, Managing Significance in Decision Taking in the Historic Environment [online]. Available at: <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/> [Accessed 17 December 2024].
- Ref 7 Natural England (2024). National Character Area 46 The Fens. Available at: <https://nationalcharacterareas.co.uk/the-fens/description> [Accessed 12 December 2024].
- Ref 8 British Geological Survey geology viewer [online]. Available at: BGS Geology Viewer (BETA) [Accessed 12 December 2024].
- Ref 9 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 10 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 11 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

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6. Water Environment and Flood Risk

6.1 Introduction

6.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Water Environment and Flood Risk assessment of the New Walpole B Substation Section (Section 7) 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 for Section 7 (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 7 Study Area relevant to the Water Environment and Flood Risk assessment (section 6.5);
- vi. A description of mitigation measures included for the purposes of the Water Environment and Flood Risk assessment reported within the PEI Report (section 6.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
- vii. The likely significant and non-significant Water Environment and Flood Risk effects arising during construction and operation of the Project within Section 7, 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 (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 Information	
PEI Report Volume 2 Part B Section 7 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.
PEIR 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 Water Framework Directive (WFD) water body status and ecological and chemical characteristics for those waterbodies relevant to the Section 7 assessment.
Project Supporting Information	
PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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.

Supporting Information	Description
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 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 7 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 7 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. Norfolk Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026 (adopted 2011) (Ref 1);
 - ii. Norfolk County Council Local Flood Risk Management Strategy Policy Review (2021) (Ref 2):
 - Policy UC 3: Flood Risk Asset Register;
 - Policy UC 9: Designation of 3rd party structures or features;
 - Policy OW3: Consenting of works on Ordinary Watercourses;
 - Policy OW4: Culverting;
 - iii. King's Lynn and West Norfolk Local Plan 2021-2040 (Adopted March 2025) (Ref 3)
 - Policy LP21 – Environment, Design and Amenity: which states that development must protect and enhance the amenity of the wider environment and identifies criteria against which proposals will be assessed, including impacts upon water quality and potential contamination.
 - Policy LP24 – Renewable Energy: proposals for renewable energy and associated infrastructure will be assessed to determine whether the benefits they bring are outweighed by impacts upon aspects of the environment including, ecological interests (species and habitats) and watercourses (in terms of pollution).
 - Policy LP25 – Sites in Areas of Flood Risk: whilst specific to allocated sites, includes associated requirements for development proposals within areas of flood risk, including site specific flood risk assessment.
 - iv. King's Lynn Internal Drainage Board Byelaws (2013) (Ref 4).
 - These documents set out local byelaws governing watercourse maintenance and water level management within the IDB district.

6.3 Scope of Assessment

- 6.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 5) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 6). The scope has also been informed through consultation and engagement with relevant consultees. A

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

- 6.3.2 Non statutory consultation feedback has been addressed within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 6.3.3 Aspects of the Water Environment and Flood Risk which are included within the scope of the assessment are summarised in **Table 6.2**.
- 6.3.4 It should be noted that operational phase impacts on aquatic environment and water 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: - Main rivers - WFD river and transitional waterbodies - IDB-maintained watercourses - Ordinary watercourses Water resource receptors , comprising: - Licensed surface water abstractions - Unlicensed surface water abstractions for private water supply - Discharges to surface waters	WFD and WFD (Standards and Classification) Directions (England and Wales) 2015 (Ref 7).	<ul style="list-style-type: none"> 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). Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants from contaminated soil, or accidental spillage of pollutants (e.g. fuel or oil). Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants in groundwater and subsequently surface water. Impact from any dewatering for construction from temporary works impacting groundwater – surface water interactions.

Receptor	Relevant Assessment Criteria	Potential Effects Considered
		<ul style="list-style-type: none"> 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 8)	<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		
Aquatic environment receptors , comprising: <ul style="list-style-type: none"> - Main rivers - WFD river and transitional waterbodies - IDB-maintained watercourses - Ordinary watercourses 	WFD and WFD (Standards and Classification) Directions (England and Wales) 2015 (Ref 7).	<ul style="list-style-type: none"> Deterioration in the water quality of aquatic environment receptors due to a spill or leakage of fuels/chemicals during periodic maintenance and refurb activities. These activities are unlikely to require heavy plant, or excavations or the need to construct new temporary access roads. The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.
Water resource receptors , comprising: <ul style="list-style-type: none"> - Licensed surface water abstractions 		

Receptor	Relevant Assessment Criteria	Potential Effects Considered
<ul style="list-style-type: none"> - Unlicensed surface water abstractions for private water supply - Discharges to surface waters 		
Flood risk receptors (property and infrastructure at risk of flooding)	NPPF (Ref 8)	<ul style="list-style-type: none"> • Changes to surface water flood risk due to changes in runoff rates resulting creation of impermeable surfaces, and to changes in surface water runoff pathways due to changes in ground surface levels. • 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 7 Study Area for Water Environment and Flood Risk, as defined in section 6.5.

Aquatic Environment Receptors

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

Water Resource Receptors

6.3.7 Water 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 7 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 10) that supports the NPPF (Ref 8). It is recognised that the primary purpose of the NPPF flood vulnerability classification is to guide Flood Risk Assessment (FRA) requirements for new development, but it is also considered to be a useful tool for assessing the relative sensitivity of external receptors for flood risk effects from new development.
- 6.3.10 The preliminary assessment for flood risk reported in this chapter only considers the impacts of the Project on flood risk to external receptors. An appraisal of the risks of flooding to proposed project infrastructure and activities and proposed mitigation of these risks is provided in the **PEI Report Volume 2 Part C Appendix 5A Preliminary Flood Risk Assessment**.

6.4 Assessment Methodology

- 6.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Water Environment and Flood Risk assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor value, magnitude of impact and significance of effects are all defined and assigned to the assessment. A summary of the key components is 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 11). Whilst primarily intended for use in assessing the impacts of highways projects on the water environment, the methodology is widely accepted for assessing the effects of other types of linear infrastructure. 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 12)

and included in the ES. A summary of the assessment approach and Stage 1 Screening assessment is included within the PEI Report as an appendix to the Water Environment and Flood Risk chapter of the Route-wide Assessment in **PEI Report Volume 3 Part C Appendix 5B Preliminary WFD Assessment**.

- 6.4.6 Relevant technical guidance and standards that have informed the methodology are listed in full in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.

Assessment Assumptions and Limitations

- 6.4.7 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 7.
- 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 7 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 6) and is considered an appropriate Study Area based on the nature of the Project construction and operation (and maintenance) activities, technical knowledge of similar schemes, and an understanding of source-pathway-receptor linkages for Water Environment and Flood Risk. Beyond the 500 m buffer, effects resulting from the Project are unlikely and have therefore been scoped out. This was accepted by the Planning Inspectorate (PINS) in their Scoping Opinion (Ref 5). The Section 7 Study Area is presented in **PEI Report Volume 2 Part B Section 7 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 7 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 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 within Section 7 include:
- River Nene Tidal Breaching Model and Report (Ref 13);
 - Main East Coast Breach Model and Report (Ref 14); and
 - Northern Area Tidal Modelling (NTM) East Coast Overtopping Model and Report (Ref 15).
- 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 23). 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 Marham (Ref 16)
Topography	Ordnance Survey Mapping (Ref 17)
Geology	British Geological Survey (BGS) Geology of Britain Viewer (Ref 18)
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 19); National Soil Research Institute Soilscape map viewer (Ref 20)
Hydrology	Environment Agency Statutory Main River Map for England (Ref 21) Flood Estimation Handbook Web Service (Ref 22)
Flood risk	Environment Agency Flood Map for Planning (Ref 23) Environment Agency Risk of Flooding from Surface Water (RoFSW) (Ref 24) National Flood Risk Assessment (NAFRA) Dataset (Ref 25) Environment Agency Risk of Flooding from Reservoirs (Ref 26) Environment Agency Flood Defence Asset database (Ref 27) National River Flow Archive (NRFA) (Ref 28)
Water quality and Water Framework Directive status	Catchment Data Explorer database (Ref 29) of Cycle 2 and 3 WFD information
Water abstractions and discharge consents	Environment Agency abstraction and discharge consent data including active discharge locations, abstraction licence strategies and local authority private water supply datasets. (Ref 30) (Ref 31)

Survey Work

- 6.5.7 While a Water Environment and Flood Risk walkover survey was not undertaken to inform the PEI Report, this will be undertaken in 2025 with a view to informing the ES. The objective of this walkover survey will be to conduct visual inspections to characterise watercourses in terms of morphology, depth of water, depth of movement and water quality.
- 6.5.8 Therefore, the following data was not available at the time of writing this PEI Report but will be available to inform the ES:
- i. Field notes and photographs collected during watercourse surveys;
 - ii. Aquatic ecology surveys, including:
 - General characteristics of watercourses to be crossed, including physical features 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 for protected and notable species typically associated with watercourse habitats.

Further Data Requests

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

Existing Baseline

- 6.5.10 The following section outlines the Water Environment and Flood Risk baseline. The baseline section should be read in conjunction with the following supporting Figures and Appendices as found within **PEI Report Volume 2** and **Volume 3** respectively:
- i. **PEI Report Volume 2 Part B Section 7 Figure 6.1 Water Environment Receptors and Study Area;**
 - ii. **PEI Report Volume 2 Part B Section 7 Figure 6.2 Principal Local Water Environment Regulators;**
 - iii. **PEI Report Volume 2 Part B Section 7 Figure 6.3 Surface Water Flood Risk;**
 - iv. **PEI Report Volume 2 Part B Section 7 Figure 6.4 Water Framework Directive Surface Water Body Status;**
 - v. **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment;** and

vi. **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Screening Assessment.**

- 6.5.11 The Section 7 draft Order Limits cover the new Walpole B Substation site, approximately 0.5 km of new overhead line within Section 7 to the west of the proposed substation, and an approximately 1.2 km section of existing 4ZM 400 kV overhead line, which will be modified in order to connect it to the new Walpole B Substation. Infrastructure included within the Section 7 Study Area is further discussed in **Chapter 1 Overview of the Section and Description of the Project.**
- 6.5.12 The Section 7 draft Order Limits are located approximately 4 km northeast of the town of Wisbech, immediately north of the village of Walton Highway. The Section 7 Study Area is located within the Borough Council of King's Lynn and West Norfolk local authority areas. However, both the draft Order Limits and the wider Study Area for Section 7 are located entirely within the King's Lynn IDB district, as shown on **PEI Report Volume 2 Part B Section 7 Figure 6.2 Principal Local Water Environment Regulators.** Section 7 is located within Norfolk County Council area however, King's Lynn IDB district is responsible for watercourses within the Study Area.
- 6.5.13 At this stage, baseline conditions have been assessed based upon desk-based information and will be reviewed and updated as required within the ES, based upon further field survey and data collection.

Climate

- 6.5.14 Average annual rainfall estimates for the period 1991-2020 were taken from the Met Office website (Ref 16). This demonstrates the average annual total rainfall in the locality of Section 7 was approximately 660 mm, based on the Marham station record (NGR TF738090) located approximately 22 km from the Study Area for Section 7. This is slightly higher than the East Anglia district average (1991-2020) of 627 mm.
- 6.5.15 The distribution of rainfall throughout the year varied based on the Marham 1991-2020 record. The highest monthly average precipitation was recorded during October (67 mm) followed by November (63 mm). The driest months were February (43 mm) and April (43 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 Anglia District.
- 6.5.17 Across the East Anglian district there has been a minimal increase in annual rainfall between 1991-2020. The average annual maximum temperatures and average annual minimum temperatures both exhibit an increasing trend for the same period.

Topography and Land Use

- 6.5.18 A review of Ordnance Survey (OS) mapping shows the Section 7 Study Area to be flat and low-lying throughout, with elevations mostly below 5 m above ordnance datum (AOD).
- 6.5.19 The land within the Section 7 Study Area is primarily used for agricultural purposes with only one major road crossing (A47) to the southeast of the draft Order Limits and minor/local road crossings.

- 6.5.20 Localised residential properties and farm buildings are present within the Section 7 Study Area, but generally are not within the draft Order Limits. The exception to this is the Jasmine Nursery, a wholesale nursery, off Lynn Road within the south of Section 7. A second large nursery is present within the Study Area, south of the draft Order Limits and south of Salts Road. The low-lying nature of the land is such that an abundance of surface water features is present within the Section 7 Study Area, including ponds, drains and streams.
- 6.5.21 Existing overhead lines are present within the Section 7 Study Area, including within the draft Order Limits, shown on aerial imagery and historical mapping. A solar farm is present across the northern half of the Section 7 Study Area immediately adjacent the draft Order Limits.
- 6.5.22 A pump is noted on the earliest available historical mapping (1830s to 1880's) approximately 150 m east of the draft Order Limits, although was not shown on any more recent revisions, so is unlikely to still be present.
- 6.5.23 A steel oil tank manufacturer (Walton Oil Tanks) is present within the south of the Section 7 Study Area, approximately 50 m south of the draft Order Limits off Salts Road. A plant and machinery hire contractor (East Anglian Access Hire) is located in the northeast limit of the Study Area for Section 7, off West Drove North, approximately 500 m north of the draft Order Limits.
- 6.5.24 A factory is also located within the Section 7 Study Area off Lynn Road and is recorded on historical mapping from the 1940's, although with no indication of specific use. This factory currently houses a timber merchant (English Brothers Limited).

Hydrology and Surface Water Features

- 6.5.25 Surface water features identified within the Section 7 Study Area are shown in **PEI Report Volume 2 Part B Section 7 Figure 6.1 Water Environment Receptors and Study Area**. These include a network of IDB-maintained watercourses and ordinary watercourses, all of which fall within the King's Lynn IDB district. There are no Environment Agency main rivers or canals/navigable rivers within the Section 7 Study Area. The closest main river to the Section 7 draft Order Limits is the tidal River Nene, which is 2.8 km to the west and is crossed by the draft Order Limits of Section 6.
- 6.5.26 Two IDB watercourses (Harfords Dyke and Rose and Crown Drain), which may need to be diverted, are located within the draft Order Limits. The IDB-maintained watercourses immediately flow south before flowing east. Although the tidal River Nene is the closest main river to the Section 7 Study Area, it appears that there is no hydrological connection between the watercourse network within the Section 7 Study Area and this watercourse. Instead, the watercourses within the Section 7 Study Area form part of a wider pumped drainage catchment which drains eastwards towards Islington Pumping Station on the River Great Ouse (NGR TF 59016 14825, approximately 7.5km from the Study Area). The pumping station is managed by King's Lynn IDB to manage land drainage and flood risk to properties within the catchment.
- 6.5.27 There are no Environment Agency gauging stations on any of the watercourses traversing the Section 7 Study Area. Given that this area is located in an IDB-managed pumped catchment, data from nearby flow gauging stations on other watercourses are unlikely to serve as a useful proxy for the hydrological behaviour of

the catchment. Further engagement with King's Lynn IDB will be carried out prior to finalisation of the ES to ensure that watercourse connectivity and the level management regime in this catchment is fully understood.

- 6.5.28 **Table 6.4** summarises the surface water receptors considered within 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
IDB maintained watercourses	Medium	<ul style="list-style-type: none"> Arterial watercourses maintained by King's Lynn IDB to maintain drainage within the catchment to Islington Pumping Station, including Harfords Dyke and the Rose and Crown Drain. Artificial or heavily modified morphology, not part of a reportable WFD water body. Potential for direct impacts as a result of watercourse crossings and diversions. Potential for indirect impacts via changes to runoff rates and water quality as a result of construction activities and substation operation.
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, arterial network. Potential for direct impacts as a result of watercourse crossings and diversions. Potential for indirect impacts via changes to runoff rates and water quality as a result of construction activities and substation operation.

Water Quality and Water Framework Directive Status

- 6.5.29 The Section 7 Study Area is located within the North West Norfolk Management Catchment and North West Norfolk Rivers Operational Catchment. The Section 7 Study Area is within a region of no reportable waterbodies, as shown in **PEI Report Volume 2 Part B Section 7 Figure 6.4 Water Framework Directive Surface Water Body Status**. However, other reportable waterbodies in the same operational catchment indirectly connected with Section 7 are listed in **Table 6.5**.
- 6.5.30 The WFD classifications for the waterbodies are informed by monitoring a range of parameters that are indicators of water quality from the Environment Agency monitoring sites. On the basis that the surrounding waterbodies are similar and affected by similar issues, such as intense agriculture, they demonstrate the following water qualities and characteristics. They both share moderate water body status. The waterbodies also share a chemical status of 'fail' due to exceedance of priority hazardous substances, in particular mercury and its compounds, as well as Polybrominated diphenyl ethers (PBDE). Further detail regarding reasons for not achieving good status (RNAG) and WFD objective are provided in **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive**

Assessment. Information on groundwater water bodies is included in **PEI Report Volume 2 Part B Section 7 Chapter 7 Geology and Hydrogeology**.

Table 6.5 WFD waterbodies indirectly connected with Section 7

Water Body (ID)	Water Body Type	Water Body Type (Cycle 3)	Overall Water Body status (2022) ¹
Babingley River (GB105033047620)	River	River	Moderate
South Holland Main Drain (GB205032050405)	River	River	Moderate

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

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

Surface Water-Dependent Nature Conservation Sites

- 6.5.32 No statutory or non-statutory nature conservation sites that are dependent on surface water have been identified within the Section 7 Study Area. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) will be addressed separately in the ES.

Water Resources

- 6.5.33 Data to characterise existing water interests has been collected from the Environment Agency and Local Authorities. Based on the available data for the Section 7 Study Area, there are no licensed surface water abstractions or discharges present. Additionally, correspondence with the Borough Council of King's Lynn and West Norfolk indicates that there are no private water supplies located within the Section 7 Study Area.
- 6.5.34 An assessment of effects upon any identified groundwater abstractions, including private water supplies, is provided in **PEI Report Volume 2 Part B Section 7 Chapter 7 Geology and Hydrogeology**.
- 6.5.35 The Section 7 Study Area intersects the unassessed north-eastern region of the Nene Abstraction Licensing Strategy (ALS) (Ref 31). However, according to the nearest assessment point (AP16 – Nene Downstream Boundary) the Section 7 Study Area is likely to be within an area of restricted water availability.

Flood Risk and Land Drainage

- 6.5.36 The Environment Agency's Flood Map for Planning (Ref 23) 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 23) likelihood of flooding respectively. Flood Zone extents are shown on **PEI Report Volume 2 Part B Section 7 Figure 6.1 Water Environment Receptors and Study Area**.
- 6.5.37 In this Section, according to the Environment Agency Flood Map for Planning (Ref 23) the majority of the Section 7 Study Area is within Flood Zone 3 (high risk), this is equivalent to an annual chance of flooding from rivers of 1 in 100 (1 per cent) or

greater, and an annual chance of flooding from the sea of 1 in 200 (0.5 per cent) or greater. The Section 7 draft Order Limits are located almost entirely within Flood Zone 3 and are also situated in the Flood Warning Area accounting for tidal breach east of Wisbech along the A47 at West Walton, Emneth Hungate and Terrington St John. A small proportionate of the draft Order Limits of Section 7 are located within Flood Zone 2.

- 6.5.38 According to Environment Agency long-term flood risk mapping, tidal flooding poses the primary flood risk to Section 7, with a medium risk of flooding (between 1 and 3.3 per cent chance each year) (Ref 24). This is largely attributed to the low-lying topography of Section 7, and the proximity of major tidal rivers such as the Nene and Great Ouse.
- 6.5.39 According to the Environment Agency Asset Information and Maintenance (AIMS) database (Ref 32), there are no flood formal defences present within the Section 7 Study Area. However, there are extensive flood defence embankments associated with Rivers Nene and Great Ouse in the wider local area. The Section 7 Study Area (including the new Walpole B Substation) is located in an area benefiting from these defences. Further work will be carried out using hydraulic modelling to determine the level of this benefit, the potential residual risks associated with Section 7 infrastructure and the level of flood protection required for the proposed Walpole B substation. In addition, as noted above, engagement with King's Lynn IDB will be carried out to understand the role of the operation of the Islington Pumping Station in controlling water levels in the local watercourse network within the Section 7 Study Area. This will be reported in the final FRA to be included within the ES which accompanies the DCO application. At this preliminary stage, a precautionary approach has been taken to inform the **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment** and the preliminary assessment of effects included in section 6.7.
- 6.5.40 The Risk of Flooding from Surface Water map (Ref 24) indicates small areas of low risk ponding within the Section 7 Study Area and is illustrated in **PEI Report Volume 2 Part B Section 7 Figure 6.3 Surface Water Flood Risk**, with some areas of high risk ponding (more than 3.3 per cent chance each year) largely associated with the agricultural drainage ditches and topographic low points.
- 6.5.41 Risk of flooding from sewers is not considered as a significant source of flooding in Section 7 due to the predominantly rural setting of the Project.
- 6.5.42 The Environment Agency's on-line flood risk mapping for reservoirs (Ref 26) indicates no risk of flooding from reservoir failure within the Section 7 Study Area.
- 6.5.43 A number of external receptors for flood risk effects from the Project have been identified within the Section 7 Study Area. The receptors identified and their associated values are listed in **Table 6.6** below.

Table 6.6 Identified flood risk receptors and associated value

Receptor	Value	Rationale
Agricultural land and undeveloped land.	Low	Water compatible development.
Agricultural premises and commercial property designated as 'Less Vulnerable'.	Medium	Less vulnerable development.
Residential properties and other 'Highly Vulnerable' development types and access roads designated as 'More Vulnerable'. This includes Walton Highway, smaller residential areas, West Walton Fire Station plus rural residential properties.	High	More vulnerable development.
Flood defence embankments along River Nene, other essential infrastructure that is vulnerable to flooding, such as major highways and existing electricity substations.	Very High	Essential infrastructure or highly vulnerable development.

Future Baseline

- 6.5.44 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.
- 6.5.45 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.

Climate and Flood Risk

- 6.5.46 Climate change is likely to lead to significant changes in hydrological conditions within the Section 7 Study Area over the lifetime of the Project. Outputs from UKCP18 (Ref 33) and the Future Flows and Groundwater Levels (FFGWL) Project (Ref 34) have been used to assess likely changes in ambient conditions for the purposes of the future baseline.
- 6.5.47 The FFGWL project is the first of its kind to conduct a consistent assessment of the impact of climate change on river flows and groundwater levels across Great Britain. The project modelled a total of 282 river catchments and 24 boreholes to capture the

range of climate, land use, geological and geographical characteristics found in England, Wales and Scotland. The outputs aid the study of the impact of climate change on water availability and allows river basin management plans to be tested for robustness (Ref 35). Analysis of the impact of climate change on transient flows for watercourses traversing the Section 7 Study Area has not been conducted due to the lack of location specific data. It is also not expected that this data will be available to inform the ES. However, an upstream datapoint on Harper's Brook, a tributary of the River Nene, indicates that transient flows are projected to decrease at all flow percentiles across all models. For the Q30 flow percentile, a decrease of up to 10 per cent by 2080 is predicted by most models. At the Q90 flow percentile, decreases in transient flows range between 60 and 10 per cent by 2080, depending on the model used (Ref 36). Assessment of seasonal average changes in the region of the Section 7 Study Area indicate that in the 2050s winter flows will increase up to 20 percent in most scenarios, spring flows will decrease by up to 20 percent in most scenarios, summer flows will decrease by between 20 and 40 percent in most scenarios and autumn flows will decrease by up to 20 percent in most scenarios (Ref 37).

- 6.5.48 For the FRA to be completed in support of the ES, the impacts of climate change on future flood risk will be assessed in line with current Environment Agency guidance (Ref 38). Current Environment Agency recommendations for climate change factors to be applied to extreme rainfall and river flows for the Project area and are summarised in **Table 6.7**, **Table 6.8** and **Table 6.9** below. These factors are based on analysis of UKCP18 climate model outputs for rainfall and from hydrological models driven by UKCP18 rainfall outputs.

Table 6.7 Peak river flow climate change allowances for the North West Norfolk Management Catchment (Ref 39)

Allowance Category	Potential Change Anticipated for the 2020s	Potential Change Anticipated for the 2050s	Potential Change Anticipated for 2080s
Upper	30%	34%	57%
Higher	18%	18%	33%
Central	13%	11%	23%

Table 6.8 3.3 per cent Annual exceedance probability peak rainfall climate change allowances for the North West Norfolk Management Catchment (Ref 39)

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

Table 6.9 1 per cent Annual exceedance probability peak rainfall climate change allowances for the North West Norfolk Management Catchment (Ref 39)

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

6.5.49 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 38). 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 38).

Topography and land use

6.5.50 Land use change can affect the permeability of the ground, which can affect surface water run-off. Given that most of the Project 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 Study Area. However, as noted above, the Section 7 Study Area is within an IDB-managed pumped catchment. Changes to agricultural land use practices and rising tidal levels in the River Great Ouse resulting from climate change may impact the management arrangements for this catchment in the future. Given that the surrounding areas are largely rural and in Flood Zone 3, significant new urban development pressure is unlikely. Nevertheless, developers of any new commercial or residential development will be obliged to meet the requirements of the NPPF to ensure that surface runoff is managed within developments so as not to increase flood risk to others.

Water quality and Water Framework Directive status

6.5.51 Given the current status of the WFD waterbodies in close proximity to the Section 7 Study Area is moderate, it is anticipated the future status will improve, ultimately to good, as required by the WFD. Improvements to WFD water body status associated with improvements to individual quality elements (i.e., PBDE) would result in higher quality aquatic environments in these waterbodies. Given that the sensitivity of WFD waterbodies is not determined by their status, this does not influence the assessment relative to the existing or future baseline.

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

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

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

- 6.5.52 The WFD reasons for not achieving good status for waterbodies close to the Section 7 Study Area are included in **PEI Report Volume 3 Part C Appendix 5B Preliminary Water Framework Directive Assessment**.

Water resources

- 6.5.53 The location and rate of surface water abstractions in the area could vary over time and may result in changes to Abstraction Licence Strategy (ALS) water availability. Despite Section 7 falling within the unassessed region of the Nene Catchment ALS, it is assumed that the Environment Agency is unlikely to licence significant additional new abstractions in this area. This is due to the restricted water availability in adjacent assessed areas at Q50 flow within the Nene Catchment ALS. Water becomes unavailable across the Nene Catchment ALS for Q70 and Q95 flows.

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 40) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 41) 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 42) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 6.6.2 The Section 7 draft Order Limits have been located to avoid sensitive Environment and Flood Risk receptors, where practicable. This is consistent with the sequential approach to management of flood risk advocated in NSP EN-1 (Ref 43); and NPPF (Ref 8).
- 6.6.3 As part of the process of ongoing Project design, the Water Environment and Flood Risk team will work alongside other environmental disciplines and the design team to ensure that appropriate mitigation is incorporated into the final design for permanent infrastructure, to minimise effects on Water Environment and Flood Risk receptors. These include, but are not limited to, the following:
- i. Any flood protection measures for the substation are to be designed in accordance with National Grid Electricity Transmission plc (National Grid) internal guidance on substation flood resilience and consistent with planning policy requirements to ensure no increased flood risk to third parties.
 - ii. Substation surface water drainage systems will provide attenuation of runoff from impermeable surfaces to greenfield rates and incorporate appropriate pollution prevention measures, incorporating the use of Sustainable Urban Drainage Systems (SuDS) as far as practicable.
 - iii. If watercourse diversions are required to provide sufficient space for the substation platform, then these will be designed to provide an equivalent conveyance capacity to the existing watercourses, and will incorporate morphological features to promote aquatic biodiversity to a level that is

consistent with maintaining effective land drainage. Culverting will be avoided as far as practicable.

- iv. Any requirements for water supply and foul water treatment and disposal for office and welfare facilities at substations will be designed to minimise impacts on water resources and receiving water quality.
- v. 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

Construction

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

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

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

be stripped of the topsoil, which will be stored and reinstated in accordance with the Soil Management Plan.

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

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

- iii. W03: Riverbank and in-channel vegetation will be retained where not directly affected by installation works. As far as possible, natural substrate will be provided through temporary watercourse crossing culverts.
- iv. W04: Where watercourses are to be crossed by construction traffic, measures to be applied include the use of temporary culverts or temporary clear span bridges. Once the temporary culvert is installed, the area above the temporary culvert will be backfilled and construction mats placed over the backfilled area to permit the passage of plant, equipment, materials, and people. Temporary culverts will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge. Where flood defences are present, crossing design should ensure that their integrity and standard of protection are preserved. Watercourse bed, banks and any flood defences will be subject to full reinstatement on removal of temporary watercourse crossings on completion of construction works. Specific detailed designs for each watercourse crossing, consistent with these design principles, will be prepared by the construction contractor. These will be subject to the appropriate consent by the relevant drainage authority (FRAP from the Environment Agency for main rivers; OWC from the LLFA or IDB for ordinary watercourses).
- v. W05: The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This will particularly be with regard not only to volumes and discharge rates, but also to water quality (particularly suspended solids, pH and hydrocarbons) and will include discharges to land, water bodies or third-party drains/sewers.
- vi. W06: The Project will incorporate appropriate surface water drainage measures into its final design for the haul roads, access tracks, works compounds and laydown areas so that they do not lead to a significant increase in flood risk. Access roads (and working areas) in the floodplain are to be as close to ground level as possible (a slight raised surface, relative to the adjacent land, is often required to allow for drainage). This is to minimise the loss of floodplain storage volumes associated with raised structures such as raised access roads, working areas and associated topsoil stockpiles. Cross drainage would be provided as necessary at topographic low points. Stockpiles would be located outside of the floodplain as far as reasonably practicable. Approaches to bridges and culverts in Flood Zones would minimise ramping up to the bridge deck so as not to impede flood flow conveyance.
- vii. W07: The contractor(s) will subscribe to the EA's Floodline service, which provides advance warning of potential local flooding events, and subscribe to the Met Office's Weather Warnings email alerts system and any other relevant flood warning information. The contractor(s) will implement a suitable flood risk action plan, which would form part of the Emergency Action Plan, and will include appropriate evacuation procedures should a flood occur or be forecast.
- viii. W08: Active private water supplies will be identified with landowners through the landowner discussions. Appropriate measures would be considered during construction to prevent any water quality deterioration from pollution. In the event of a landowner or tenant reporting that installation activities have affected their private water supplies, an initial response will be provided within 24 hours.

Where the installation works have affected a private water supply, an alternative water supply will be provided, as appropriate.

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

Additional Mitigation Measures

- 6.6.7 Additional mitigation measures are those required to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and control measures described above.
- 6.6.1 Potential additional mitigation measures which may be required to reduce the effects of the Project upon the Water Environment and Flood Risk are in the early stages of development, based upon an iterative process informed by ongoing survey and assessment. These typically include additional measures which specifically serve a mitigation function, to reduce the scale of potential impacts. This may include a requirement for compensatory flood storage volume, subject to further development of the FRA.
- 6.6.2 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 EA. These measures will be described within the ES.

- 6.6.3 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 7 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 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 6.10**, 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 described in section 10.5 have the potential to be directly or indirectly impacted due to the construction and permanent presence of new pylons, the new Walpole B Substation, including the associated permanent access road, and modified existing overhead line.
- 6.7.6 The proposed temporary and permanent features within Section 7 are illustrated on the following figures:
- i. **PEI Report Volume 2 Part B Section 7 Figure 1.2 Permanent and Operational Features;**
 - ii. **PEI Report Volume 2 Part B Section 7 Figure 1.3 Temporary and Construction Features.**
- 6.7.7 The permanent access road for the new Walpole B Substation would require widening of an existing IDB maintained watercourse crossing off West Drove North.
- 6.7.8 The proposed location of the new Walpole B Substation would require works to both IDB-maintained watercourses and ordinary watercourses, including watercourse crossings (closed culverts) and/or diversions. Design of any permanent diversions of these watercourses is ongoing and further information on this element will be provided within the ES.
- 6.7.9 Temporary watercourse crossing would also be required to facilitate access during construction of new overhead line and modification of existing overhead lines. As set out within **PEI Report Volume 3 Part A Appendix 5C Indicative Bridge and Culvert Schedule**, eight temporary crossings are currently assumed to be required within Section 7.

Likely Significant Effects

Construction

Aquatic Environment and Water Resources Receptors

- 6.7.10 Based upon the preliminary assessment, no significant effects upon aquatic environment and water resource receptors within the Section 7 Study Area are predicted as a result of the construction phase of the Project. Further discussion is provided in the following sections in relation to the predicted non-significant effects of the Project.

Flood risk

Changes to Fluvial Flood Risk Associated with Loss Of Floodplain Storage and/or Change in Floodplain Flow Conveyance

- 6.7.11 The land within the Section 7 draft Order Limits is within Flood Zone 3. The Section 7 Study Area also includes areas within Flood zone 2 to the north. The construction of infrastructure within this zone has potential to reduce or displace floodplain storage, which could adversely impact flood risk. It is assumed temporary works will include stockpiling of materials within the floodplain, due to both the temporary storage of soils and the import of aggregate for the design elements. The construction of access routes, presence of stockpiles, watercourse crossings and working areas also has the potential to compartmentalise the floodplain by obstructing water flow.
- 6.7.12 The area within the Section 7 draft Order Limits is defended floodplain. Therefore, under normal conditions, there will be no effect on floodplain storage and conveyance arising from project construction activities. However, under conditions of flood defence overtopping or breach, the presence of the Project construction works could lead to a change in residual flood risk for external receptors, through reducing floodplain storage or impeding flood conveyance.
- 6.7.13 The potential for loss of the floodplain and changes in floodplain flow conveyance would be managed through embedded control measures, including ensuring that temporary access watercourse crossings have sufficient conveyance capacity (Preliminary CoCP measure W04), ensuring that access roads and working areas in the floodplain are as close to ground level as possible (W06) and that appropriate provision for disruption of drainage is provided (W10). It should also be noted that construction activities are temporary. Temporary works infrastructure, including haul roads and associated watercourse crossings would be removed. Land required temporarily and watercourses affected by temporary crossings would be reinstated following completion of construction.
- 6.7.14 A full assessment of potential changes in flood risk to external third party receptors has not yet been completed. There are several factors which require further assessment to inform the final FRA and ES, informed by engagement with the EA. Specifically these include confirmation of the standard of defence provided by the existing system of flood risk management assets; confirmation of compensatory storage requirements; review existing flood models and agreement of the scope of future assessment to be reported within the FRA and ES. Further information has been provided in **PEI Report Volume 3 Part C Appendix 5A Preliminary Flood Risk Assessment**.

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

Operation and Maintenance

Aquatic Environment and Water Resources Receptors

- 6.7.16 The operational phase impacts on aquatic environment and water resource receptors arising from overhead line aspects of the project were scoped out of the assessment at scoping stage and are therefore not considered further, in accordance with the Scoping Opinion.

Flood Risk

Changes to Fluvial Flood Risk Associated with Loss of Floodplain Storage and/or Flow Conveyance

- 6.7.17 The effects on flood risk receptors from the operation of the Project have been scoped into the assessment for the new Walpole B Substation and new pylons in Section 7. As noted above, the project infrastructure within the Section 7 draft Order Limits is within an area of defended floodplain. Therefore, under normal conditions, there will be no effect on floodplain storage and conveyance arising from the project. However, under conditions of flood defence overtopping or breach, the permanent presence of the project infrastructure could lead to a change in residual flood risk for external receptors through reducing floodplain storage or impeding flood conveyance.
- 6.7.18 Due to their open lattice structure, the impact on floodplain storage resulting from the presence of pylons is considered to be negligible, even under conditions where flood defences are overwhelmed. Regarding impacts on flow conveyance, this too is likely to be negligible, except under circumstances where pylons are located close to flood defence breach or overtopping. This will be considered further as part of modelling assessments being carried out to support the FRA to be submitted in support of the DCO application.
- 6.7.19 In relation to the new Walpole B Substation, the National Grid design criteria (Ref 44) requires substations to be resilient to flooding up to and including a 1 in 1,000-year (0.1 per cent AEP) flood event with an allowance for climate change. To ensure the substation achieves the required flood resilience there may be a requirement for land raising in the area, or the construction of a flood wall to provide resilience to the substation and associated accesses.
- 6.7.20 The current standard of protection of all current defences needs to be assessed to ensure defences are accurately represented in any modelling required. Correspondence with the Environment Agency (received 04 February 2025) indicates

that local flood storage compensation may be required as the proposed new Walpole B Substation lies within a defended tidal zone. This is to offset the displaced flood water for 1 per cent AEP fluvial event plus climate change and 0.5 per cent AEP tidal event plus climate change. There may be increased residual risk of flooding under the circumstances of breach or overtopping at this location if a substation(s) platform level is raised behind defences and associated additional mitigation is not in place. The permanent impacts of the substation(s) upon flood risk are however, subject to further design development and ongoing flood risk assessment.

- 6.7.21 Further investigations and consultations with the Environment Agency are required to understand the flood risk in the Section 7 Study Area, review of existing flood models and agree a scope to future assessment to be reported in the FRA and ES. This will include an assessment of the effects of climate change over the lifetime of the Project.
- 6.7.22 At this preliminary stage of assessment, the magnitude of impacts upon flood risk due to permanent loss of floodplain storage capacity is assessed as large adverse, given current uncertainty around magnitude of impacts and requirements for additional mitigation. In the absence of additional mitigation, effects during the operational phase of the Project upon flood risk receptors of very high to medium value are likely to be major to moderate, and therefore significant. Effects upon low value receptors would be minor and are therefore not assessed as significant.

Non-Significant Effects

- 6.7.23 For completeness, **Table 6.10** 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 6.10 Preliminary summary of non-significant Water Environment and Flood Risk effects – Section 7

Impact	Receptor(s)	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	IDB-maintained watercourses and ordinary watercourses listed in Table 6.4	Low - Medium	Small adverse	Not Significant (Minor)	<p>During the construction of the new substation and associated overhead line works there is potential to generate sediment laden runoff which could, in absence of appropriate embedded measures, adversely affect water quality in surface water receptors. Activities that could potentially produce sediment-laden runoff include:</p> <ul style="list-style-type: none"> • Construction and removal of access routes, construction compounds and working areas (including topsoil stripping, earthworks and excavations); • Runoff from installed access routes, temporary construction compounds and working areas; • Direct sediment disturbance from in channel works for the construction of access crossings; • Potential diversion/realignment of ordinary watercourses and IDB watercourses; and • The use and management of soil stockpiles.

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>The assessment of suspended sediment-related effects is considered precautionary, given that the watercourses across the Study Area are likely to experience baseline variation in suspended sediment due to agricultural practice in the area.</p> <p>Assuming the implementation of embedded environmental measures included in the Preliminary CoCP (including GG03, GG16, W01, W05 and W11) predicted effects on the watercourses due to sediment laden run-off are not significant.</p>
Potential impacts on hydromorphology and flow conveyance as a result of increased sediment inputs from watercourse disturbance (including from new watercourse crossings).	IDB-maintained watercourses and ordinary watercourses listed in Table 6.4	Low - Medium	Small adverse	Not Significant (Minor)	<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 would be 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 minimum and ensure minimal change to existing morphology and flow conveyance,</p>

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>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).	IDB-maintained watercourses and ordinary watercourses listed in Table 6.4	Low - Medium	Small adverse	Not Significant (Minor)	<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 GG03, GG15, GG23, W02, W05, W09 and W11.</p>

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					Assuming the implementation of these measures, predicted effects on surface water receptors and water resources/WFD receptors due to potential mobilisation and release of pollutants are not significant.
Deterioration in the water quality of aquatic environment receptors affected by mobilisation of contaminants in groundwater and subsequently surface water	IDB-maintained watercourses and ordinary watercourses listed in Table 6.4	Low - Medium	Small adverse	Not Significant (Minor)	<p>The risk of pollution of groundwater as a result of project construction activities would be controlled through preparation of a Foundation Works Risk Assessment (FWRA), in accordance with 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.</p> <p>Therefore, in this preliminary assessment, predicted effects upon surface water receptors resulting from the mobilisation of ground contaminants are not significant.</p>
Impact from any dewatering for construction from temporary works impacting groundwater – surface water interactions.	IDB-maintained watercourses and ordinary watercourses listed in Table 6.4	Low - Medium	Small adverse	Not Significant (Minor)	<p>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.</p> <p>The superficial deposits within the Study Area are designated as unproductive strata, so are not likely to yield any significant quantities of groundwater. The Tidal Flat superficial deposits may yield</p>

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>limited amounts of groundwater, although these are likely to be isolated and not widespread across the Section 7 Study Area.</p> <p>Earthworks within Section 7 are not likely to be of substantive depths and the superficial deposits across the Study Area for Section 7 are primarily of low permeability. It is considered likely that any dewatering during construction of the Walpole B Substation would be restricted to management of surface water accumulation and localised perched water.</p> <p>Where dewatering is required, temporary measures will be undertaken in accordance with Environment Agency guidance and in line with control measures. Groundwater effects on flows and levels are predicted to be limited and as a result, there is a limited scope for groundwater dependent surface water flows to be affected. The risk of mobilisation of pre-existing contamination would be managed through control measures within the Preliminary CoCP, including GH02 and GH11.</p> <p>Therefore, predicted effects due to dewatering of temporary works areas are not significant.</p>

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
Water Resource Receptors					
The potential effects noted above for surface water aquatic environment receptors could also have implications for surface water resource availability.	<ul style="list-style-type: none"> Licensed surface water abstractions Unlicensed surface water abstractions for private water supply Discharges to surface waters 	N/A	N/A	N/A	As reported in section 6.5, no water resource receptors have been identified within the Section 7 Study Area. Consequently, no adverse effects upon water resources as a result of construction of the Project are predicted within the Section 7 Study Area.
Flood Risk Receptors					
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 eight proposed temporary watercourse crossings within the Section 7 draft Order Limits. In the absence of appropriate measures, these crossings could impact flow conveyance, which could potentially influence flood risk upstream of the watercourse crossing.</p> <p>The proposed embedded measures to prevent an increase in surface water flood risk due to changes in existing watercourse flow conveyance are set out in the Preliminary CoCP and include W04 and W10.</p> <p>Based upon the implementation of these measures, predicted effects upon flood risk</p>

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					due to new or temporary watercourse crossings are 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)	<p>During construction, there would be temporary changes to land surface permeabilities. Temporary surfaces with lower permeability relative to the baseline include stone aggregate surfaces on the following: access tracks, pylon working areas, stringing platforms, contractor compounds and laydown areas. It is assumed Type 1 aggregate would be used, which has a lower permeability than the soils present across the majority of the Study Area. However, this finish is not as impermeable as tarmac or concrete.</p> <p>Changes to surfacing resulting from temporary works could reduce rainfall infiltration rates, increase runoff rates, and induce overland flow during construction. This could contribute to localised changes to the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes. Any potential watercourse diversions may also disrupt or server existing field drainage systems, dependent on the alignment of any diversions.</p> <p>The proposed embedded measures to prevent an increase in surface water flood</p>

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					<p>risk during construction are set out in the Preliminary CoCP and include W06 and W10.</p> <p>Based upon the implementation of these embedded measures, effects on flood risk receptors due to changes in run-off rates and pathways during the construction phase are predicted to be negligible, and therefore not significant.</p>
Impacts on the integrity of flood defence and land drainage infrastructure as a result of physical impingement of Project infrastructure.	Property and Infrastructure at risk of flooding	Low – Very High	Negligible	Not Significant (Negligible to Minor)	<p>In the absence of appropriate measures, the impingement of Project infrastructure could deteriorate the factor of safety of flood defences, which could potentially increase flood risk to downstream receptors.</p> <p>Project infrastructure would only impact watercourses which have flood defence embankments present such as the River Nene in Section 6. The Study Area is defended floodplain, therefore, flood defences 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. Generally, a hierarchy of mitigation principles would be as follows:</p> <ul style="list-style-type: none"> • Avoid where possible; • Pre-commencement survey;

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					<ul style="list-style-type: none"> 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. <p>Based upon the implementation of embedded measures, effects on flood risk receptors due to impacts upon existing flood defences and drainage infrastructure during the construction phase are predicted to be negligible, and therefore not significant.</p>
Operation Phase					
Flood Risk Receptors					
Changes to surface water flood risk due to changes in runoff rates resulting in the creation of	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 within Section 7. Permanent impermeable surfaces would include tarmac access

Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
impermeable surfaces, and to changes in surface water runoff pathways due to changes in ground surface levels.					<p>roads to and within the substation and concrete and/or tarmac hardstanding within the substation boundary and associated building footprints. The proposed measures for the impermeable surfaces associated with the substation during operation include mitigation through drainage design. This would incorporate the use of SuDS as required. Foul drainage arisings from welfare facilities on the site will either be discharged to the mains sewer network or tankered off-site to an appropriate permitted treatment facility.</p> <p>Overhead line maintenance would involve light vehicles using existing agricultural access and would not involve significant ground disturbance. Therefore, the impacts of the operation of Section 7 project infrastructure on flood risk receptors is considered negligible and not significant.</p>

Aquatic Environment and Water Resources Receptors

Increased pollution from storage of potential pollutants such as oil-filled transformers.	IDB-maintained watercourses and ordinary watercourses (referred to in Table 6.4)	Low - Medium	Small adverse	Not Significant (Minor)	<p>The proposed substation has the potential to affect water quality conditions and therefore, aquatic environment receptors within the associated water features via the introduction of contaminants.</p> <p>Substation drainage design would incorporate suitable pollution prevention measures for surface runoff through the use of SuDS, plus containment and oil</p>
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Impact	Receptor(s)	Value of Receptor(s) ¹	Magnitude of Change ²	Significance ³	Rationale
					interceptors for transformers as required. Foul drainage arisings from welfare facilities on the site would either be discharged to the mains sewer network or tankered off-site to an appropriate permitted treatment facility. Overhead line maintenance would involve light vehicles using existing agricultural access, and would not involve significant ground disturbance. Therefore, the impacts of the operation of Section 7 on aquatic environment receptors and water resources is considered negligible to minor and not significant.

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

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

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 in Appendix 4B EIA Technical Assessment Methodologies and Scope.

6.8 Monitoring

- 6.8.1 Given that in the absence of additional mitigation measures, significant effects have been identified within the Water Environment and Flood Risk assessment of Section 7 and due to the large Flood Zone 3 extent within this section, 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 Norfolk County Council Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026 (adopted 2011) [online]. Available at: <https://www.north-norfolk.gov.uk/media/9022/j3-core-strategy-minerals-waste-development-management-policies-dpd-2010-2026.pdf> [Accessed 02 October 2024].
- Ref 2 Norfolk County Council (2021) Norfolk County Council Local Flood Risk Management Strategy Policy Review [online]. Available at: <https://www.norfolk.gov.uk/article/39041/Local-Flood-Risk-Management-strategy> [Accessed 02 October 2024].
- Ref 3 Borough Council of King's Lynn and West Norfolk (2025) King's Lynn and West Norfolk Local Plan 2021 – 2040 Adopted March 2025 [online]. Available at: https://www.west-norfolk.gov.uk/homepage/23/current_local_plan [Accessed 29 April 2025].
- Ref 4 King's Lynn Internal Drainage Board (2013) Byelaws, 3, 6, 7, 10, 13, 14, 15, 16. [online] Available at: https://www.wlma.org.uk/uploads/KLIDB_Byelaws.pdf [Accessed 19 December 2024].
- Ref 5 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 6 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 7 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 8 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 9 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 10 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 11 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 12 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 25 November 2024].
- Ref 13 Hyder Consulting (2011) Tidal Nene and Tidal Welland Hazard Mapping – Information received from Environment Agency 2024.
- Ref 14 Mott MacDonald (2010) Northern Area Tidal Modelling, Volume 1-5: Breach Flood Mapping – Information received from Environment Agency 2024.
- Ref 15 Mott MacDonald (2010) Northern Area Tidal Modelling, Volume 3: Overtopping Flood Mapping – Information received from Environment Agency 2024.
- Ref 16 Met Office (2024) Climate Averages at Marham [online]. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/location-specific-long-term-averages/u127sbvd7> [Accessed 21 January 2025] .
- Ref 17 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 18 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 19 Department for Environment, Food and Rural Affairs (DEFRA) (2024). MAGIC Maps.
- Ref 20 Cranfield Soil and AgriFood Institute (2024) Soils Map [online]. Available at: <https://www.landis.org.uk/soilsmap/> [Accessed: 21 October 2024].
- Ref 21 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 22 UK Centre of Ecology & Hydrology Flood Estimation Handbook Web Service. [online]. Available at: <https://fehweb.ceh.ac.uk/> [Accessed: 21 October 2024].
- Ref 23 UK Government (2025). Flood Map for Planning [online]. Available at: <https://flood-map-for-planning.service.gov.uk/> [Accessed 21 January 2025].
- Ref 24 Environment Agency (2025) Long Term Flood Risk [online]. Available at: <https://www.gov.uk/check-long-term-flood-risk> [Accessed 21 January 2025.]
- Ref 25 NAFRA Dataset (2020) [online]. Available at: <https://www.arcgis.com/home/item.html?id=f8488c24a34f4456a69abd894a2ba180> [Accessed 21 October 2024].

- Ref 26 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 27 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 28 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 29 Environment Agency (2025). Catchment data explorer database [online]. <https://environment.data.gov.uk/catchment-planning/> [Accessed 21 January 2025].
- Ref 30 Data request – Information received from Environment Agency August 2024.
- Ref 31 Environment Agency (2021) Nene Catchment Abstraction Licensing Strategy [online]. Available at: <https://assets.publishing.service.gov.uk/media/606d91e28fa8f57359cf4346/CAMS-Nene-Catchment-Abstraction-Management-Strategy.pdf> [Accessed 23 January 2025].
- Ref 32 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 33 Met Office (2024). UKCP18 Summaries and Headline Findings [online]. Available at: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/summaries/index> [Accessed 28 November 2024].
- Ref 34 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 35 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 36 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 37 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 38 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 39 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 40 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 41 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 42 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 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 (2016). General electricity and substation design manual for civil, structural and building engineering, Section No:13; Flood defences for electricity for substations (TS 2.10.13, Issue 2). National Grid; London.

7. Geology and Hydrogeology

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7. Geology and Hydrogeology

7.1 Introduction

- 7.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Geology and Hydrogeology assessment of the New Walpole B Substation section (Section 7) 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 (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 7 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 7 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 7 Figures	Figure 7.1 Superficial Geology Figure 7.2 Bedrock Geology Figure 7.3 Aquifer Designations: Superficial Deposits Figure 7.4 Aquifer Designations: Bedrock Geology Figure 7.5 Landfills, Waste and Potentially Contaminative Previous Land Uses
PEI Report Volume 3 Part B Section 7 Appendix 7A Initial Contamination Risk Classification	A list of identified sites with potentially contaminative uses within the Section 7 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 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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.

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

- 7.1.3 There are interrelationships between the potential effects on Geology and Hydrogeology and other environmental topics. Therefore, please also refer to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 7 Chapter 4 Ecology and Biodiversity** should be consulted in relation to effects identified by the Geology and Hydrogeology assessment including impacts on land and groundwater quality and groundwater quantity, that may affect ecological receptors, such as Groundwater Dependent Terrestrial Ecosystems (GWDTE) and Sites of Specific Scientific Interest (SSSI);
 - ii. **PEI Report Volume 2 Part B Section 7 Chapter 6 Water Environment** should be consulted in relation to 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 7 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 Section 7 Study Area;
 - iv. **PEI Report Volume 2 Part B Section 7 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. King's Lynn & West Norfolk Borough Council Local Plan 2021-2040 (Adopted March 2025) (Ref 1):
 - Policy LP19 Environmental Assets – Green Infrastructure, Landscape character, Biodiversity and Geodiversity: Development should, in line with the mitigation hierarchy, seek to avoid, and where this is not possible, with justification, mitigate or compensate for any adverse impacts on geodiversity; and
 - Policy LP21 Environment, Design and Amenity: Proposals will be assessed against their impact on neighbouring uses and their occupants as well as the amenity of any future occupants of the proposed development across a number of factors including water contamination and quality.
- ii. Norfolk County Council, 2021. Norfolk Minerals and Waste Development Framework. Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010 – 2026 (Ref 2):
 - Core Strategy Policy CS14 – Environmental Protection: sets out requirements for development proposals to ensure no unacceptable adverse impacts on natural resources (including water and soil) and geodiversity;
 - Core Strategy Policy CS16 – Safeguarding mineral and waste sites and mineral resources: sets out the safeguarding procedure for existing, permitted and allocated waste sites and the requirements for development proposals for the use of safeguarded sites; and
 - Development Management Policy DM3 – Groundwater and surface water: this policy is relevant for hydrogeological receptors and sets out the requirements for developments, particularly within Source Protection Zones.
- iii. Norfolk County Council, 2017. Norfolk Minerals and Waste Development Framework. Mineral Site Specific Allocations Development Plan Document (Ref 3);
- iv. Norfolk County Council, 2013. Norfolk Minerals and Waste Development Framework. Waste Site Specific Allocations Development Plan Document (Ref 4);
- v. Norfolk Geodiversity Partnership, 2011. The Norfolk Geodiversity Action Plan (Ref 5): this document sets out the aims and objectives for conserving and protecting geodiversity sites and resources within Norfolk; and
- vi. Norfolk Geodiversity Partnership, 2011. Norfolk's Earth Heritage – Valuing Our Geodiversity (Ref 6): this document provides background information on the geodiversity of Norfolk and a list of Geological SSSIs.

7.3 Scope of Assessment

7.3.1 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 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 Geology and Hydrogeology chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.

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

7.3.3 The scope of the construction assessment covers the following receptor groups:

- i. Human health (construction workers, adjacent land users) – only in the context of land contamination assessments (various other aspects of human health are addressed in **PEI Report Volume 2 Part C Route-wide 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 7 Chapter 8 Agriculture and Soils**);
- v. Structures; and
- vi. Designated geological conservation sites (none present within the Section 7 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 Route-wide Chapter 8 Health and Wellbeing**);
- ii. Groundwater aquifers;
- iii. Groundwater abstractions; and,
- iv. Structures.

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 9), which includes an approach for contaminated land assessments in relation to human health, land and groundwater receptors. This guidance is based on the source-pathway-receptor approach, which forms the basis of the approach used for assessing effects relating to contamination. This approach is also consistent with the Environment Agency's

Approach to Groundwater Protection (Ref 10) including the requirements noted in that guidance in relation to Nationally Significant Infrastructure Projects. The EA's guidance (Ref 10) 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 11), adapted as necessary to support environmental impact assessment.
- 7.4.4 The assessment is 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 7.
- 7.4.6 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 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 7). As outlined within the Scoping Report (Ref 8), hydrogeological receptors further from the draft Order Limits are more susceptible to effects from the Project than geological receptors due to the mobile nature of groundwater and corresponding potential for the Project to affect receptors at a greater distance, hence the use of a larger Study Area for the hydrogeological assessment.

Data Collection

- 7.5.2 The following data has been used to inform the baseline conditions:
- Published historical mapping to identify potentially contaminative former land uses (National Library of Scotland mapping, (Ref 12);
 - UK Health Security Agency radon mapping (Ref 13);
 - Geological mapping published by the British Geological Survey (BGS) (1:50,000 scale) (Ref 14);

- iv. Historical borehole records held by the BGS (Ref 14), details of which are provided within **Table 7.2**;
- v. Groundwater abstraction details (public and private), discharge consents, historical pollution incident records, and historical and authorised landfills, as available from the Environment Agency (EA) and Local Planning Authorities, obtained through formal data requests;
- vi. Department for Environment, Food and Rural Affairs (DEFRA) groundwater aquifer information, provided through MAGIC (Multi-Agency Geographic Information for the Countryside) (Ref 15);
- vii. Source Protection Zones (SPZ) data, available under Open Government License (Ref 16);
- viii. Environment Agency (EA) Catchment Data Explorer records on groundwater quality (Ref 17);
- ix. Natural England designated Sites, i.e. Geological SSSIs, provided through MAGIC (Ref 12).
- x. Zetica Unexploded Ordnance (UXO) online hazard mapping (Ref 18);
- xi. Records from King's Lynn & West Norfolk Borough Council, including historical and current potentially contaminative land uses, obtained through a formal data request and received on 16 August 2024; and
- xii. Records on locally designated geological sites, including a review of relevant local planning documentation and readily available local geo-conservation documents.

7.5.3 The data sources listed above are as specified in the Grimsby to Walpole Scoping Report (Ref 8). Furthermore, where additional information over and above this is available from geotechnical assessments being carried out 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 10 % of the draft Order Limits for Section 7.

Existing Baseline

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

- i. **PEI Report Volume 2 Part B Section 7 Figure 7.1 Superficial Geology;**
- ii. **PEI Report Volume 2 Part B Section 7 Figure 7.2 Bedrock Geology;**
- iii. **PEI Report Volume 2 Part B Section 7 Figure 7.3 Aquifer Designations: Superficial Deposits;**
- iv. **PEI Report Volume 2 Part B Section 7 Figure 7.4 Aquifer Designations: Bedrock Geology;**

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

Topography and Current Land Use

- 7.5.5 Section 7 covers the new Walpole Substation and a short section of overhead line which requires diverting into the substation. Section 7 is located at the southeast edge of the Project extent, northeast of Wisbech.
- 7.5.6 The land within Section 7 is primarily used for agricultural purposes with minor/local roads. A review of Ordnance Survey (OS) mapping shows the Section 7 Study Area to be flat-lying throughout, with no evidence of contour lines and only isolated topographic highs of 5 m above ordnance datum (AOD).
- 7.5.7 Localised residential properties and farm buildings are present within the Section 7 Study Area, but generally not within the draft Order Limits. The exception to this is the Jasmine Nursery, a wholesale nursery, off Lynn Road within the south of Section 7. A second large nursery is present within the Section 7 Study Area, south of the draft Order Limits and south of Salts Road. The low-lying nature of the land is such that an abundance of surface water features is present within the Section 7 Study Area, including ponds, drains and streams. Existing 132 kV overhead lines are present within the Section 7 Study Area and within the draft Order Limits, shown on current OS mapping and historical mapping. A solar farm is present across the northern half of the Section 7 Study Area, located directly adjacent to and on the boundary of the draft Order Limits in the north of Section 7.
- 7.5.8 Aerial imagery indicates that there is some commercial built development within the Section 7 Study Area (all situated outside of the draft Order Limits), including a steel oil tank manufacturer, a plant and machinery hire contractor, a timber merchants, a waste management contractor, a construction contractor and a trucking company. 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 7 Appendix 7A Initial Contamination Risk Classification.**
- 7.5.9 Evidence of burnt ground/discoloration is present on aerial imagery within the southwest of the Section 7 Study Area, adjacent to a commercial facility off Lynn Road, approximately 500 m southwest of the draft Order Limits, with a building contractor noted adjacent to this feature.

Historical Land Use

- 7.5.10 A mound is noted on historical mapping (Ref 12) dated 1949 – 1973 in the southwest of the Section 7 Study Area off Salts Road, but not within the draft Order Limits. No evidence of this feature is present on current aerial imagery.
- 7.5.11 The current and historical features identified within this Section are shown on **PEI Report Volume 2 Part B Section 7 Figure 7.5 Landfills, Waste and Potentially Contaminative Previous Land Uses.**

Geology

Made Ground

- 7.5.12 There are no recorded artificial deposits within the draft Order Limits or Section 7 Study Area, although Made Ground would be expected in minor deposits within isolated areas along roads and access tracks, particularly along the edges of the draft Order Limits, 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

- 7.5.13 The Section 7 Study Area is recorded to be underlain entirely by superficial deposits comprising Tidal Flat deposits, consisting of clay and silt. No other superficial deposits are recorded within the Section 7 Study Area. The superficial deposits within the Section 7 Study Area are shown on **PEI Report Volume 2 Part B Section 7 Figure 7.1 Superficial Geology**.

Bedrock

- 7.5.14 The bedrock within the Section 7 Study Area is recorded to comprise mudstone of the Ampthill Clay Formation, generally described as smooth or slightly silty mudstone and argillaceous limestone nodules. The bedrock strata within the Section 7 Study Area are shown on **PEI Report Volume 2 Part B Section 7 Figure 7.2 Bedrock Geology**.

Geological Setting

- 7.5.15 No linear geological features (e.g. faults, breaklines, etc.) are recorded within the Section 7 Study Area. Published geological mapping (Ref 14) records a general dip of bedrock strata down towards the east, although no indication of dip value is recorded across the Section 7 Study Area.
- 7.5.16 Borehole records published by the BGS were reviewed as part of this assessment to help confirm the anticipated geological sequence in line with the published geological mapping. No BGS boreholes (Ref 14) are located within the draft Order Limits for Section 7, but five boreholes are located within the south of the Section 7 Study Area and logs of these are summarised in **Table 7.2** below.

Table 7.2 Summary of British Geological Survey boreholes within the Section 7 Study Area

Borehole ID	Location (Easting, Northing)	Location Description	Stratigraphy
TF41SE6	549130, 313160	Southwest of pylon 4ZM329, off Salts Road at Walton Highway	<ul style="list-style-type: none">0 – 20.73 m: No recovery due to drilling method, indication of boundary to recent deposits at 16.3 m16.3 – 44.21 m: Glacial Deposits – clays, chalk-rich

Borehole ID	Location (Easting, Northing)	Location Description	Stratigraphy
			<ul style="list-style-type: none"> • 44.21 – 68.25 m: Ampthill Clay Formation, with cementstone bands • 68.25 – 82.31 m: Elsworth Rock Group • 82.31 – 99.40 m: Upper Oxford Clay
TF41SE14	549326, 312148	Southwest of the draft Order Limits (approximately 450 m), adjacent to the A47	<ul style="list-style-type: none"> • 0 – 0.30 m: Topsoil • 0.30 – 14.00 m: Alluvium (clays, silts and sands) • 14.00 – 15.00 m: Glacial Till • 15.00 – 26.00 m: Glacio-Lacustrine Clay
TF41SE34	549760, 312330	South of the draft Order Limits (approximately 100 m), adjacent to St Paul's Road South	<ul style="list-style-type: none"> • 0 – 0.70 m: Made Ground (topsoil with brick fragments) • 0.70 – 9.30 m: Alluvial Clay • 9.30 – 17.0 m: Alluvial Sand
TF41SE20	549749, 312704	West of the draft Order Limits (approximately 100 m), adjacent to A47	<ul style="list-style-type: none"> • 0 – 0.30 m: Topsoil • 0.30 – 2.70 m: Alluvium, cohesive • 2.70 – 14.70 m: Alluvium, granular • 14.70 – 25.00 m: Glacio-Lacustrine Clay
TF51SW5	550216, 313052	East of the draft Order Limits (approximately 500 m), adjacent to A47	<ul style="list-style-type: none"> • 0 – 0.30 m: Topsoil • 0.30 – 1.70 m: Alluvium, cohesive • 1.70 – 21.10 m: Alluvium, granular • 21.10 – 22.00 m: Glacial Till • 22.00 – 25.00 m: Glacio-Lacustrine Clay

7.5.17 No Local Geological Sites or sites nationally designated for their geological importance (e.g. SSSI) are located within the Section 7 Study Area.

7.5.18 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 7 Figure 7.1 Superficial Geology should be made for the areas affected by the classifications described.

- 7.5.19 Tidal Flat deposits (recorded across the entire Section 7 Study Area) are classified as Class D in relation to compressibility, meaning that compressibility and uneven settlement hazards are probably present. These deposits are also designated as medium plasticity clays (Class C with respect to shrink-swell hazards) and Class D for running sands hazards (defined as running sand hazards ‘may be’ or are ‘probably present’).

Hydrogeology

- 7.5.20 The superficial deposits (Tidal Flat deposits) and solid strata (mudstone of the Amphill Clay Formation) across the Section 7 Study Area are both designated as Unproductive Strata, defined as strata which have negligible significance for water supply or baseflows to rivers, lakes and wetlands. They consist of strata with low permeability that naturally offer protection to any aquifers that may be present beneath. The designations and spatial distribution of the superficial and bedrock aquifers within the Section 7 Study Area are shown on **PEI Report Volume 2 Part B Section 7 Figure 7.3 Aquifer Designations: Superficial Deposits** and **PEI Report Volume 2 Part B Section 7 Figure 7.4 Aquifer Designations: Bedrock Geology**.
- 7.5.21 The Section 7 Study Area is not located within any groundwater bodies monitored by the EA as part of the Water Framework Directive (WFD), due to the unproductive nature of both the superficial deposits and solid strata within Section 7.
- 7.5.22 No drinking water safeguard zones or nitrate vulnerable zones (NVZ) are present within the Section 7 Study Area.

Groundwater Levels

- 7.5.23 The BGS does not hold any records for groundwater levels within the Section 7 Study Area. The closest borehole is located c. 32 km east of the Study Area and therefore has not been referenced within this assessment.
- 7.5.24 The EA also does not hold any records for groundwater levels within the Section 7 Study Area. The closest boreholes monitored by the EA for groundwater levels are located north of the New Lincolnshire Connection Substation B to Refined Weston Marsh Substation Siting Zone (Section 4) Study Area and are within groundwater aquifers not connected to Section 7, where all strata designated as unproductive. Therefore, they have not been referenced within this assessment.

Source Protection Zones

- 7.5.25 No SPZs are present within the Section 7 Study Area, due to the unproductive nature of the superficial and bedrock strata within this Section.

Abstractions

- 7.5.26 There are no groundwater abstractions recorded by the EA within the Section 7 Study Area, due to the unproductive nature of the superficial and bedrock strata within this Section.
- 7.5.27 The local authority of Kings Lynn & West Norfolk Borough Council have indicated that they have no records of private water supplies within the Section 7 Study Area.

Environmental Setting

- 7.5.28 Zetica UXO online risk mapping (Ref 18) records the Section 7 Study Area as lying entirely within an area of Low bomb risk with no strategic targets identified within the Section 7 Study Area. The closest strategic target is located approximately 4 km north of the Section 7 Study Area at a former Royal Air Force (RAF) base.
- 7.5.29 There are no recorded historical or active landfills, waste exemptions or recorded waste sites within the Section 7 Study Area.
- 7.5.30 The local authority of King's Lynn and West Norfolk have provided details of contaminative land uses within the Study Area for the Project where it lies within their district. Only one recorded contaminative land use is located within the Section 7 Study Area and comprises a closed petroleum license for JT Ward in the west of the Section 7 Study Area at Walton Highway, approximately 500 m southwest of the draft Order Limits. The location of this feature is shown on **PEI Report Volume 2 Part B Section 7 Figure 7.5 Landfills, Waste and Potentially Contaminative Previous Land Uses**.

Pollution Incidents

- 7.5.31 There are no recorded pollution incidents, from the Environment Agency records, within the Section 7 Study Area.

Discharge Consents

- 7.5.32 There are no recorded discharge consents within the Section 7 Study Area.

Radon

- 7.5.33 The radon potential within the Section 7 Study Area is considered to be low risk. The Section 7 Study Area is recorded as being within an area where less than one per cent of homes are at or above the radon Action Level, which is the lowest category defined by the UK Health Security Agency (Ref 13).

Minerals

- 7.5.34 A Minerals Safeguarding Report has been prepared for the Project, which is provided in **PEI Report Volume 3 Part B Sections 1 to 7 Appendix 7B Minerals Safeguarding Report**. This report identifies the safeguarded minerals and safeguarded areas within the draft Order Limits and any potential effects on these as a result of the Project, within the context of relevant mineral safeguarding policy. There are no safeguarded mineral areas or deposits that are considered likely to contain safeguarded minerals within the Section 7 Study Area.
- 7.5.35 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 7).

Future Baseline

- 7.5.36 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.

- 7.5.37 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. 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.
- 7.5.38 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.
- 7.5.39 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; 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.
- 7.5.40 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 7. This will remain under review prior to submission of the ES, to ensure that any change in circumstances are considered on a case-by-case basis.

7.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 7.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 19) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 20) 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 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.

- 7.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project.

Control Mitigation Measures

Construction

- 7.6.3 A Preliminary CoCP has been prepared for this project, provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The control measures included within the Preliminary CoCP relevant to the Geology and Hydrogeology assessment of Section 7 include:
- i. GH01: Intrusive ground investigations and assessment will be undertaken prior to construction which will inform appropriate geotechnical design in relation to the site/structure specific ground conditions including ground instability/adverse ground conditions.
 - ii. GH02: Construction methods such as appropriate piling techniques will be required to minimise the risk of mixing of aquifer bodies through the creation of new pathways. This includes the provision of a Foundation Works Risk Assessment (FWRA), which would be undertaken once the proposed foundation solutions are known, in accordance with CL:AIRE guidance 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention' (Ref 22).
 - 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 23).
 - v. GH05: Any temporary dewatering activities during construction will be undertaken in accordance with EA guidance (Ref 24), 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 practice contamination avoidance and waste management procedures for construction sites (e.g. regular vehicle checks, use of spill kits, correct waste storage and disposal).
 - vii. GH07: If required (e.g. for maintenance during the operational phase), herbicides to be used in accordance with relevant DEFRA guidance (Ref 25).
 - 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 26), with control of run-off during any application in SPZs.

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

Consideration will be given to the guidance in the Code of Practice developed by Contaminated Land: Applications in Real Environments (CLAIRE) “A Definition of Waste: Development Industry Code of Practice (DoWCoP)” (Ref 27). 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 Section 7 Study Area, as a result of construction, operational and/or maintenance activities.

- 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included in **Table 7.3**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 7.7.4 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.

Likely Significant Effects

Construction

- 7.7.5 Based on the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 7 as a result of the construction phase of the Project.

Operation and Maintenance

- 7.7.6 Based on the preliminary assessment, no significant effects are predicted for Geology and Hydrogeology receptors within Section 7 as a result of the operation and maintenance of the Project.

Likely Non-Significant Effects

- 7.7.7 For completeness, **Table 7.3** 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 7.3 Preliminary summary of non-significant Geology and Hydrogeology effects – Section 7

Receptor ¹	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>The potential contamination sources identified within Section 7 from the baseline conditions assessment are outlined within the initial contamination screening assessment within PEI Report Volume 3 Part B Section 7 Appendix 7A Initial Contamination Risk Classification.</p> <p>Based on the assessment within the initial contamination assessment, it is not anticipated that the construction will involve disturbance of ground affected by historical contamination.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), then with the use of appropriate personal protective equipment</p>

¹ Groundwater abstractions, bedrock groundwater aquifers and Geological Conservation Sites have not been included as receptors within this table due to their absence within the Section 7 Study Area. There are no groundwater abstractions within the Section 7 Study Area. The Ampthill Clay Formation is not considered as an aquifer due to the unproductive nature of the strata. There are no Geological Conservation Sites within the Section 7 Study Area.

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					(PPE) and the implementation of control measure 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.
		High (adjacent land users)	Negligible	Negligible – not significant	<p>It is not expected that contamination sources would be disturbed during the construction phase.</p> <p>In the event that unexpected contamination is encountered either by pre-construction ground investigation (control measure GH01) or during construction (control measure GH11), with the implementation of control measure (GH06 – dust and leachate control) detailed 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 adjacent land users</p>

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					are not considered to be significant.
Groundwater	Deterioration in chemical quality of the groundwater through disturbance of the ground during construction that is affected by pre-existing contamination	Negligible – Tidal Flat Deposits	Negligible	Negligible – not significant	<p>Based on the initial contamination screening assessment (provided in PEI Report Volume 3 Part B Section 7 Appendix 7A Initial Contamination Risk Classification), it is not anticipated that the construction will involve disturbance of ground affected by historical contamination.</p> <p>Tidal flat deposits comprising clay and silt are recorded across the Section 7 Study Area. However, published borehole records record common granular horizons within these deposits, often several metres in thickness. These may store or yield limited amounts of perched groundwater. Perched groundwater may be encountered during construction of the Project.</p> <p>The control measures within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice)</p>

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>include the use of suitable piling methods, in accordance with a foundation works risk assessment (control measure GH02), to prevent pathway creation into the sensitive aquifers.</p> <p>Control measure GH11 would also prevent release of contamination to groundwater by having suitable precautions and measures in place if unexpected contamination is encountered during the construction phase or during the pre-construction ground investigations (control measure GH01). Therefore, the pathways would be reduced/prevented such that the effects on the groundwater are not significant.</p>
Groundwater	Physical effects on groundwater, such as increased solids/turbidity, through dewatering activities (e.g. during excavations for foundations for new structures) and changes to groundwater flows caused by construction activities and generation of	Negligible – Tidal Flat deposits	Negligible	Negligible – not significant	<p>The Tidal Flat superficial deposits are recorded to have isolated granular horizons within published borehole records, which may yield limited amounts of groundwater, although these are not widespread across the Section 7 Study Area.</p> <p>It is considered likely that any dewatering during construction of</p>

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	solids through ground disturbance				<p>the new Walpole B Substation would be restricted to management of surface water accumulation and localised perched water. Temporary groundwater control/pumping during substation and pylon foundation excavations 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 CoCP).</p> <p>With the implementation of control measures (GH02 and GH05) within the Preliminary CoCP to ensure physical effects are appropriately minimised and controlled, the effects on groundwater are not significant.</p>
Groundwater	Physical and chemical effects on groundwater, such as depletion in groundwater, increased solids/turbidity and reduction in chemical quality, as a result of the discharge of groundwater arising from dewatering or surface water control	Negligible – Tidal Flat deposits	Negligible	Negligible – not significant	Any discharge of water generated during construction (e.g. from pylon and substation foundations excavations) to land would be of unpolluted water only and carried out in accordance with control measure W05 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary CoCP). Discharges

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					directly to groundwater are not anticipated. Therefore, there is not considered to be a significant effect.
Soil/land quality	Deterioration in chemical quality of the land through release of contamination by construction activities	Medium	Negligible	Negligible – not significant	<p>Soil/land quality can be negatively affected by construction due to the inadvertent release of contamination and/or incorrect storage and re-use of excavated soils.</p> <p>With the implementation of control measures (GH03 - adequate training of workers in managing hazardous substances, GH04 - appropriate storage of chemicals and health and safety measures for construction sites) within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary CoCP), the effects on soil/land quality are not significant.</p>
Groundwater	Deterioration in chemical quality of the groundwater through release of contamination by construction activities (e.g. loss of fuels to an aquifer)	Negligible – Tidal Flat deposits	Negligible	Negligible – not significant	The superficial deposits across the Section 7 Study Area are recorded to be of low permeability and are designated as unproductive strata, which is not likely to yield or store significant quantities of

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					<p>groundwater which could be adversely affected by activities within the Project.</p> <p>With the implementation of control measures (GH03 and GH04) within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary CoCP), releases of contamination should be adequately prevented and the pathways would be reduced/prevented such that the effects on the groundwater 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>No specific sources of ground gas or potential ground gas-generating material were identified within the assessment of baseline conditions for Section 7.</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 CoCP) identify the presence of hazardous ground gases, the effect would be mitigated through the use of personal protective</p>

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					equipment (PPE) and control measures GH02 and GH06, as well as suitable construction at any temporary structures to prevent accumulation of ground gas. As such, the exposure pathways would be identified and mitigated such that the effects on construction workers and adjacent land users are not significant. The FWRA (within control measure GH02) will consider migration of ground gas if disturbed during construction, to ensure that there are no risks to occupants/users of nearby buildings.
Structures	Explosion as a result of ingress and accumulation of ground gas within buildings or other confined spaces	Medium	Negligible	Negligible – not significant	<p>No specific sources of ground gas or potential ground gas-generating material were identified within the assessment of baseline conditions for Section 7.</p> <p>With the implementation of control measure GH01 within the Preliminary CoCP (provided in PEI Report Volume 3 Part A Appendix 5A Preliminary CoCP) and suitable construction of any temporary structures (i.e. construction compounds) to prevent ground gas accumulation</p>

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					and migration towards adjacent structures, the pathways would be identified and mitigation such that the effects on structures are not significant.
Adjacent land users, construction workers (Human health)	Unstable ground and damage to buildings or property through disturbance of unstable ground by construction activities	High (Human health) Medium (Structures)	Negligible	Negligible – not significant	Based on the mapped geology and currently available information from the BGS geohazards data set, it is considered that natural geohazards can be mitigated through suitable engineering design (in accordance with standard good practice) such that adverse effects should not occur. As such, there is not considered to be a significant effect.
Structures					
Soil/land quality	Ground stability issues caused through dissolution of soluble rocks, due to changed patterns or groundwater flow/discharges caused by construction activities	High (Human health) Medium (Structures and soil/land quality)	Negligible	Negligible – not significant	The bedrock beneath the Section 7 Study Area is recorded to comprise mudstone strata, which are not considered a soluble rock and are not liable to dissolution through changes in groundwater flow or discharges from construction. Therefore, there is a negligible magnitude of change and resulting negligible effect, which is not considered to be significant.
Adjacent land users, construction workers (Human health)					
Structures					

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Operation and Maintenance					
Future land users (Human health)	Harm to health of substation operatives due to explosions or asphyxiation as a result of ingress and accumulation of ground gas within structures	High (Human health) Medium (Structures)	Negligible	Negligible – not significant	No specific sources of ground gas or ground gas generating potential were identified within the baseline conditions assessment for Section 7 as outlined within the initial contamination screening assessment within PEI Report Volume 3 Part B Section 7 Appendix 7A Initial Contamination Risk Classification . 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 CoCP) identify the presence of hazardous ground gases or materials with the potential to generate these (e.g. Made Ground or natural materials with degradable content), the substation would be designed to incorporate appropriate gas protection, if required. Therefore, there is not considered to be a significant effect.

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Groundwater	Changes to infiltration and corresponding effects on groundwater levels as a result of the presence of new structures and surfaces	Negligible – Tidal Flat deposits	Negligible	Negligible – not significant	The construction of the Walpole Substation in Section 7 will introduce new impermeable surfacing. However, the Tidal Flat deposits are predominantly cohesive and are designated as unproductive strata, unlikely to yield or store significant quantities of groundwater. Therefore, the construction of new impermeable surfaces is not considered likely to alter recharge to groundwater in a way that could substantively affect groundwater quantities (levels) in a groundwater resource (aquifer). Therefore, there is not considered to be a significant effect.
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 excavations for inspection/access to utilities,	Medium	Negligible	Negligible – not significant	With the exception of the former petroleum license approximately 500 m south of the draft Order Limits, there are no specific potential sources of contamination identified in the Section 7 Study Area within the initial contamination assessment (provided in PEI Report Volume 3 Part B Section 7 Appendix 7A Initial Contamination Risk Classification). It is therefore considered unlikely that soils

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	below ground infrastructure or foundations)				affected by contamination will be encountered during maintenance activities involving ground disturbance. Furthermore, in the unlikely event that such contamination was present it would be known from the construction phase and risks to health mitigated/prevented by suitable health and safety measures. Therefore, there is not considered to be a significant effect.
Groundwater	Deterioration in chemical quality of the groundwater through disturbance of pre-existing contamination (Disturbance of pre-existing contamination may occur through infrequent maintenance or repair activities requiring excavations for inspection/access to utilities, below ground infrastructure or foundations)	Negligible – Tidal Flat deposits	Negligible	Negligible – not significant	With the exception of the former petroleum license (located approximately 500m outside the draft Order Limits), no specific potential sources of contamination were identified within the baseline conditions assessment for Section 7 (within PEI Report Volume 3 Part B Section 7 Appendix 7A Initial Contamination Risk Classification). It is therefore considered unlikely that soils affected by contamination will be encountered during maintenance activities involving ground disturbance. Furthermore, in the unlikely event that such contamination was present it

Receptor ¹	Impact	Sensitivity/ Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					would be known from the construction phase and any work involving disturbance of the ground planned and carried out accordingly, in compliance with suitable environmental controls. 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.

7.8 Monitoring

- 7.8.1 As no significant effects have been identified within this assessment, it is not considered necessary to undertake any monitoring prior to and within the construction phase for assurance purposes within the Section 7 Study Area.

References

- Ref 1 Borough Council of King's Lynn & West Norfolk (2025) Kings Lynn & West Norfolk Local Plan (Adopted March 2025). [online] https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 24 April 2025].
- Ref 2 Norfolk County Council (2021). Norfolk Minerals and Waste Development Framework. Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010 – 2026. [online]. Available at: <https://www.north-norfolk.gov.uk/media/9022/j3-core-strategy-minerals-waste-development-management-policies-dpd-2010-2026.pdf> [Accessed 21 May 2025].
- Ref 3 Norfolk County Council (2017). Norfolk Minerals and Waste Development Framework. Mineral Site Specific Allocations Development Plan Document. [online]. Available at: <https://www.north-norfolk.gov.uk/media/9021/j4-mineral-site-specific-allocations-development-plan-document.pdf> [Accessed 21 May 2025].
- Ref 4 Norfolk County Council (2013). Norfolk Minerals and Waste Development Framework. Waste Site Specific Allocations Development Plan Document.
- Ref 5 Norfolk Geodiversity Partnership (2011). The Norfolk Geodiversity Action Plan. [online] Available at: <http://www.nbis.org.uk/gap> [Accessed 21 May 2025].
- Ref 6 Norfolk Geodiversity Partnership (201). Norfolk's Earth Heritage – Valuing Our Geodiversity. [online]. Available at: http://www.nbis.org.uk/sites/default/files/documents/Norfolk's%20Earth%20Heritage_Screen%20version.pdf [Accessed 21 May 2025].
- 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 18 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 18 October 2024].
- Ref 9 Environment Agency, (2023). Land Contamination Risk Management (LCRM). [online]. Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm> [Accessed 21 May 2025].
- Ref 10 Environment Agency, (2024). Groundwater protection guidance. [online]. Available at: <https://www.gov.uk/government/collections/groundwater-protection> [Accessed 15 November 2024].
- Ref 11 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 21 May 2025].

- Ref 12 National Library of Scotland, (2024), Side by side geo-referenced map viewer. [online]. Available at: <https://maps.nls.uk/geo/explore/side-by-side/#zoom=16.1&lat=52.03983&lon=-1.12861&layers=10&right=ESRIWorld> [Accessed 09 January 2025].
- Ref 13 UK Health Security Agency, (2024). UK maps of Radon. [online]. Available at: <https://www.ukradon.org/information/ukmaps> [Accessed 09 January 2025].
- Ref 14 British Geological Survey, (2024). GeoIndex. [online]. Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> [Accessed 09 January 2025].
- Ref 15 Department for Environment, Food and Rural Affairs, (2024). MAGIC Interactive Map. [online]. Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed 09 January 2025].
- Ref 16 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 17 Environment Agency, (2024). Catchment Data Explorer Database. [online]. Available at: <https://environment.data.gov.uk/catchment-planning/> [Accessed 09 January 2025].
- Ref 18 Zetica, (2024). Unexploded Ordnance Risk Mapping. [online]. Available at: <https://zeticauxo.com/guidance/risk-maps/> [Accessed 09 January 2025].
- 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].
- Ref 22 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 21 May 2025].
- Ref 23 Environment Agency, (2024). Guidance on Pollution prevention for businesses. Available at: <https://www.gov.uk/guidance/pollution-prevention-for-businesses> [Accessed 12 November 2024].
- Ref 24 Environment Agency, (2024). Groundwater protection guidance. Available at: <https://www.gov.uk/government/collections/groundwater-protection> [Accessed 15 November 2024].
- Ref 25 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 21 May 2025].

- Ref 26 CIRIA, (2006). CIRIA Publication 648 Control of water pollution from linear construction projects. [online]. Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C649&Category=BOOK [Accessed 21 May 2025].
- Ref 27 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/projects-and-initiatives/dow-cop> [Accessed 21 May 2025].

8. Agriculture and Soils

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8. Agriculture and Soils

8.1 Introduction

- 8.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Agriculture and Soils assessment of the New Walpole B Substation (Section 7) 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 7 (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 7 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 7, 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 7 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 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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

Supporting Information	Description
	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, reference should also be made to the following chapters within **PEI Report Volume 2 Part B** and **Part C**:
- i. **PEI Report Volume 2 Part B Section 7 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 7 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 7 Chapter 6 Water Environment** should be consulted in relation to the details of the water environment which interacts with the soil, for example in relation the land drainage, infiltration rates, erosion risk and flood risk;
 - iv. **PEI Report Volume 2 Part B Section 7 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 7 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment;
 - vi. **PEI Report Volume 2 Part C Route-wide Chapter 6 Agriculture and Soils** should be consulted in relation to the route-wide impacts upon Best and Most Versatile (BMV) soils across the entire Project and any significant effects; and
 - 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.

8.2 Legislation and Policy Framework

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

Regional and Local Policy

- 8.2.1 Regional and local plans or policies relevant to this assessment are as follows:
- i. Norfolk County Council (2011). Norfolk Minerals and Waste Development Framework (Ref 1):
 - Core Strategy Policy CS14 - Environmental protection: the policy seeks to protect and enhance Norfolk's natural and built environment inclusive of the local natural resources; and
 - ii. King's Lynn and West Norfolk Local Plan 2021 – 2040 (Adopted March 2025) (Ref 2):
 - Policy LP19 Environmental Assets: Green Infrastructure, Landscape character, Biodiversity and Geodiversity: states that the long-term capability of the best and most versatile agricultural land (Grades 1, 2 and 3a in the Agricultural Land Classification) will be safeguarded as a resource for the future; and
 - Policy LP24 Renewable Energy: Proposals for renewable energy (other than proposals for wind energy development) and associated infrastructure, including landward infrastructure for offshore renewable schemes, will be assessed to determine whether or not the benefits they bring outweigh impacts, either individually or cumulatively. The Borough Council will seek to protect productive agricultural land and best and most versatile land.

8.3 Scope of Assessment

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

8.4 Assessment Methodology

- 8.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Agriculture and Soils assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment**

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

- 8.4.2 The 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 is being undertaken from January to October 2025 to determine the sensitivities of soils and the grades of agricultural land within the draft Order Limits. The information from the detailed ALC and soil survey was not available for this preliminary assessment but will inform the assessment presented in the ES. The survey and assessment will be undertaken in accordance with the Soil Survey Field Handbook (Ref 6) and the ALC guidelines (Ref 5) and will characterise soil properties based on an examination of soil profiles, from which agricultural land grade as well as soil resilience can be calculated and assessed. An Agriculture and Soils survey strategy document is provided within Annex B to the **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 8.4.4 The assessment presented in the PEI Report is based on publicly available Provisional ALC data, and detailed data (where available). The Provisional ALC mapping does not differentiate between Grade 3a (BMV) and Grade 3b (non-BMV); as such a worst-case approach has been taken for the assessment presented, with all land provisionally mapped as Grade 1, 2 and 3 being considered to comprise BMV land. The ES submitted with the DDCO 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 The following assumptions and limitations are specific to the Agriculture and Soils of Section 7.
- 8.4.10 It should be noted that while most of the land in Section 7 is provisionally mapped as ALC Grade 2 land, classifications must 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.
- 8.4.11 The key parameters and assumptions which inform the assessment will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions applicable to the full assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

8.5 Baseline Conditions

Study Area

- 8.5.1 The Study Area for the assessment of Agriculture and Soils comprises the draft Order Limits within Section 7, 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 9);
 - ii. Ordnance Survey (OS) mapping and aerial photography (Ref 10);
 - iii. Agricultural Land Classification – Provisional (England) (Ref 11);
 - iv. Post-1988 Agricultural Land Classification (England) (Ref 11);

- v. National Soil Association Map of East Midlands and Eastern England and soil data from National Soils Resources Institute at Cranfield university (NSRI) (Ref 12);
- vi. Likelihood of BMV Agricultural Land map (Ref 13);
- vii. Relevant Agriculture and Soils data from other projects which overlap with the draft Order Limits (such as Eastern Green Link 3 and 4); and
- viii. Climate data sets for ALC assessment (Ref 14).

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 7 Figure 8.1 National Soil Map;**
- ii. **PEI Report Volume 2 Part B Section 7 Figure 8.2 Provisional Agricultural Land Classification;**
- iii. **PEI Report Volume 2 Part B Section 7 Figure 8.3 Detailed Agricultural Land Classification;**
- iv. **PEI Report Volume 2 Part B Section 7 Figure 8.4 Woodland and Forestry Schemes;** and
- v. **PEI Report Volume 2 Part B Section 7 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 7 comprises the Ampthill Clay Formation, a Mudstone sedimentary bedrock formed between 163.5 and 157.3 million years ago during the Jurassic period.

8.5.5 Clay and silt tidal flat deposits form the superficial drift present, formed between 2.54 million years ago and the present during the Quaternary period.

Soils

8.5.6 The Soil Associations describe the different types of soil found within the UK. Available national soil survey mapping data indicates that the Soil Association present within Section 7 is predominantly Wallasea 2 with only a small area of Tanvats in the northern extent. The two Soil Associations present within Section 7 (as show in **PEI Report Volume 2 Part B Section 7 Figure 8.1 National Soil Map**) are described as follows:

- i. 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; and

- ii. Tanvats - deep stoneless fine and coarse silty and clayey soils with groundwater levels controlled by ditches and pumps on flat land. They are seasonally waterlogged soils affected by a shallow fluctuating groundwater-table. These soils are developed mainly within or over permeable material and have prominently mottled or greyish coloured horizons within 40 cm depth most occupy low-lying or depressional sites with distinct topsoil, in loamy or clayey recent alluvium more than 30 cm thick.

- 8.5.7 The soils in Section 7 will be providing a range of soil functions, and as such are considered to have a range of sensitivities from very high to medium.

Agricultural Land Classification

- 8.5.8 ALC is a classification system used to assess the agricultural quality within England and Wales. The Provisional ALC mapping shows that the draft Order Limits within Section 7, comprises Grade 2 land with potentially a small extent of Grade 1 land associated with the access road. This is shown in **PEI Report Volume 2 Part B Section 7 Figure 8.2 Provisional Agricultural Land Classification**. Grade 1 and Grade 2 agricultural land would be considered a receptor of very high sensitivity.
- 8.5.9 Please note limitations associated with using provisional ALC mapping as described in paragraph 8.4.10.
- 8.5.10 There is no pre-existing detailed ALC survey data available within the draft Order Limits for Section 7, as shown in **PEI Report Volume 2 Part B Section 7 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 Schemes

- 8.5.11 Woodland and Forestry Schemes are government provided incentives that reward landowners for the creation and management of woodlands. There are no Woodland and Forestry Schemes within the draft Order Limits for Section 7 (as shown on **PEI Report Volume 2 Part B Section 7 Figure 8.4 Woodland and Forestry Schemes**).

Agri Environment Schemes

- 8.5.12 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 which have increasing complexity and land management requirements but also therefore have greater environmental benefits. A Countryside Stewardship (Middle Tier) is located east of West Walton within the draft Order Limits for Section 7 as shown on **PEI Report Volume 2 Part B Section 7 Figure 8.5 Agri Environment Schemes**).

Land Use

- 8.5.13 Aerial imagery and OS mapping indicate that the agricultural land use within Section 7 is predominantly arable, with some grassland and woodland areas. Field boundaries generally comprise hedges, existing overhead line, trees and roads.

Agricultural Landholdings

- 8.5.14 Agricultural landholdings will be affected within Section 7 due to the permanent land take for by the construction of the proposed Walpole Substation and overhead line.
- 8.5.15 There are three landowners affected within Section 7, with all the land under arable production. Given the predominant land use this receptor is considered to have a low sensitivity.

Future Baseline

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

8.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 8.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 17) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 18) 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 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.

- 8.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. For example, the Project design has been and will continue to be rationalised to minimise the extent of land take required to construct, maintain and operate the proposed assets and position infrastructure (such as pylons and access routes) as close as is practicable to field boundaries to minimise impacts to agricultural operations.

Control Mitigation Measures

Construction

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

it may be that temporarily access isn't maintained but, in all instances, those impacted will be consulted on the proposals. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties during the pre-construction period, with any changes communicated in advance of the change being implemented. Where field-to-field access points require alteration as a result of construction, alternative field access will be provided in consultation with the landowner/occupier.

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

- suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works;
- approach to reinstating soil that has been compacted, where required;
- details of measures required for soil restoration; and
- requirements for monitoring.

Additional Mitigation Measures

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

8.7 Preliminary Assessment of Effects

- 8.7.1 The following section presents the findings of the preliminary assessment of effects upon the receptors, identified within the Study Area, as a result of construction, maintenance and/or operational activities within Section 7.
- 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 8.2**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 8.7.4 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

Likely Significant Effects

Construction

Agricultural Land Classification

- 8.7.5 To undertake this assessment, publicly available Provisional ALC data has been used to determine the 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.
- 8.7.6 During construction there would be a potential loss of BMV land (defined as ALC Grades 1, 2 and 3a) from agricultural productivity.

- 8.7.7 For Section 7, it is assumed that all land within the draft Order Limits is likely to be temporarily impacted and temporarily removed from agricultural production during the construction phase.
- 8.7.8 The agricultural land required in Section 7 is provisionally mapped principally as Grade 2 land, with potentially a small area of Grade 1 land, and as such is considered likely to comprise BMV land. Grade 1 and 2 land is considered to have a very high sensitivity. The total extent of land required during construction would be 104.8 ha. Of this, 50.7 ha would be reinstated to its preconstruction condition and grade; the impacts of the temporary land take would therefore comprise an impact of small magnitude which would be a moderate adverse effect and likely significant (following the assessment criteria set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**). The land required includes all agricultural land needed for the construction of the proposed Project infrastructure including pylons, access roads and temporary land requirements.
- 8.7.9 Of the land required during construction, 54.2 ha would be required for permanent infrastructure (pylon footings and foundations). The permanent loss of this land (assumed to be BMV land) would be an impact of large magnitude, which would result in a major adverse effect which is considered significant.

Soil Function

- 8.7.10 There would be disturbance to soils, from the soil stripping required for the construction of the Substation, pylons, access routes, and areas required temporarily (such as construction compounds and haul roads).
- 8.7.11 The soils in Section 7 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 soils are described as being of silt loam texture with a field capacity day value (FCD) of below 150 days, and as such these soils have a moderate resilience to structural damage. The stripping and stockpiling of soil resources would have a temporary effect on the soil ecosystem services. This could include affecting soil hydrology as well as a soils' natural carbon storage ability. The implementation of effective soil handling, storage and reinstatement measures, which will be detailed in the SMP (submitted as part of the DCO application), would therefore be critical in ensuring minimisation of effects on these functions and their successful restoration.
- 8.7.12 For Section 7, it is assumed that all land within the draft Order Limits may 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 7, this would result in a range of major, moderate or minor adverse effects. Major and moderate effects are considered significant.
- 8.7.13 The permanent loss of 54.2 ha of soils would affect the associated soil ecosystem services. 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 be considered a major adverse effect on soil function, which is considered significant. The land grades and soil types

(including peat if present) affected permanently will be confirmed following surveys and will be fully assessed in the ES submitted with the DCO application.

Operation and Maintenance

- 8.7.14 Based upon the preliminary assessment, no significant effects are expected to occur on Agriculture and Soil receptors during the operation and maintenance phase of the Project in Section 7. Further discussion is provided in the following sections in relation to the predicted non-significant effects of the Project.
- 8.7.15 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

- 8.7.16 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 non-significant Agriculture and Soils effects – Section 7

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	Small/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

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
						in a SMP for the works. As these are likely to be small-scale and temporary, no likely significant effects on BMV land during operational, maintenance or repair activities are predicted.
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.	Medium to very high	Small/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	Small/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

Source	Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
						<p>compensation code (which would include consideration of any active agri-environment and/or forestry/woodland schemes). The overhead line will not result in any further permanent impacts in relation to on-going agricultural activities above and beyond the permanent effects assessed during the construction phase, and any maintenance or repair works are likely to be small-scale and temporary, with works undertaken in accordance with good practice at the time of the works.</p>

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 Norfolk County Council (2011). Norfolk Minerals and Waste Development Framework; Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026. [online]. Available at: <https://www.north-norfolk.gov.uk/media/9022/j3-core-strategy-minerals-waste-development-management-policies-dpd-2010-2026.pdf> [Accessed 21 May 2025].
- Ref 2 Borough Council of King's Lynn and West Norfolk (2025) Kings Lynn and West Norfolk Local Plan 2021-2040 [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 25 April 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 14 April 2025].
- Ref 5 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 6 Hodgson, J.M. (2022). Soil Survey Field Handbook: Describing and Sampling Soil Profiles. Cranfield: Cranfield University.
- Ref 7 National Highways (2020). Design Manual for Roads and Bridges (DMRB) LA112: Population and human health. [online]. Available at: <https://www.standardsforhighways.co.uk/search/1e13d6ac-755e-4d60-9735-f976bf64580a> [Accessed 29 April 2024].
- Ref 8 National Grid (2021) Construction best practice for underground cable installation.
- Ref 9 British Geological Survey, BGS Geology Viewer. [online]. Available at: <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/> [Accessed 3 May 2024].
- Ref 10 Google Earth (2024). Ordnance Survey Mapping and Aerial Photography [online]. Available at: <https://www.earth.google.com> [Accessed 29 April 2024].
- Ref 11 Defra, Magic Map Application [online]. Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed 29 April 2024].
- Ref 12 Cranfield University (2024). Soils and their use in East Midlands and East England.
- Ref 13 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/5208993007403008>
[Accessed 29 April 2024].

- Ref 14 The Met Office (1989). Climatological Data for Agricultural Land Classification. [online]. Available at: <https://publications.naturalengland.org.uk/publication/6493605842649088> [Accessed 21 May 2025].
- Ref 15 Department for Energy Security and Net Zero (2023). National Policy Statement for electricity networks infrastructure (EN-5). [online]. Available at: https://assets.publishing.service.gov.uk/media/64252f852fa848000cec0f53/NPS_EN-5.pdf [Accessed 21 May 2025].
- Ref 16 King's Lynn & West Norfolk Borough Council (2011). King's Lynn & West Norfolk Borough Council Local Development Framework Core Strategy (Adopted July 2011). [online]. Available at: https://www.west-norfolk.gov.uk/downloads/file/594/core_strategy_adopted_version_2011 [Accessed 21 May 2025].
- Ref 17 National Grid (no date). Holford Rules [online]. Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf>. [Accessed 30 August 2024].
- 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 30 August 2024].
- Ref 19 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].

9. Traffic and Movement

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9. Traffic and Movement

9.1 Introduction

- 9.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Traffic and Movement assessment for the New Walpole B Substation Section (Section 7) 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 7 (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 7 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 7, 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 7 Figures	<p>Figure 9.1 Overall Context Plan</p> <p>Figure 9.2 Primary Access Routes and Worker 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 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 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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.

Supporting Information	Description
PEI Report Volume 3 Part B Appendix 2Ci Local Planning 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 Planning Policy: Route-wide	Details of planning policies applicable route-wide within the relevant Local Authority areas.
PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered	Provides a summary of the main alternatives considered in relation to the Project during the design development process, including the main reasons for selecting the chosen option.
PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information	Sets out the Environmental Impact Assessment (EIA) approach and general methodology that has been used in developing the PEI Report for the Project.
PEI Report Volume 2 Part A Chapter 5 Project Description	An overarching description of the Project and its key components, including available construction information.
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 7 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 7 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 7 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 7 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
 - v. **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** considers potential impacts on neighbourhood quality and access to open space and health and social infrastructure, including those associated with traffic generated by the Project.

- vi. **PEI Report Volume 2 Part C Route-wide Chapter 9 Climate Change** considers the potential greenhouse gas emissions from traffic resulting from the Project. It should be noted that at this preliminary stage, this does not include quantitative calculations.
- vii. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. It also identifies a shortlist of other Committed Developments with which there may be potential for cumulative effects, and the relevant environmental topics for such effects (inter-project). The full cumulative effects assessment will be reported within the ES.

9.2 Legislation and Policy Framework

Legislation and National Policy

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

Regional and Local Policy

- 9.2.2 Regional and local plans or policies relevant to this assessment are as follows:
 - i. Lincolnshire County Council's Local Transport Plan 5 (Adopted 2022)¹ (Ref 1);
 - Aims to use the local and strategic development management processes to ensure that development is planned, delivered and managed to reduce the need to travel and to support the delivery of sustainable transport modes. Supports the provision of improved walking, cycling and public transport services and facilities as part of new development and actively encourage innovative solutions to travel.
 - ii. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 2):
 - 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.
 - iii. South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019) (Ref 3):
 - Policy 33 – Delivering a More Sustainable Transport Network: seeks improvements to existing transport infrastructure and services and encourages the protection of existing footpaths, cycle routes and public rights of way from development; and

¹ Construction traffic routes anticipated to be utilised by construction traffic associated with works in Section 7 include highway links across the wider region, therefore policies set out within wider area policy documents are also considered relevant to the assessment

- Policy 34 Delivering the Boston Distributor Road: Priority strategic infrastructure – development that compromises identified priority strategic infrastructure will not be permitted.
- iv. Boston Transport Strategy 2016-2036 (Ref 4):
- The Strategy helps to address existing transport and travel issues in Boston and help support proposals for significant growth in the short, medium and long-term. The Strategy includes support for development of the Boston Distributor Road.
- v. Fenland Local Plan (Adopted May 2014) (9.8.4Ref 5):
- Policy LP15 – Facilitating the Creation of a More Sustainable Transport Network: sets out an integrated approach to transport in Fenland that is sustainable, facilitates growth, links town and country, encompasses cross boundary transport issues and improves accessibility for everyone by all modes of travel.
- vi. Fenland Local Plan 2021-2040 Draft Local Plan Consultation (August 2022) (9.8.4Ref 6):
- Policy LP21 Public Rights of Way: requires that existing PRoW network will, in principle, be protected from development.
- vii. Kings Lynn & West Norfolk Borough Council Local Plan 2021-2040 (Adopted March 2025) (9.8.4Ref 7):
- LP13 Transportation: The Council will work with partner organisations to deliver a sustainable transport network which improves connectivity. Amongst other factors, priority will be given to improving strategic networks, including the introduction of measures to reduce congestion and improve reliability and safety of travel.
- viii. Spalding Transport Strategy 2018-2036 (Ref 8):
- The Strategy provides an approach to the improvement and provision of transport and access for the town and surrounding area. The Strategy addresses existing issues and supports proposals for significant growth in the town in the short, medium and long-term. The Strategy covers provision of improved and sustainable transport policy, services and infrastructure.
- ix. Fenland Transport Strategy (Adopted March 2023) (Ref 9):
- Policy FTS1 is the overarching policy approach which supports the Local Plan and Local Transport CP through prioritising and developing a connected, safe and inclusive transport network, and enabling more people to access services, with a key focus on active or sustainable travel.
- x. Cambridgeshire Local Transport and Connectivity Plan (LTCP) (Ref 10):
- The LTCP seeks to support a transport network which puts improved health at its core, with measures to help avoiding unnecessary travel, shifting travel choices to more sustainable modes and improving the operational efficiency and journey experience of the transport network.

9.3 Scope of Assessment

- 9.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 11) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 12). 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 13) which is based on consideration of the impacts upon the following transport infrastructure: highways (including footpaths and cycleways), railways, waterways and PRow. The receptors assessed and potential effects considered are summarised in **Table 9.2**.

Table 9.2 Scope of Traffic and Movement assessment

Receptor	Potential effects
Highway Network (including footways and 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 (AIL) and hazardous loads during construction.
Public transport users (bus)	Effects as a result of construction traffic and road closures/diversions leading to potential journey time delays.
Pedestrians and cyclists	Effects as a result of construction traffic leading to severance and pedestrian/cycle delay. Effects on footway closures/diversions leading to severance and/or increased journey time. Effects of general construction works leading to a decline in pedestrian and cycle amenity ² and additional fear and intimidation.
Railways	
Railway users	Effects upon users of the rail network due to potential impacts upon railway infrastructure.

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.

Receptor	Potential effects
Navigable Waterways	
Waterway users	Effects upon users of navigable waterways due to temporary closures leading to reduced access/increased journey time.
Public Rights of Way and Promoted/Recreational Routes	
Pedestrians, Cyclists and Equestrians	Effects as a result of route closures/diversions leading to potential increased journey time. Effects due to a decline in pedestrian and cycle amenity due to interaction with traffic.

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

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.
- 9.4.3 For users of the highway network during construction, the assessment is based on the impact criteria set out within the IEMA Guidance, which sets out two broad rules for identifying potential highway links for analysis:
- Rule 1: include highway links where traffic flows will increase by more than 30 per cent (or the number of HGVs will increase by more than 30 per cent); and
 - Rule 2: include highway links of high sensitivity where traffic flows have increased by 10 per cent or more.
- 9.4.4 Based on the IEMA Guidance, highway links have therefore been identified where traffic flows are expected to increase by 30 per cent or more, and where there are increases of 10 per cent or more in an area identified as high or very high sensitivity. Sensitive areas are those where there is a presence of sensitive receptors as defined by the IEMA Guidance, and are also defined through consideration of congestion and accident data.
- 9.4.5 To determine likely increases in traffic flows on highway links, projected volumes of construction traffic have been distributed across the highway network. Construction traffic has been assigned based upon an assessment of the connection points

between the works areas and the highway network, and the most suitable/likely routes that will be used to access the draft Order Limits. This approach is based upon identification of bellmouths, Primary Access Routes and Worker Access Routes, which are defined in **Table 9.3** and described further in section 9.5 Baseline Conditions.

Table 9.3 Distribution of Project traffic – definitions

Accesses used by Project traffic Definition	
Bellmouths	Access points (junctions) from the existing highway network, facilitating access to construction compounds and site haul roads.
Primary Access Routes	Identified as a series of roads and junctions, between the Strategic Road Network (SRN) ³ and the bellmouths, suitable for access by large construction vehicles, that are planned to be used by HGVs. Identification of these routes is based on existing conditions, potential for improvements and professional judgement.
Worker Access Routes	Identified as a series of additional roads and junctions which are not promoted as construction HGV routes but could be used by workers to travel to site. These are identified as likely routes between residential areas, key employment/skills centres and the bellmouths.

- 9.4.6 A qualitative assessment of impacts to bus users during construction has been undertaken based on the projected increase in traffic flows as a result of the Project and potential impacts to bus services. More detailed assessment will be provided within the ES if the projected increase in traffic flows on the highway links where bus services operate exceed the IEMA Guidance screening criteria defined above.
- 9.4.7 A qualitative assessment of impacts to railway users and waterway users during construction has been undertaken based on any identified requirement to restrict access or close these routes to enable construction of the Project within Section 7. An initial assessment of sensitivity is based on consideration of the likely numbers of users of the infrastructure; for railways this is considered High as there are likely to be high numbers of passengers, for waterways this is considered Low as the number of users will likely be less. More detailed assessment, where required, will be provided in the ES following further consultation with the infrastructure operators.
- 9.4.8 A qualitative assessment of impacts to pedestrians and cyclists has been undertaken based on the projected increase in traffic flows as a result of the Project during construction, and potential impacts upon pedestrians and cyclists using the affected highway routes. More detailed assessment will be provided in the ES where the projected increase in traffic flows exceed the IEMA Guidance criteria and the impact thresholds defined with the Scoping Report or if required by the highway authority.

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

- 9.4.9 In addition, PRoW and promoted/recreational routes that are expected to be crossed by the works within Section 7 have been identified and qualitative assessment of impacts to pedestrians, cyclists and equestrians undertaken where routes are anticipated to require temporary diversion or closure. The significance of effects on PRoW and promoted/recreational routes is determined through professional judgement based on the sensitivity (national, regional, local importance and potential usage of the routes) and magnitude of impact, based on requirements for crossing, diversion or closure of routes. More details assessment will be provided within the ES where requested by the local authority.
- 9.4.10 A high-level summary of potential effects (without mitigation) is then provided within this chapter based on professional judgement and experience on other similar National Grid Electricity Transmission plc (National Grid) projects. Residual effects will be assessed and reported in the ES.
- 9.4.11 While the Scoping Report Traffic and Movement chapter sought to scope out effects associated with the operation of the Project, this PEI Report assessment presents details of forecast operational traffic movements and provides an initial assessment of potential effects of the forecast flows on the baseline flows.

Assessment Assumptions and Limitations

- 9.4.12 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. No limitations and assumptions have been identified for the assessment which are specific to the assessment of Section 7.
- 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 7 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, as well as railways and waterways that are crossed by the Section 7 draft Order Limits.
- 9.5.3 **PEI Report Volume 2 Part B Section 7 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 7 Study Area are shown in **PEI Report Volume 2 Part B Section 7 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 which form the basis of the initial assessment presented in this PEI Report. Primary Access Routes have been developed using the following criteria where possible:
- 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 AIL's.
 - 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 7 will be temporary in nature and will be reinstated upon completion of the construction phase. Haul routes and permanent access road are illustrated on **PEI Report Volume 2 Part B Section 7 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 7 draft Order Limits, and their strategic connections for delivery of materials/equipment.

Table 9.4 Construction traffic route – strategic road network connections

Strategic/classified road network	SRN Connections
A47	West to A1(M) and M1

- 9.5.6 Primary Access Routes are formed of one or more roads within the road network between the SRN/classified road network and the site access bellmouths. The Primary Access Routes are made up of Core Routes (CR series), which are the main A roads providing connections across the wider Study Area, and Local Links (LK series) which are roads providing local access from the Core Routes to the individual bellmouth accesses.
- 9.5.7 These are summarised in **Table 9.5** and presented on **PEI Report Volume 2 Part B Section 7 Figure 9.2 Primary Access Routes and Worker 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 for HGVs

Bellmouth Access	Core Routes forming Primary Access Routes	Local Links forming Primary Access Routes
SW B055/New Walpole B Substation + compound	CR27 (A47)/CR13 (A47)	LK14 (Lynn Road)/LK15 (West Drove North)

Construction Traffic Routes – Worker Access Routes

- 9.5.8 In addition to the Primary Access Routes, construction workers cars/light goods vehicles (LGVs) will use highway links which are not planned to be used by HGVs to access the site. Therefore, additional access routes have been identified that construction workers are expected to use (W series), which provide access from local urban areas where workers are assumed to live.
- 9.5.9 **Table 9.6** summarises the main Workers Access Routes relevant to Section 7. These are presented on **PEI Report Volume 2 Part B Section 7 Figure 9.2 Primary Access Routes**.

Table 9.6 Worker access routes – additional highways for construction workers

Access Ref	Roads forming Workers Access Routes
New Walpole B Substation and compound	CR10 (A16), CR14 (A17), CR15 (A17), CR22 (A17), CR28 (A17), CR29 (A47), LK95 (Marsh Road), W50 (A17), W51 (A17), W52 (East Bank), W53 (Gunthorpe Road), W54 (West Drove North), W55 (Market Lane), W56 (Lynn Road), W61 (Eye Road), W62 (Frank Perkins Parkway)

Data Collection

- 9.5.10 The following data has been used to inform the baseline conditions:
- highway network – Ordnance Survey open map (Ref 14), Google Maps (Ref 15), OpenStreetBrowser (Ref 16);
 - bus route information – local bus operators, traveline.info (Ref 17), Google Maps (Ref 15);
 - rail information – National Rail (Ref 18), Google Maps (Ref 15);
 - waterways – Environment Agency, Navigation Authority and The Inland Waterways Association (Ref 19);
 - designated non-motorised user routes for pedestrians, cyclists and equestrians and PRoW – Sustrans (Ref 20) 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 21);
- viii. traffic count data from surveys undertaken for this Project – the surveys record road users, pedestrians, cyclists and equestrians as required with Automatic Traffic Count (ATC) data/PRoW count data collected in August 2024 and October 2024;
- ix. Traffic Regulation Orders restricting movement and constraints such as height and weight restrictions as viewed on Google Maps;
- x. Personal Injury Collision (PIC) DfT accident data over a five year period (Ref 22);
- xi. Traffic growth factors have been obtained from Trip End Model Presentation Program (TEMPPro)/National Trip End Model; and
- xii. Identification of pedestrian, cycle and horse-riding infrastructure provision along access routes, obtained from Google Maps imagery of the highway network.

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

- i. traffic and PRoW user survey data has been obtained for August 2024 and October 2024. However, additional PRoW surveys will be undertaken between April/May and October 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 the vicinity of the primary access routes; and
- iv. construction and operational traffic flows for Eastern Green Link 3 and 4 projects for cumulative sensitivity testing.

Existing Baseline

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

- i. **PEI Report Volume 2 Part B Section 7 Figure 9.1 Overall Context Plan;**
- ii. **PEI Report Volume 2 Part B Section 7 Figure 9.2 Primary Access Routes;**
- iii. **PEI Report Volume 2 Part B Section 7 Figure 9.3 Existing Public Rights of Way (PRoW); and**
- iv. **PEI Report Volume 2 Part B Section 7 Figure 9.4 Route Sensitivity; and**
- v. **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline.**

Highway Network

- 9.5.13 Links forming Primary Access Routes and Worker Access Routes and 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**.
- 9.5.14 **Table 9.7** provides a description of each link which forms part of the Primary Access Routes and Worker Access Routes within the Section 7 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 7 Figure 9.2 Primary Access Routes and Worker Access Routes**.

Table 9.7 Highway network – links

Route Ref	Road	Description
CR10	A16	Generally wide single carriageway, predominantly rural, 60mph speed limit, no street lighting or footways, speed limit reduces and street lighting provided through Kirton and southern Boston where 40mph applies and some sections of footway and segregated cycleways are provided
CR13	A47	Wide single carriageway/dual carriageway road, national speed limit (60/70mph), generally no street lighting except at junctions, no footways
CR14	A17	Wide single carriageway with localised widening at junctions and some sections of dual carriageway, predominantly rural, national speed limit, no street lighting, except at junctions, no footways
CR15	A17	Dual carriageway, generally rural route, national speed limit (70mph), no footways or street lighting to the north and east of Sleaford. Narrows to wide single carriageway 3 km east of Sleaford, national speed limit (60mph), no footways or street lighting, localised widening and lighting at some junctions. Speed limit reduces to 50mph with narrow footway, refuge crossings at East Heckington and Swineshead Bridge
CR22	A17	Wide single carriageway with some short sections of dual carriageway, national speed limit (60/70mph), no footways, generally no street lighting except at junctions
CR27	A47	Dual carriageway road, national speed limit (70mph), street lighting, no footways
CR28	A17	Wide single carriageway with some short sections of dual carriageway at junctions, national speed limit (60mph), no footways, generally no street lighting except at junctions
CR29	A47	Wide single carriageway/dual carriageway, national speed limit (60/70mph), generally no footways except at eastern end, generally no street lighting except at junctions

Route Ref	Road	Description
LK14	Lynn Road	Wide single carriageway, subject to 50mph speed limit, 7.5T weight restriction except for loading, generally no footways and street lighting except for western end
LK15	West Drove North	Single carriageway, national speed limit (60mph), no street lighting or footways
LK95	Marsh Road	Narrow single carriageway, 60mph speed limit, no footways or street lighting
W50	A17	Wide single carriageway, 60mph speed limit, no footways, no street lighting except at junctions near Sutton Bridge
W51	A17	Wide single carriageway, 60mph speed limit, no footways or street lighting
W52	East Bank	Narrow single carriageway, 60mph speed limit, no footways or street lighting
W53	Gunthorpe Road	Narrow single carriageway, 60mph speed limit, no footways or street lighting
W54	West Drove North	Narrow single carriageway, 40mph speed limit changing to 60mph, no footways or street lighting
W55	Market Lane	Single carriageway, 60mph speed limit reduces to 30mph in Walpole St Andrew, no footways or street lighting
W56	Lynn Road	Single carriageway through Walton Highway, 40mph speed limit through built up area, street lighting, some footways
W61	Eye Road	Wide single carriageway, 60mph speed limit, narrow footway
W62	A1139 Frank Perkins Parkway	Dual carriageway, 70mph speed limit, no street lighting or footways

- 9.5.15 For the PEI Report no assessment of junction impacts along the Primary Access Routes and Worker Access Routes has been undertaken. However, the baseline review of link congestion and accident data provided in **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline** does consider junctions as part of the route sensitivity. More detailed assessment of junction operation will be undertaken as required and presented with the Transport Assessment and ES to be submitted with the DCO application.
- 9.5.16 In addition to the Primary Access Routes and Worker Access Routes, there are roads located on the local highway network where a crossover point is proposed to be provided. This allows construction vehicles to cross over the road (likely via a priority crossing arrangement) and progress along the proposed haul roads. Construction traffic will not access the local highway at these points, therefore these roads have not been assessed within this PEI Report. These cross over points are listed within

PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline.

Traffic Flows

- 9.5.17 Where available, baseline traffic flows are taken from the DfT's traffic counters for road links forming the Primary Access Routes and Worker Access Routes. The DfT traffic counter sites are shown on **PEI Report Volume 2 Part B Section 7 Figure 9.2 Primary Access Routes and Worker Access Routes**.
- 9.5.18 Traffic surveys were undertaken in August and October 2024 on links that do not have available or recent DfT counts. The location of the traffic surveys are also shown on **PEI Report Volume 2 Part B Section 7 Figure 9.2 Primary Access Routes and Worker Access Routes**.
- 9.5.19 Appropriate growth factors derived from the DfT's Trip End Model Presentation Program (TEMPPro), which is used for viewing the National Trip End Model information, have been applied to the count data where required to present all traffic data for a consistent 2024 Base Year.
- 9.5.20 Baseline traffic flows on road links forming the Primary Access Routes and Worker Access Routes where surveys have been undertaken are presented in **PEI Report Volume 3 Part B Sections 1-7 Appendix 9A Traffic and Movement Baseline**. All traffic data is presented as AADT flows for total vehicles and for HGVs.
- 9.5.21 In addition, a Congestion rating is set out within **PEI Report Volume 3 Part B Section 1-7 Appendix 9A Traffic and Movement Baseline** and presented on **PEI Report Volume 2 Part B Section 7 Figure 9.4 Route Sensitivity**. This is based on a review of google traffic flow categories for typical weekday peak hours; coloured grading of fast to slow represented as green = 0, orange = 1, red = 2, dark red = 3. Congestion along the whole link has been considered and where congestion varies along the link or over different time periods a judgement has been made for the overall link rating.

Collision Data

- 9.5.22 PIC data has been obtained from DfT Road Safety Data for the roads along the Primary Access Routes and Worker Access Routes. The latest five-year PIC data (2019-2023) is presented on **PEI Report Volume 2 Part B Section 7 Figure 9.4 Route Sensitivity**.
- 9.5.23 A collision cluster has been determined by the following criteria:
- i. a location where there are nine or more injury collisions occurring within a junction or a 100 m stretch; and
 - ii. a location with four or more fatal and/or serious collisions happening either within a junction or within a 100 m stretch.
- 9.5.24 From the collision data analysis, collision clusters have been identified at the following locations:
- i. At the A16/A52 Roundabout, A16/B1397 Roundabout and A16/B1192 Roundabout in Boston
 - ii. At the A16/A17 (Sutterton) Roundabout to the south of Boston;

- iii. At the A47/A1101 Roundabout (Elm Road Junction);
- iv. At the A17/A47 Roundabout to the west of King's Lynn;
- v. At the A15 / A47 roundabout to the north of Peterborough; and
- vi. At the Frank Perkins Parkway/Eye Rd/A15 Roundabout to the east of Peterborough.

Highway Link Sensitivity

- 9.5.25 Sensitive receptors include users of highway links including drivers, walkers, cyclists, horse riders and public transport passengers. Sensitive areas comprise urban areas where there are likely to be more people (including vulnerable users, younger, older, socially disadvantaged people) and include residential properties, retail areas, schools and hospitals.
- 9.5.26 Receptor/area sensitivity has been assigned to all assessed highway links which constitute the Primary Access Routes and Workers Access Routes for Section 7. The sensitivity level follows IEMA Guidance and is categorised as Negligible, Low, Medium, High and Very High. Sensitivity of a link has been determined based on the identified receptors which are present, alongside the assessment of each highway link's congestion rating and any associated collision clusters. Further detail is included in **PEI Report Volume 3 Part A Appendix 4B EIA Assessment Methodologies and Scope**.
- 9.5.27 A description, location, and the sensitivity level within the Section 7 Study Area are summarised in **Table 9.8** 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 7 Figure 9.4 Route Sensitivity**.

Table 9.8 Highway link sensitivity within the Section 7 Study Area

Route Ref	Road	Description	Sensitivity Level
CR10	A16	Few properties through rural area. Some residential and commercial properties in Boston though generally not with direct frontages/accesses, some segregated footway/cycleways, some footways adjacent to the carriageway and pedestrian crossings	Medium
CR13	A47	A few residential and commercial properties	Low
CR14	A17	A few commercial and residential properties along this link	Low
CR15	A17	A few commercial and residential properties	Low
CR22	A17	Very occasional properties	Low
CR27	A47	No receptors identified on this link	Negligible
CR28	A17	No receptors identified on this link	Negligible
CR29	A47	No receptors identified on this link	Negligible

Route Ref	Road	Description	Sensitivity Level
LK14	Lynn Road	Residential driveways, some footways, part of NCN1	Medium
LK15	West Drove North	Some residential and commercial properties	Low
LK95	Marsh Road	A few residential and commercial properties	Low
W50	A17	A few commercial properties in Sutton Bridge	Low
W51	A17	Bus stops within laybys and footway connection to Sutton Bridge	Low
W52	East Bank	A few commercial properties	Low
W53	Gunthorpe Road	Occasional residential properties	Low
W54	West Drove North	A few residential properties	Low
W55	Market Lane	Residential properties with accesses in Walpole St Andrew, bus route with on carriageway stops	Medium
W56	Lynn Road	Residential and commercial properties in Walton Highway, some footways, part of NCN1, bus routes	High
W61	Eye Road	Some commercial properties along this link	Low
W62	A1139 Frank Perkins Parkway	No receptors identified on this link	Negligible

Bus Routes

- 9.5.28 Bus services run along some roads forming the Primary Access Routes and Worker Access Routes for Section 7. Bus services A excel, C excel and 46 provide a combined 1-2 services per hour through the day in each direction between Wisbech and Kings Lynn, with stops near to the New Walpole B Substation in West Walton and Walton Highway. Service 505 provides approximately two services per hour between Kings Lynn and Spalding, stopping on the A17 immediately east of Sutton Bridge. Service 54 provides occasional services between Kings Lynn and Walpole St Peter with stops on Market Lane and within Walpole St Andrew and Walpole St Peter.

Railway Infrastructure

- 9.5.29 The nearest rail station is at King's Lynn, which is a stop for regular services to London King's Cross and Cambridge. The rail station is some distance from the Section 7 draft Order Limits, approximately 15 km to the east. The Primary Access

Routes for construction HGV traffic do not pass the station, although some construction workers cars/LGVs may travel through central King's Lynn close to the Station. No rail lines are crossed by the Section 7 draft Order Limits.

Waterways

- 9.5.30 The River Nene is a navigable waterway and passes approximately 3 km to the west of the New Walpole B Substation site, but does not run through the draft Order Limits for Section 7. A number of small becks, dykes, and land drains are noted close to the proposed substation site, however these watercourses are not navigable waterways and are therefore not considered further within this preliminary Transport and Movement assessment.

Public Rights of Way and Promoted/Recreational Routes

- 9.5.31 PRoWs and promoted/recreational routes affected by the New Walpole B Substation are summarised below and presented on **PEI Report Volume 2 Part B Section 7 Figure 9.3 Existing Public Rights of Way (PRoW)**.
- 9.5.32 No PRoW or cycle routes cross the draft Order Limits for Section 7.
- 9.5.33 The West Walton Jubilee Walk promoted recreational route passes along the boundary of the proposed New Walpole B Substation site. It provides a local walking route around West Walton. An adopted unsurfaced road link running from the north of Strattons Farm through West Walton provides a cut-through of the longer recreational route.
- 9.5.34 The National Cycle Network route 1 (NCN 1) passes along Lynn Road and through Walton Highway and West Walton. It is a long-distance route running from Dover to the north of Scotland.
- 9.5.35 The sensitivity of recreational routes along the highway are included within the highway link sensitivity in **Table 9.8** above.
- 9.5.36 Further details of promoted/recreational routes are included within **PEI Report Volume 2 Part B Section 3 Chapter 11 Socio-economics, Recreation and Tourism** and discussions with PRoW officers from all relevant Local Authorities will continue to be undertaken to confirm these key routes for assessment reported within the ES.

Future Baseline

- 9.5.37 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.
- 9.5.38 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.

- 9.5.39 Based on the proposed construction programme for the Project, the peak year for construction activities that would affect each road link comprising the Primary Access Routes and Workers Access Routes has been identified as 2031. The future baseline traffic along these road links has been calculated by applying an appropriate growth factor derived from DfT's Trip End Model Presentation Program (TEMPro) to the 2024 Baseline traffic flows. These flows are summarised in **PEI Report Volume 3 Part B Sections 1-7 Appendix 9C Future Baseline and Impact Analysis**.
- 9.5.40 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.
- 9.5.41 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 Additional Mitigation Measures

Design Mitigation Measures

- 9.6.1 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 23) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 24) 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 25) 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 7. 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 of temporary highway improvement works (e.g. road widening and creation of passing) places will be considered for implementation to maintain a safe operational highway.

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

Control Mitigation Measures

Construction

9.6.3 A Preliminary Code of Construction Practice (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 7 include:

- i. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP) and a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management 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.'
- 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 Public Rights of Way (PRoWs) will be identified, and any potential permanent or temporary closures detailed in the DCO. All designated PRoWs crossing the working area will be managed with access only closed for periods while construction activities occur. Any required diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns and will be subject to a PRoWMP. PRoWs crossing the working areas will be managed in discussion with the relevant local authorities and potential temporary closures applied for discussed with the relevant local authority. Access disruption would be reduced as reasonably practicable while construction activities occur.
 - 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 AIL's.
 - 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 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.
 - ix. AS03: Access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction period or as agreed through the landowner discussions. This may require signed diversions or

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

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

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 7.
- 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 9.11** based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 9.7.4 It 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

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 due to construction traffic using the local road network. This is based upon projected changes relative to a future baseline.
- 9.7.6 Traffic and Movement effects associated with the construction phase on receptors relate to the change in traffic flow and the sensitivity of highway links. **PEI Report Volume 3 Part B Sections 1-7 Appendix 9C Future Baseline and Impact Analysis** sets out the predicted worst-case increase in traffic on the local road network for each Primary Access Route and Worker Access Routes used by construction traffic. These increases have then been assessed against the assigned sensitivity of each highway link.
- 9.7.7 Within this PEI Report the assessment identifies highway links where an increase in baseline traffic flows due to construction traffic exceeds 10 percent for sensitive roads and 30 percent for non-sensitive roads, in accordance with the IEMA Guidance 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 7 Figure 9.5 Preliminary Impact Analysis** shows the location of highway links that are below or above the IEMA thresholds.
- 9.7.8 At this stage of assessment, baseline data for some of the identified construction traffic access routes is not currently available (from either DfT counts or 2024 traffic surveys). For these routes, a qualitative analysis has been undertaken to consider whether the volume of projected construction traffic is likely to be significant, given the type of road and type of construction vehicles (HGVs or Workers cars/vans). These links will be considered further within the TA and ES if the total number of all construction vehicles exceeds 50 per day or the number of HGVs exceeds 20 per day.
- 9.7.9 The receptors/users on the highway links exceeding the appropriate sensitivity threshold for potential significant effects are summarised in **Table 9.9**. At this preliminary stage of the assessment, significant effects upon users of these highway links cannot be ruled out. However, no detailed assessment, in terms of severance, delay (junction assessment), highway safety and fear and intimidation, has yet been undertaken to determine the magnitude of impacts upon these road links. As such, an assessment of the scale of effects upon the receptors identified in **Table 9.9** has not yet been completed.
- 9.7.10 Following further assessment of the projected increases in traffic flow upon severance, congestion (potentially resulting in increases in journey time and driver delay), highway safety and fear and intimidation, the subsequent effects upon users of the highway network as a result of the Project will be reported in the ES.

Table 9.9 Preliminary assessment of effects upon users of highway links – Section 7

Receptor	Potential Significant Effects	Route/Link
Drivers (all vehicles including HGVs and Emergency Services)	Severance, changes in journey time, driver delay and highway safety effects due to increased traffic	LK14 (Lynn Road), LK15 (West Drove North), LK95 Marsh Road, W50 (A17), W54 (West Drove North), W56 (Lynn Road)
Bus passengers	Potential for delay due to congestion as a result of increased traffic	W56 (Lynn Road)
Pedestrians and cyclists	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects as a result of increased traffic	LK14 (Lynn Road), W56 (Lynn Road), 'cut through' link of West Walton Jubilee Walk
All Users	Potential for severance, delay, increased journey time due to potential road closures and/or diversion to facilitate AIL.	Routes to be determined
All users	Potential for impact as a result of a road traffic accident leading to Hazardous Load spill	Routes to be determined

Abnormal Indivisible Loads/Hazardous Loads

- 9.7.11 The requirements and routeing of AIL and Hazardous Loads are still being determined and therefore detail to inform the assessment is not available at this stage. The ES will include preferred routes for the movement of AIL including vehicle type, route, anticipated time of movement(s) and the nature of any highway works/temporary closures required to accommodate the movement. Whilst this may lead to some congestion/increased journey times from temporary road closures/diversions and risks, experience from other projects will be employed to seek to minimise disruption and delay to other road users. However, at this stage associated significant effects cannot be ruled out entirely.
- 9.7.12 The likely AIL movements set out **Table 9.10** will be assessed, with the results presented within the ES.

Table 9.10 Anticipated AIL routes

Route	Vehicle Type and Load	Frequency of Movement	Links Use
Sutton Bridge/Wisbech to the New Walpole B Substation	Long articulated low loader to transport transformer from dock to Substation.	Single delivery	TBC

Operation and Maintenance

- 9.7.13 The adopted unsurfaced road providing a 'cut-through' link of the West Walton Jubilee Walk will need to be permanently closed or diverted as a result of construction of the substation within Section 7. Details will be discussed and agreed with the local highway authority. As a result, potential significant effects for pedestrian users of the route cannot be ruled out at this stage. Further details and assessment will be presented as part of the ES.
- 9.7.14 Based upon the preliminary assessment, no other significant effects upon Transport and Movement receptors within the Section 7 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

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

Construction

Highway Network

- 9.7.16 **Table 9.11** identifies the highway links that form part of the Primary Access Route and Worker Access Route network where construction traffic impacts are below the assessment thresholds and are therefore not likely to have significant effects on users/receptors on these highway links. It is not currently anticipated that these links will be subject to further assessments within the ES, subject to further screening of final construction traffic projections and discussions with the Local Highway Authority. **PEI Report Volume 3 Part B Section 7 Figure 9.5 Preliminary Impact Analysis** shows the location of highway links that are below or above the IEMA thresholds.

Operation and Maintenance

- 9.7.17 The Scoping Report Traffic and Movement chapter sought to scope out effects associated with operation of the Project. However, it is noted the scoping opinion received requested further information relating to traffic associated with operation of the Project. This PEI Report assessment therefore presents details of forecast operational traffic movements and provides an initial assessment of potential effects.
- 9.7.18 The operational traffic flows of the New Walpole B Substation are anticipated to comprise vehicles associated with routine visits and fault maintenance. Based upon existing precedent and National Grid estimates, typical routine maintenance vehicle movements would comprise approximately two visits per month by two people. 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.
- 9.7.19 On the basis of the information provided, operational/maintenance traffic will not have material impact on traffic flows and no likely significant effects are expected on users of highway links.
- 9.7.20 Operational traffic flows will be very occasional therefore no impact to users of bus services is expected. No railway lines are crossed by the proposed infrastructure in, therefore impact to rail users is not expected. Therefore, there are no predicted to be

any significant effects upon public transport users during operation and/or maintenance of the Project in Section 7.

- 9.7.21 No navigable waterways are impacted by operation of Section 7 of the Project, therefore no likely significant effects are expected.
- 9.7.22 No PRow are permanently affected by Section 7, therefore no significant effects are expected.

Table 9.11 Preliminary Summary of non-significant Traffic and Movement effects – Section 7

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
Construction					
Highway Network					
Road users of highway links CR10, CR13, CR14, CR15, CR22, CR27, CR28, CR29, W51, W66, W62	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	<30 per cent	Low – Not significant	The percentage increase in traffic flows as a result of the Project does not meet IEMA threshold for significant effects
Road users of highway links W52-W53, W55	Increased traffic due to construction of the Project, potentially resulting in severance, changes in journey time, driver delay and highway safety effects upon road users	Low/Medium	No. of construction workers cars/LGVs <50 daily	Low – Not significant	The volume of cars/LGVs is low across the day
Public transport users (bus passengers) of link W51, W55	Increased traffic due to construction of the Project, potentially resulting in delay due to congestion on bus routes	Low/Medium	<30 per cent change in traffic flow or no. of construction workers cars/LGVs <50 daily	Low – Not significant	The volume of cars/LGVs is low and unlikely to impact bus movements. HGVs are not routed along these bus routes
Pedestrians and cyclists on links CR10, W51,	Increased traffic due to construction of the Project, potentially resulting in severance, increased journey time, delay, decline	Low/Medium	varies (<30%, <10% or <20 HGVs daily)	Low – Not significant	The volume of construction traffic does not meet IEMA thresholds or considered low (on routes without

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
	in amenity, additional fear and intimidation and safety effects.				baseline data) such that it is unlikely to impact pedestrian and cycle movements
Railway Infrastructure					
Railway users	Potential for disruption of the railway network and/or operational safety	High	Negligible	Negligible – Not significant	No railway lines are crossed by the Section 7 draft Order Limits, therefore, no likely significant effects on railway users are expected.
Waterways					
Waterway Users	Construction traffic/haul road crossings potentially resulting in severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.	Low	Negligible	Negligible – Not significant	No navigable waterways are crossed by the Section 7 draft Order Limits, therefore, no likely significant effects on users are expected.
Public Rights of Way and Promoted/Recreational Routes					
PRoW Users	Temporary route closures/diversions to enable construction potentially resulting in severance, delay, increased journey time, decline in amenity,	Low	Negligible	Negligible – Not significant	There are no PRoW affected by Section 7 therefore no significant effects to PRoW are identified.

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
	additional fear and intimidation and safety effects.				
Operation and maintenance					
Highway Network					
Road users, public transport users, pedestrians, cyclists and equestrians of all routes	Increased traffic during operation and maintenance potentially resulting in severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.	Negligible – Medium	2 visits/month by 2 people	Negligible – Not significant	The volume of traffic associated with operation and maintenance is very low and would not impact receptors
Railway Infrastructure					
Railway users	Potential for disruption of the railway network and/or operational safety	High	No impact	Negligible – Not significant	No railway lines are crossed by the Section 7 draft Order Limits, therefore no likely significant effects on railway users are expected.
Waterways					
Waterway Users	Potential for disruption of navigable waterways	Low	No impact	Negligible – Not significant	No navigable waterways are crossed by the Section 7 draft Order Limits, therefore no likely significant effects on

Receptor	Impact	Sensitivity	Magnitude of Change	Significance of Effect	Rationale
					users of waterways are expected
Public Rights of Way and Promoted/Recreational Routes					
Pedestrians, cyclists and equestrians on PRow	Potential for severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects	Low	No impact	Negligible – Not significant	PRow would not be impacted by operation of the Substation

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 the Section 7 Study Area.

References

- Ref 1 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 2 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 3 Lincolnshire County Council, Boston Borough Council, and South Holland District Council (2019) South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019). [online] Available at: <https://www.southeastlincslocalplan.org/wp-content/uploads/2019/02/Local-Plan-text-March-2019.pdf> [Accessed 29 May 2024].
- Ref 4 Lincolnshire County Council (2016) Boston Transport Strategy 2016-2036. [online] Available at: <https://www.lincolnshire.gov.uk/downloads/file/1877/boston-transport-strategy-2016-2036> [Accessed 29 May 2024].
- Ref 5 Fenland District Council (2014) Fenland Local Plan (Adopted May 2014). [online] Available at: https://www.fenland.gov.uk/media/12064/Fenland-Local-Plan---Adopted-2014/pdf/Fenland_Local_Plan-Adopted_2014.pdf [Accessed 29 May 2024].
- Ref 6 Fenland District Council (2022) Fenland Local Plan 2021-2040 Draft Local Plan Consultation (August 2022). [online] Available at: https://www.fenland.gov.uk/media/18814/Draft-Local-Plan-August-2022/pdf/Draft_Local_Plan_for_Consultation_Aug_2022.pdf?m=1661177156537 [Accessed 29 May 2024].
- Ref 7 Borough Council of King's Lynn & West Norfolk (2025) Kings Lynn & West Norfolk Local Plan (Adopted March 2025). [online] https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 24 April 2024].
- Ref 8 Lincolnshire County Council (2014) Spalding Transport Strategy 2014-2036. [online] Available at: <https://www.lincolnshire.gov.uk/downloads/file/1938/spalding-transport-strategy> [Accessed 29 May 2024].
- Ref 9 Fenland District Council, Cambridgeshire County Council, and Peterborough City Council (2023) Fenland Transport Strategy (Adopted March 2023). [online] Available at: <https://www.cambridgeshire.gov.uk/asset-library/Fenland-Transport-Strategy-Adopted-March-2023.pdf> [Accessed 29 May 2024].
- Ref 10 Cambridgeshire County Council and Peterborough City Council (2023) Local Transport and Connectivity Plan. [online] Available at: <https://cambridgeshirepeterborough-ca.gov.uk/wp-content/uploads/CPCA-LTCP-Strategic-Document.pdf> [Accessed 29 May 2024].

- Ref 11 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 12 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 13 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 14 Ordnance Survey (2024). OS OpenMap [online]. Available at: <https://www.ordnancesurvey.co.uk> [Accessed 21 October 2024].
- Ref 15 Google (2024). Google maps [online]. Available at: <https://www.google.com/maps> [Accessed 21 October 2024].
- Ref 16 OpenStreetBrowser (no date). OpenStreetMap [online]. Available at <https://www.openstreetmap.org/#map=6/54.91/-3.43> Accessed 28 October 2024].
- Ref 17 Mapway Ltd (no date). Home. Traveline.info. [online]. Available at: <https://www.traveline.info/> [Accessed 21 October 2024].
- Ref 18 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 19 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 20 Sustrans (no date). Sustrans homepage [online]. Available at: <https://www.sustrans.org.uk/> [Accessed 21 October 2024].
- Ref 21 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 22 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 23 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 24 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 25 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

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10. Noise and Vibration

10.1 Introduction

10.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the assessment of Noise and Vibration on noise sensitive receptors (NSR) for the New Walpole B Substation Section (Section 7) of the Grimsby to Walpole Project (the Project). Specifically, the chapter includes the following sections:

- i. An introduction to the topic (section 10.1);
- ii. Identification of key local and regional policy relevant to the assessment (section 10.2). A full overview of the legislation and national, regional onshore and marine planning policy context that applies to the Project is presented within **PEI Report Volume 2 Part A Chapter 2 Legislative, Regulatory and Planning Policy Context** and supporting appendices;
- iii. A summary of the assessment scoping process and the 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 7 (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 7 Study Area relevant to the Noise and Vibration assessment (section 10.5);
- vi. A description of mitigation measures included for the purposes of the Noise and Vibration assessment reported within the PEI Report (section 10.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
- vii. The likely significant and non-significant Noise and Vibration effects arising during construction and operation of the Project within Section 7, 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 7 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> <p>Figure 9.1 Primary Access Routes</p>
PEI Report Volume 3 Part B Section 7 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 7 Appendix 10B Initial Construction Traffic Noise Assessment	Includes the assessment of construction traffic noise on construction traffic routes within Section 7.
PEI Report Volume 3 Part B Section 7 Appendix 10C Initial Operational Substation Noise Assessment	Provides further details of the initial assessment of operational noise from the New Walpole B substation on NSR in the Section 7 Study Area.
Project Supporting Documentation	
PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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.

Supporting Information	Description
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.

- 10.1.3 There are interrelationships between the potential effects 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 7 Chapter 4 Ecology and Biodiversity** assesses the effects of the Project upon ecological receptors, including those resulting from Noise and Vibration.
 - ii. **PEI Report Volume 2 Part B Section 7 Chapter 5 Historic Environment** assesses the impacts of the Project upon heritage assets, including the potential effects of vibration.
 - iii. **PEI Report Volume 2 Part B Section 7 Chapter 9 Traffic and Movement** assesses the potential change in traffic movements during construction and operation, which are relevant to the assessment of noise effects associated with changes in traffic flow.
 - iv. **PEI Report Volume 2 Part B Section 7 Chapter 11 Socio-economics, Recreation and Tourism** 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 7 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon the preliminary assessment.
 - vi. **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** assesses the potential effects of Noise and Vibration generated by the Project upon health and wellbeing.
 - vii. **PEI Report Volume 2 Part C Route-wide Chapter 10 Cumulative Effects** reports those intra-project effects which could potentially act in combination to result in cumulative environmental effects. 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 Legislative, Regulatory and Planning Policy Context** and supporting appendices, the details of which are set out in **Table 10.1**.

Regional and Local Policy

- 10.2.2 Regional and local plans or policies relevant to this assessment are as follows.
- i. Kings Lynn and West Norfolk Local Plan 2021-2040 (Adopted March 2025) (Ref 1):
 - Policy LP21 – Environment, Design and Amenity: which stipulates that development must protect and enhance the amenity of the wider environment and identifies factors against which proposals are assessed, including noise; and
 - Policy LP27 – Renewable Energy: which stipulates that renewable energy and associated infrastructure proposals will be assessed to determine whether the benefits they bring outweigh their individual or cumulative impacts upon factors including amenity (in terms of noise, overbearing relationship, air quality and light pollution).

10.3 Scope of Assessment

- 10.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 2) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). A summary of the Scoping Opinion together with a response against each point of relevance to the 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 is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 10.3.3 The scope of the Noise and Vibration assessment includes consideration of effects due to:
- 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 substations; and
 - vi. operational noise and vibration from substantial maintenance activities.
- 10.3.4 As set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**, the scope of the assessment excludes:
- i. construction traffic vibration;

- ii. operational noise impacts from auxiliary plant (e.g. back-up generators and switchgear) within proposed new substations;
- iii. operational noise impacts from typical maintenance activities due to their infrequent and localised nature; and
- iv. operational noise from proposed overhead lines, on the basis that a low noise conductor system is proposed. Further information regarding the scoping out of overhead line noise is provided in paragraph 10.6.3.

10.4 Assessment Methodology

- 10.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Noise and Vibration assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components are outlined below.
- 10.4.2 Construction Noise and Vibration has been assessed in accordance with the methodology described in British Standard (BS) 5228-1:2009+A1:2014 Code of practice for Noise and Vibration control on construction and open sites – Part 1: Noise (BS 5228-1) (Ref 4), and Part 2: Vibration (BS 5228-2) (Ref 5), respectively. The assessment Study Area for construction noise is 300 m from the proposed works, based on guidance from BS 5228-1. The assessment Study Area for construction vibration is 100m from the proposed works, based on guidance from BS 5228-2.
- 10.4.3 Construction traffic noise has been predicted in accordance with the methodology described in Calculation of Road Traffic Noise (CRTN) (Ref 6) and assessed in accordance with the methodology described in the Design Manual for Roads and Bridges LA 111 Noise and vibration (DMRB LA 111) (Ref 7).
- 10.4.4 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 8). The assessment Study Area for operational noise is 1 km from the proposed New Walpole B 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 9).
- 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**. There are no additional limitations and assumptions that have been identified which are specific to the assessment of Section 7.
- 10.4.7 These key parameters and assumptions will be reviewed based on the design presented in the DCO application and, where required, updated, or refined, for the ES. The ES will present the final key limitations and assumptions used within that

assessment, particularly drawing attention to any areas that may have changed from that presented in this preliminary assessment.

10.5 Baseline Conditions

Study Area

- 10.5.1 The Section 7 Study Area for the assessment of the Noise and Vibration baseline is illustrated in **PEI Report Volume 2 Part B Section 7 Figure 10.1 Noise and Vibration Study Area**. The baseline Study Area includes an additional 1 km buffer from the Section 7 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 7 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 7 Figure 10.2 Noise and Vibration Baseline**. This represents the daytime ambient noise levels from road and rail sources and Noise Important Areas (NIAs); and
 - iii. current OS mapping information.

Existing Baseline

- 10.5.3 The following section outlines the Noise and Vibration baseline for the Section 7 Study Area. 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 7 Figure 10.1 Noise and Vibration Study Area**; and
 - ii. **PEI Report Volume 2 Part B Section 7 Figure 10.2 Noise and Vibration Baseline**.
- 10.5.4 The proposed New Walpole B Substation and associated overhead line are located in predominantly rural areas. The substation is however located in close proximity to Walton Highway. The majority of assessed NSRs within the Section 7 Study Area are located in the following villages.
- i. Walton Highway, approximately 100 m to the south of the Section 7 draft Order Limits and the proposed location of the New Walpole B Substation;
 - ii. West Walton, approximately 1 km to the southwest of the Section 7 draft Order Limits and the new 400 kV overhead line; and
 - iii. Ingleborough, approximately 1 km to the west of the Section 7 draft Order Limits and directly north of the proposed route of new 400 kV overhead line within the adjoining Section 6.

- 10.5.5 There are also isolated dwellings and farmhouses within the Section 7 Study Area, including a number of properties located off West Drove North, directly west of the proposed New Walpole B Substation location. **PEI Report Volume 2 Part B Section 7 Figure 10.1 Noise and Vibration Study Area** shows NSR locations, including residential and non-residential receptors.
- 10.5.6 The baseline noise environment is expected to vary around the Section 7 Study Area, depending on the nature of the area. For example, close to noise sources, such as roads and built up areas, ambient noise levels are expected to be higher. Further away from road noise 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 7 Figure 10.2 Noise and Vibration Baseline**, showing how existing noise levels vary along the draft Order Limits. Areas outside of the contours are generally considered to have low ambient and background noise levels. Areas where the road and rail contours overlap are considered to experience noise effects from both sources.
- 10.5.7 NIAs are determined via strategic noise maps and highlight the residential areas experiencing the highest one per cent of noise levels from road and rail sources in England and are shown in **PEI Report Volume 2 Part B Section 7 Figure 10.2 Noise and Vibration Baseline**. There are no NIAs close to the Section 7 Study Area.
- 10.5.8 The proposed New Walpole B Substation, new 400 kV overhead line and modified 400 kV overhead line to the west of Walton Highway located within agricultural land, albeit in proximity to the villages to the south. The main sources of environmental noise across the Study Area are likely to be relatively distant road traffic on the A47 and A1101, as well as traffic on local roads. In terms of industrial sources, the main source of noise is likely to be agricultural activity.
- 10.5.9 Acceptable levels of vibration during construction are higher than those that would be acceptable during normal conditions. It is therefore assumed that existing vibration levels at NSR within the draft Order Limits are negligible compared to the construction vibration threshold values, as described in **PEI Report Volume 2 Part A Chapter 4 Approach to Preliminary Environmental Information**. Construction vibration impacts are therefore assessed against fixed thresholds, rather than relative thresholds informed by an assessment of the baseline.

Noise Survey Data

- 10.5.10 At this stage, baseline noise level surveys have not been completed in the vicinity of the proposed New Walpole B Substation due to ongoing coordination with the nearby proposed National Grid Ventures Eastern Green Link (EGL) project. Baseline survey data will inform the assessment reported within the ES.

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 No significant changes to the future Noise and Vibration baseline that would affect the assessment are anticipated. This is owing to the largely rural and agricultural nature of the Section 7 Study Area. This will remain under review during development of the ES and further consideration of any appropriate changes to the assumed future baseline characterised within this PEI Report.

10.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 10.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 10) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 11) which apply to the design and siting of substations. These approaches are explained in further detail within the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 12) and **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered**. Principles include, but are not limited to, seeking to avoid areas of highest amenity, cultural or scientific value, taking advantage of natural screening provided by existing landform and features (e.g. woodland) and keeping visual, noise and other environmental effects to a minimum.
- 10.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. This has and will continue to contribute to the avoidance or reduction of the potential environmental impacts of the Project as the design is finalised.
- 10.6.3 The proposed overhead line system is a 'Triple Araucaria' conductor bundle. Noise from high voltage overhead lines is primarily due to a phenomenon called corona discharge. Overhead line noise is generated when the conductor surface voltage gradient (electric stress, or E_{max} expressed in kilovolts per centimetre (kV/cm)) exceeds the inception level for corona discharge activity which is released as acoustic energy and radiates into the air as sound. In UK conditions the corona inception level is regarded to occur when electric stress is in the range 17 to 20kV/cm. Whilst most high voltage overhead lines are designed to operate below this level, those that operate close to this may produce audible noise when enhancement of conductor surface electric stress occurs due to rainfall (wet noise) or the presence of conductor surface contamination (dry noise). Overhead lines that operate significantly below the corona inception level are much less likely to produce audible noise. 'Triple Araucaria' is regarded as practically quiet during both dry and wet weather conditions as it typically operates with an electrical stress below the inception level for corona discharge. Operational noise from the proposed overhead line would therefore not lead to significant adverse effects at nearby NSR, even if directly underneath the line. This supports the rationale for scoping operational noise out of the assessment.

- 10.6.4 In addition, pylon fittings, such as insulators, dampers, spacers, and clamps, are designed and procured in accordance with a series of National Grid Electricity Transmission plc (National Grid) Technical Specifications and must be type registered (rigorously tested) to ensure the fitting conforms to National Grid standards. These design, testing, and procurement processes reduce the potential for audible noise and tones to occur from all types of fittings, including insulators. Where noise does occur, it is likely to be localised and of short duration. If this is due to a fault, action can be taken to rectify it. Where noise from fittings does occur which results in a complaint, appropriate action can be taken to seek to remedy the cause of the noise where practicable, usually through cleaning or replacing the relevant fitting.
- 10.6.5 Appropriate noise mitigation measures will be considered in the proposed New Walpole B Substation design. This will include consideration of plant selection, site layout, screening, and enclosures, as may be considered appropriate. For the purposes of the assessment, it is assumed that substation transformers and shunt reactors are housed within standard acoustic enclosures providing a reduction of 20 dB.
- 10.6.6 Substation plant would also include vibration isolation measures. This is principally to protect the plant from potential external sources of vibration but also serves to attenuate vibration from the plant such that vibration levels would be well below significant levels, even immediately adjacent to the plant.

Control Mitigation Measures

Construction

- 10.6.7 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 7 include:
- i. GG01: The Project will be compliant with all relevant legislation, consents and permits.
 - ii. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced EnvCoW(s) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The EnvCoW(s) will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW(s) will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
 - iii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
 - pollution prevention and pollution incident response;
 - dust management and control measures;
 - location and protection of sensitive environmental sites and features;

- adherence to protected environmental areas around sensitive features;
 - working hours and Noise and Vibration reduction measures;
 - working with potentially contaminated materials;
 - waste management and storage;
 - flood risk response actions;
 - agreed traffic routes, access points, etc.;
 - soil management; and
 - drainage management.
- iv. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP) and a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (WSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), Drainage Management Plan (DrMP) along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as ‘the environmental control Plans.’
 - v. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans.
 - vi. GG10: The name and contact details for the Project will be displayed at the entrance to all compounds. This will include an emergency number.
 - vii. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
 - viii. GG13: Vehicles will be correctly maintained and operated in accordance with manufacturer’s recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. Electric, or other low carbon plant and equipment should be used where available and where practicable.
 - ix. GG14: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including excavated materials, drop heights will be limited.
 - x. GG24: Working areas will be appropriately fenced. The type of fencing installed will depend on the area to be fenced and will take into consideration the level of security required in relation to the surrounding land and public access, rural or urban environment and arable or stock farming. For some locations the fence used may also serve to provide acoustic and visual screening of the work sites and reduce the potential for disturbance of users in the surrounding areas. Fencing will be regularly inspected and maintained and removed as part of the demobilisation unless otherwise specified.

- xi. GG25: Members of the community and local businesses will be kept informed regularly of the works through active community liaison and groups with local membership. This will include notification of noisy activities, heavy traffic periods and start and end dates of key phasing. A contact number will be provided which members of the public can use to raise any concerns or complaints about the Project. All construction related complaints will be logged in a complaints register, together with a record of the responses given and actions taken.
- xii. TT03: The CTMP will set out measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. It will also provide suitable control for the means of access and egress to the public highway and set out measures for the maintenance and upkeep of the public highway. The plan will also identify access for emergency vehicles. It will also set out measures to reduce safety risks through construction vehicle and driver quality standards and measures to manage abnormal loads.
- xiii. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises Noise and Vibration at all times. Best practicable means (BPM) to reduce construction noise will be set out within the CEMP.
- xiv. NV02: BPM measures, as defined by The Control of Pollution Act 1974 and detailed in BS 5228-1:2009+A1:2014 Code of practice for Noise and Vibration control on construction and open sites – Part 1: Noise, and Part 2: Vibration, will be identified within the CoCP and may include consideration of construction plant and methods, siting semi-static equipment as far as reasonably practicable away from sensitive areas, screening, enclosures, and temporal restrictions.
- xv. NV03: The contractor will conduct detailed construction noise and vibration assessments to determine whether there are likely to be any new or different significant adverse effects at noise and vibration sensitive receptors (NSR) and therefore whether additional measures, including site-specific BPM, may be required.

Control of Pollution Act 1974

- 10.6.8 The Control of Pollution Act 1974 (CoPA) (Ref 13) 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 the CoPA, as enacted under The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 (Ref 14). Compliance with the best practice Noise and Vibration mitigation requirements stated within BS 5228-1 and BS 5228-2 became a statutory obligation under the Act. Compliance with the requirements of the CoPA would be secured via control measure NV02, included within the Preliminary CoCP.
- 10.6.9 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

- 10.6.10 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.
- 10.6.11 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 7 Study Area, as a result of construction, maintenance and/or operational activities.
- 10.7.2 The preliminary assessment of effects reported below takes into account the design and control mitigation measures previously described. No additional mitigation measures have been assumed within the preliminary assessment of effects reported in the following sections.
- 10.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 7 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 assessment will be included within the ES submitted with the DCO application.

Likely Significant Effects

Construction

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

Operation

- 10.7.7 No significant effects have been identified due to Noise and Vibration during operation and maintenance of the Project in Section 7. The assessment is discussed in further detail below in relation to likely non-significant effects.

Likely Non-Significant Effects

Construction

Construction Noise

- 10.7.8 The construction noise assessment is based on the construction noise data presented in **PEI Report Volume 3 Part B Section 7 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which in Section 7 include:
- Preparation and establishment of temporary access/egress to the Site and haul roads;
 - Establishment and operation of construction compounds and laydown areas;
 - Construction of pylon foundations and erection of pylons;
 - Stringing of overhead line;
 - Construction of the new proposed New Walpole B Substation;
 - Ancillary works, such as drainage;
 - Removal of compounds and haul roads and site reinstatement.
- 10.7.9 Although BPM to reduce construction noise impacts would be employed by the contractor for all work areas, for the purposes of the assessment, it is assumed that no noise mitigation, such as screening, is included. This is so that potential noise 'hot-spots' can be identified which would require specific mitigation measures to avoid significant adverse effects. However, BPM to reduce construction noise impacts would be employed by the contractor for all work areas, as discussed in section 10.6 Control Mitigation Measures.
- 10.7.10 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 7 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 Section 7 Study Area	Number of NSR experiencing magnitude of impact:			
		Negligible	Small	Medium	Large
Residential	136	94	40	2	0
High sensitivity non- residential	1	1	0	0	0
Medium sensitivity non-residential	3	1	2	0	0
Low sensitivity non- residential	5	3	2	0	0

- 10.7.11 The assessment indicates that the magnitude of impact from construction noise without specific mitigation measures would be medium at two residential NSRs, negligible or small at all other residential, medium and low sensitivity non-residential NSR, and negligible at the one high-sensitivity non-residential NSR.
- 10.7.12 The two potential medium magnitude impacts without specific BPM are due to the construction of the proposed construction compound at the south west extent of the Section 7 draft Order Limits off West Drove North. The two affected NSRs are:
- i. Kenilworth, West Drove North, Walton Highway, PE14 7DP; and
 - ii. Ashtree House, West Drove North, Walton Highway, PE14 7DP.
- 10.7.13 The highest predicted average construction noise level at these NSR is 67 dB $L_{Aeq,10h}$. Construction noise levels could therefore readily be attenuated to a low magnitude impact level with standard BPM mitigation measures, such as localised screening.
- 10.7.14 As such, there are no likely significant adverse effects from construction noise in Section 7 where specific BPM mitigation measures in place at the proposed compound. There are no likely significant adverse effects from any other construction activity in Section 7, even without specific BPM mitigation measures. This is due to the distance between proposed construction works and nearby NSR being relatively large and noise levels reducing accordingly with distance from construction activities.

Construction Vibration

- 10.7.15 The construction vibration assessment is based on the construction vibration data presented in **PEI Report Volume 3 Part B Section 7 Appendix 10A Construction Noise and Vibration Data** for the various proposed construction activities, which include:
- i. Construction of access tracks (compaction);
 - ii. Construction and operation of construction compounds (compaction);
 - iii. Construction of the new proposed New Walpole B Substation; and
 - iv. Construction of pylons (piling).

Construction Vibration on People in Buildings

- 10.7.16 Although BPM to reduce construction vibration impacts would be employed by the contractor for all work areas, the assessment assumes no vibration mitigation, such as the use of alternative methods, is included. Additionally, on a precautionary basis, the assessment assumes typical worst-case methodologies, such as use of percussive piling for pylon foundation construction. As with the noise assessment, this is so that potential vibration 'hot-spots' can be identified which would require specific mitigation measures to avoid significant adverse effects.
- 10.7.17 The initial construction noise assessment outputs are presented in **PEI Report Volume 2 Part B Section 7 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 Section 7 Study Area	Number of NSR experiencing magnitude of impact:			
		Negligible	Small	Medium	Large
Residential	52	50	2	0	0
High sensitivity non-residential	0	0	0	0	0
Medium sensitivity non-residential	3	3	0	0	0
Low sensitivity non-residential	2	2	0	0	0

- 10.7.18 The assessment indicates that the magnitude of impact from construction vibration without specific mitigation measures would be negligible at all NSR, apart from two residential NSR where the magnitude is small. As such, there are no likely significant adverse effects from construction vibration in the Section 7 Study Area, even without specific BPM mitigation measures in place. This is principally due to the distance between proposed construction works and nearby NSR.

Construction Vibration on Buildings and Structures

- 10.7.19 No buildings or structures have been identified within the threshold distances of applicable construction activities where the level of construction vibration would have the potential to cause damage. There are therefore no likely significant adverse effects from construction vibration on structures and buildings in the Section 7 Study Area. This will be reviewed further at ES stage and by the contractor prior to starting works.

Construction Traffic Noise

- 10.7.20 The initial construction noise assessment outputs are presented in **PEI Report Volume 3 Part B Section 7 Appendix 10B Initial Construction Traffic Noise Assessment**.
- 10.7.21 Construction traffic noise impacts have been assessed on 8 construction traffic road links in Section 7 where data is available. The assessment indicates that construction traffic would lead to the following impacts:
- no change in noise level on four road links;
 - a negligible increase in noise level on three road links; and
 - a small magnitude increase on one road link (which doesn't include NIAs).
- 10.7.22 No medium or large magnitude construction traffic noise impacts are expected in the Section 7 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 the Section 7 Study Area.

Operation and Maintenance

Operational Substation Noise

- 10.7.23 The initial operational substation noise assessment is presented in **PEI Report Volume 3 Part B Section 7 Appendix 10C Initial Operational Substation Noise Assessment** and is summarised in **Table 10.4**.

Table 10.4 Summary of operational substation noise assessment

NSR Type/ Sensitivity	Total Number of NSR in Section 7 Study Area	Number of NSR experiencing magnitude of impact:			
		Negligible	Small	Medium	Large
Residential	305	305	0	0	0
High sensitivity non-residential	1	1	0	0	0
Medium sensitivity non- residential	6	6	0	0	0
Low sensitivity non-residential	6	6	0	0	0

- 10.7.24 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 Walpole B Substation would be negligible at all nearby NSR. As such, there are no likely significant adverse effects from operational substation noise in the Section 7 Study Area.

Operational Maintenance Noise and Vibration

- 10.7.25 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, or transformer/shunt reactor replacement. Such activities would be expected to be similar to those during the construction phase, as assessed above. As such, in the Section 7 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

- 10.7.26 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 7

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Construction					
All residential noise sensitive receptors (NSR) within the Section 7 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 standard construction noise mitigation measures.
High sensitivity non-residential NSR within the Section 7 Study Area, such as Walton Highway Village Club	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 high sensitivity non-residential NSR, even without specific noise mitigation measures.
Medium and low sensitivity Non-residential NSR within the Section 7 Study Area	Construction noise	Medium and low	Negligible to small	Negligible to minor adverse. Not significant	Due to the distance between proposed construction activities and receptors, construction noise levels would be below the threshold for potential significant adverse effects at all nearby non-residential NSR, even without specific noise mitigation measures.

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
All NSR within the Section 7 Study Area	Construction vibration	Residential, and high sensitivity non-residential	Negligible	Minor adverse. Not significant	Due to the distance between proposed construction activities and receptors, construction vibration levels would be below the threshold for potential significant adverse effects at all nearby medium and low sensitivity NSR, even without specific vibration mitigation measures.
Buildings and structures within the Section 7 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 the Section 7 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 7. 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 7.

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Operation and Maintenance					
All NSR within the Section 7 Study Area	Operational noise from proposed New Walpole B Substation	Residential, and high sensitivity non-residential	Negligible	Negligible to minor adverse. Not significant	With the implementation of standard noise mitigation measures (e.g. transformer and shunt reactor enclosures), operational noise levels from the proposed New Walpole B Substation would be below the threshold for potential significant adverse effects at all nearby NSR.
All NSR within the Section 7 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 13) 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 Borough Council of King's Lynn and West Norfolk (2025) Kings Lynn and West Norfolk Local Plan 2021-2040 [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 25 April 2025].
- Ref 2 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 3 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 4 BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, British Standard Institution, 2014.
- Ref 5 BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration, British Standard Institution, 2014.
- Ref 6 Department for Transport (1988). Calculation of Road Traffic Noise.
- Ref 7 Highways England et al. (2020). Design Manual for Roads and Bridges LA 111 Noise and vibration.
- Ref 8 BS 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound, British Standard Institution, 2019.
- Ref 9 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 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 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 13 Control of Pollution Act 1974 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40/contents> [Accessed 18 September 2024].

- Ref 14 The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015 [online]. Available at: <https://www.legislation.gov.uk/uksi/2015/227> [Accessed 21 January 2025].

11. Socio- economics, Recreation and Tourism

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11. Socio-economics, recreation and tourism

11.1 Introduction

- 11.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Socio-economics, recreation and tourism assessment of the New Walpole B Substation (Section 7) 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 7 (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 7 Study Area relevant to the Socio-economics, recreation and tourism assessment (Section 11.5);
 - vi. A description of mitigation measures included for the purposes of the Socio-economics, recreation and tourism assessment reported within the PEI Report (Section 11.6). Further information regarding design development can be found in **PEI Report Volume 2 Part A Chapter 3 Main Alternatives Considered** and the **Grimsby to Walpole Design Development Report**;
 - vii. The likely significant and non-significant Socio-economics, recreation and tourism effects arising during construction and operation of the Project within Section 7, based upon the assessment completed to date (Section 11.7); and
 - viii. An outline of the proposed monitoring requirements in relation to Socio-economics, recreation and tourism (Section 11.8).
- 11.1.2 Further supporting information is set out in **Table 11.1** below, including supporting figures and technical appendices.

Table 11.1 Supporting documentation

Supporting Information	Description
Topic Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 7 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>
Project Specific Supporting Documentation	
PEI Report Volume 2 Part B Section 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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 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 7, Chapter 3 Visual**, should be consulted in relation to amenity effects on users of Public Rights of Ways (PRoWs) and promoted/recreational routes;
 - ii. **PEI Report Volume 2 Part B Section 7, Chapter 8 Agriculture and Soils**, in regard to effects on agricultural landholdings;
 - iii. **PEI Report Volume 2 Part B Section 7, 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 7, 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 7, 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 7 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; and
 - 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. Norfolk Minerals and Waste Development Framework (Ref 1)
 - Policy CS16: Safeguarding mineral and waste sites and mineral resources - 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
 - ii. King's Lynn and West Norfolk Local Plan 2021 - 2040 (Adopted March 2025) (Ref 2)
 - Policy LP26 – Protection of Local Open Space: When assessing planning applications for development, the Council will have careful regard to the value of any area of open space, based upon factors including visual amenity and landscape character.
 - Policy LP38: Community and Culture: The Council encourages developers to engage with the community early in the planning process, focusing on the form, design, location, and layout of their proposals to promote community well-being. Additionally, the Council is committed to safeguarding and enhancing cultural assets. Development that compromises existing cultural facilities will only be permitted if there is a justified need and equivalent or improved facilities are provided within the same settlement boundary or nearby.

11.3 Scope of Assessment

- 11.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 3) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 4). The scope has also been informed through consultation and engagement with relevant consultees. A summary of the Scoping Opinion together with a response against each point of relevance to the Socio-economics, recreation and tourism chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**. A summary of the stakeholder engagement undertaken to date is provided in **PEI Report Volume 3 Part A Appendix 4D Summary of Stakeholder Engagement**.
- 11.3.2 Non-statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 11.3.3 The scope of the construction assessment covers the following receptor groups:
- i. Local businesses;
 - ii. Development land;
 - iii. Community facilities;
 - iv. Open space;
 - v. Users of PRoWs and promoted/recreational routes; and
 - vi. Aviation.

- 11.3.4 Where effects may be felt regionally, such as those relating to the local labour market (including employment, supply chain effects, training and apprenticeship opportunities, as well as any impact on tourism bedspace from the construction workforce), affected communities (local communities including populations of towns and villages) and strategic visitor attractions that are of importance to the economy during construction, this is considered in **PEI Report Volume 2 Part C Route-wide Chapter 7 Socio-economics, recreation and tourism**.
- 11.3.5 As outlined in the Scoping Report (Ref 4) the effects of the Projects operation and maintenance phases on the receptor groups outlined above are not likely to give rise to significant effects and are therefore scoped out of the assessment. However, acknowledging the Scoping Opinion (Ref 3), where significant effects have the potential to be felt, this is reported on as appropriate.

11.4 Assessment Methodology

- 11.4.1 The assessment scope, methodology, relevant guidance, key assumptions and limitations for the Socio-economics, recreation and tourism assessment are set out in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**. This includes a description of how receptor sensitivity, magnitude of impact and significance of effects are all described and assigned to the assessment. A summary of the key components are outlined below.
- 11.4.2 There is limited technical guidance available for Socio-economics, recreation and tourism assessments. As such, the methodology for assessing impacts has followed standard EIA guidance and entails:
- assessment of the likely scale, permanence and significance of effects associated with Socio-economics, recreation and tourism receptors; and
 - 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 Socio-economic assessment 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 7.
- 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-economics, recreation and tourism effects varies dependent on the likely spatial extent of the effect under consideration, as agreed via the Scoping Opinion (Ref 3).
- 11.5.2 The proposed Study Areas for Section 7 is shown on
- PEI Report Volume 2 Part B Section 7 Figure 11.1 – Local Business Receptors and Community Facilities Within the Study Area;**
 - PEI Report Volume 2 Part B Section 7 Figure 11.2 – Development Land Allocations and Open Space Within the Study Area;** and
 - PEI Report Volume 2 Part B Section 7 Figure 11.3 – PRoW and Promoted/Recreational Routes Within the Study Area.**
- 11.5.3 Professional judgement has been applied to determine the Study Area for each receptor type and is consistent with other similar linear nationally significant infrastructure projects.
- 11.5.4 **Table 11.2** below summarises the Study Areas considered for each receptor type that are considered within this Chapter.

Table 11.2 Study Areas

Receptor Type	Study Area
Local businesses – Indirect effects	Within 500 m of the draft Order Limits
Development land – Direct effects	Within the draft Order Limits
Development land – Indirect effects	Within 500 m of the draft Order Limits
Community facilities – Indirect effects	Within 500 m of the draft Order Limits
Open space – Direct effects	Within the draft Order Limits
Open space – Indirect effects	Within 500 m of the draft Order Limits
Users of PRoW of local significance – Direct effects	Within the draft Order Limits
Users of 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

Receptor Type	Study Area
Aviation – Indirect effects	Within 5 km of the proposed overhead line alignment
11.5.5	The Study Area for aviation receptors is 5 km from the proposed overhead line infrastructure, as opposed to the draft Order Limits in their entirety. This is because of the nature of this specific receptor group, and the subsequent elements of the Project that has the potential to cause adverse or beneficial effects being limited to the placement of overhead line infrastructure only.
11.5.6	For the purposes of this assessment, direct effects can be defined as that which involve loss or severance of land and property. Indirect effects can be defined as impacts on the environment as a result of the Project. For example, a change in a persons' experience of a place.
11.5.7	The local labour market, effects on the construction workforce and tourism bed spaces, affected communities and strategic visitor attractions will be considered as part of the PEI Report Volume 2 Part C Route-wide 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:
- Norfolk Minerals and Waste Development Framework (Ref 3);
 - Kings Lynn and West Norfolk District Council Local Plan (Ref 2);
 - Ordnance Survey (OS) Open Greenspace (Ref 5);
 - OS Local Important Buildings (Ref 6);
 - OS AddressBase (Ref 7);
 - Traffic count data from surveys, which include pedestrians, cyclists and equestrians;
 - Designated non-motorised user (NMU) routes and PRoWs from Sustrans (Ref 8 and Ref 9) and Local Authority Definitive Maps where applicable; and
 - Norfolk County Council's definitive maps (Ref 10).

Existing Baseline

- 11.5.9 The following section outlines the Socio-economics, recreation and tourism baseline. The baseline section should be read in conjunction with the following supporting Figures as found within **PEI Report Volume 2**:
- PEI Report Volume 2 Part B Section 7 Figure 11.1 – Local Business Receptors and Community Facilities Within the Study Area
 - PEI Report Volume 2 Part B Section 7 Figure 11.2 – Development Land Allocations and Open Space Within the Study Area; and

- iii. PEI Report Volume 2 Part B Section 7 Figure 11.3 – PRow and Promoted/Recreational Routes Within the Study Area.

Local Businesses

- 11.5.10 The local businesses in this area possess some economic value, with potential for substitution, and as such are assigned a Medium sensitivity. However, some assets are considered to have a low sensitivity as they are not likely to incur any loss or gain from changes in the environment.
- 11.5.11 **Table 11.3** below identifies the local businesses, including farms and tourist accommodation, which fall within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 7 Figure 11.1 – Local Business Receptors and Community Facilities Within the Study Area.**

Table 11.3 Local businesses within the Study Area

Receptor	Description	Sensitivity
Smeeth Saddlery	At its closest point, this receptor is approximately 10 m from the draft Order Limits. The receptor is situated along Salts Road.	Low
Tamar Nurseries	At its closest point, this receptor is approximately 350 m from the draft Order Limits. The receptor is situated along West Drove South.	Medium
Eastcote Workshop at School Road	At its closest point, this receptor is approximately 380 m from the draft Order Limits. The receptor is situated along School Road.	Low
Toppers Garden Services	At its closest point, this receptor is approximately 405 m from the draft Order Limits. The receptor is situated along St Pauls Road North.	Low
English Brothers Ltd	At its closest point, this receptor is approximately 280 m from the draft Order Limits. The receptor is situated along Salts Road.	Low
Kenilworth Garden Holiday Accommodation	At its closest point, this receptor is approximately 10 m from the draft Order Limits. The receptor is situated along West Drove North.	Medium
Strattons Farm Campsite	At its closest point, this receptor is approximately 5 m from the draft Order Limits. The receptor is situated along West Drove North.	Medium

Receptor	Description	Sensitivity
E & D Pet Supplies	At its closest point, this receptor is approximately 105 m from the draft Order Limits. The receptor is situated along West Drove North.	Low
Elysium Beauty Rooms	At its closest point, this receptor is approximately 30 m from the draft Order Limits. The receptor is situated along Walpole Bank.	Low
The Highwayman	At its closest point, this receptor is approximately 415 m from the draft Order Limits. The receptor is situated along Lynn Road.	Medium
Norfolk Bullz Dog Breeder	At its closest point, this receptor is approximately 170 m from the draft Order Limits. The receptor is situated along Mill Road.	Medium

Development Land

- 11.5.12 For the purposes of assessment, ‘development land’ includes existing and proposed land used for above ground renewable energy generation (solar and onshore wind farms), alongside development land allocations set out in local planning policy.
- 11.5.13 **Table 11.4** identifies key development land allocations and above-ground renewable energy generation infrastructure (solar and onshore wind farms) within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 7 Figure 11.2 Development Land Allocations and Open Space Within the Study Area**.
- 11.5.14 Generally, the allocations are strategic in nature and are therefore considered to have limited potential for substitution. As such they are considered to have a High sensitivity.
- 11.5.15 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.

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

Receptor	Description	Sensitivity
Walpole Bank Solar Site	At its closest point, this receptor is approximately 15 m from the draft Order Limits. The receptor is situated north of Mill Road.	High
Sutton Bridge Solar Farm	At its closest point, this receptor is approximately 320 m from the draft Order	High

Receptor	Description	Sensitivity
	Limits. The receptor is situated adjacent to Gunthorpe Road.	
Rose and Crown Solar Farm	This receptor is within the draft Order Limits and is located along Mill Road.	High
Gunthorpe Road Solar Site	At its closest point, this receptor is approximately 20 m from the draft Order Limits. The receptor is situated along Gunthorpe Road.	High
Wind Turbine along West Drove North	At its closest point, this receptor is approximately 190 m from the draft Order Limits. The receptor is situated along West Drove North.	Medium

Community Facilities

- 11.5.16 **Table 11.5** below identifies the community facilities which fall within the Study Area. These are also shown on **PEI Report Volume 2 Part B Section 7 Figure 11.1 – Local Business Receptors and Community Facilities Within the Study Area**.
- 11.5.17 It is considered that the Walton Club possesses some social and/or community value and would likely have limited potential for substitution in the immediate surrounding area, and as such is considered to have a High sensitivity.
- 11.5.18 The Post Office along St Pauls Road North is considered to have a Medium sensitivity by virtue of its potential for substitution in the surrounding area.

Table 11.5 Community facilities within the Study Area

Receptor	Description	Sensitivity
Post Office along St Pauls Road North	At its closest point, this receptor is approximately 400 m from the draft Order Limits. The receptor is situated along St Pauls Road North.	Medium
Walton Club	At its closest point, this receptor is approximately 250 m from the draft Order Limits. The receptor is located along Lynn Road.	High

Open space

- 11.5.19 No open space land was identified within the Section 7 Study Area.

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

- 11.5.20 This section of the baseline considers people using PRoW 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.

Routes are as identified through the definitive map of Norfolk County Council (Ref 10) These are also shown on **PEI Report Volume 2 Part B Section 7 Figure 11.3 PRow and Promoted/Recreational Routes Within the Study Area.**

- 11.5.21 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 Norfolk County Council's definitive map (Ref 10), and desk-top research. Such routes, paths and trails generally follow alignments utilising combinations of PRow.
- 11.5.22 PRow are typically considered as:
- i. Public footpaths, open to walkers only;
 - ii. Public bridleways, open to walkers, cyclists and horse-riders;
 - iii. Restricted byways, open to walkers, cyclists, horse-riders, and drivers and riders of non-mechanically propelled vehicles (such as horse-drawn carriages); and
 - iv. Byways open to all traffic (BOATs), open to all including motor vehicles.
- 11.5.23 People using wheelchairs or mobility scooters can use all of the above designations.
- 11.5.24 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 subject to available alternative routes.
- 11.5.25 Relevant transport surveys are ongoing, which are considered in **PEI Report Volume 2 Part B Section 7, Chapter 9 Traffic and Movement**. At ES stage survey results will help further inform our consideration of sensitivity of routes by providing information about usage and condition, which are relevant to determining value and potential for substitution.
- 11.5.26 **Table 11.6** 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 PRow during construction of the Project are assessed within **PEI Report Volume 2 Part B Section 7, Chapter 9 Traffic and Movement**.

Table 11.6 PRowS and promoted/recreational routes within the Study Area

District and parish area	Receptor	Description	Sensitivity
Promoted/recreational routes			
N/A	National Cycle Route 1	At its closest point, the route is within the draft Order Limits. The route is 1,264 miles in total length.	High
N/A	West Walton Jubilee Walk	This receptor is a long distance circular walk that runs through West Walton and is 7.40 miles in total length. The receptor intercepts with the southern section of the draft Order Limits.	High
Norfolk County Council			
King's Lynn and West Norfolk, Walpole	Walpole St Andrew FP1	At its closest point, the PRow is approximately 226 m from the draft Order Limits and is approximately 241 m in total length.	Medium

Aviation

11.5.27 No aviation receptors were identified within the Section 7 Study Area.

Future Baseline

- 11.5.28 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 completed prior to construction of the Project.
- 11.5.29 At this preliminary stage, a full assessment of the implications of any confirmed development projects with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope Annex A Developments for Consideration Within the Future Baseline**. This will be reviewed and updated as appropriate during development of the ES, as with other information which informs assessment of the future baseline.
- 11.5.30 Population projections relevant to the local labour market and affected communities is considered as part of **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.
- 11.5.31 The future baseline for local businesses, community facilities, open spaces, solar and wind farms, and visitor attractions over the medium to longer-term is uncertain beyond where allocated and planned development sites have been identified. Due to this uncertainty, it is assumed the future baseline for the Study Area would be unchanged from the current baseline to the completion of the Project, except where

new development is expected to be delivered in line with allocated and planned development sites as set out above.

11.6 Design, Control and Additional Mitigation Measures

Design Mitigation Measures

- 11.6.1 The Project and draft Order Limits have been designed to avoid sensitive receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 11) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 12) 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 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.
- 11.6.2 Following selection of the preferred route corridor, environmental specialists have been integral to ongoing design refinement of works within Section 7. 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 7 include:
- i. TT02: All affected PRowWs will be identified, and any potential permanent or temporary closures detailed in the DCO. All designated PRowWs crossing the working area will be managed with access only closed for periods while construction activities occur. Any required diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns and will be subject to a PRowWMP. PRowWs crossing the working areas will be managed in discussion with the relevant local authorities and potential temporary closures applied for discussed with the relevant local authority. Access disruption would be reduced as reasonably practicable while construction activities occur.
 - ii. NV01: Construction working will be undertaken within the agreed working hours set out within the DCO unless the works are under an exception to the set working hours in which case they will be carried out in a manner that minimises noise and vibration at all times. Best practicable means to reduce construction noise will be set out within the CEMP.
 - iii. GG08: Land used temporarily will be reinstated where practicable to its pre-construction condition (including 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 7.
- 11.7.2 The preliminary assessment of effects reported below takes into account the Design and Control mitigation measures previously described .
- 11.7.3 For a summary of the likely significant effects please refer to **PEI Report Volume 2 Part B Section 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this Section in **Table 11.7**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 11.7.4 This PEI Report has assumed that following the implementation of all Design, Control and Mitigation Measures there is unlikely to be a significant intra-project cumulative effect upon the amenity value of any Socio-economics, recreation and tourism receptors. This will be reviewed and updated accordingly at ES stage.
- 11.7.5 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project, statutory consultation feedback and further stakeholder engagement. A full assessment will be included within the ES submitted with the DCO application.

Likely Significant Effects

Construction, Operation and Maintenance

- 11.7.6 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 7 there is one receptor which is the Rose and Crown Solar Farm. The assumption is that these

receptor would 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 7, as a result of the construction or operation and maintenance phases of the Project.

Likely Non-Significant Effects

- 11.7.10 For completeness, **Table 11.7** 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 4), the effects of the Project's operation and maintenance phases on the receptor groups outlined in **Table 11.2** are not likely to give rise to significant effects and are therefore scoped out of the assessment. However, acknowledging the Scoping Opinion (Ref 3) and the request to report on significant effects resulting from the Projects operation and maintenance phases where they do arise, National Grid has considered this as part of this assessment.
- 11.7.12 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 7. 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 7, Chapter 9 Traffic and Movement**. This Socio-economics, recreation and tourism assessment, also at ES stage, will consider the in-combination effects of any proposed diversions and/or closures and changes to amenity value resulting from noise, visual and air quality impacts. The likely significance of effects will be determined at ES stage when the necessary information from all relevant topic specialists is available and confirmed, to help inform determination of the receptors' magnitude of change.

Table 11.7 Preliminary summary of non-significant Socio-economic, recreation and tourism effects – Section 7

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Local businesses					
Smeeth Saddlery, Salts 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.	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 likely given construction activities, including the provision of mitigation vegetation adjacent to this receptor. It is assumed that access would be maintained at all times.</p>
Tamar Nurseries, West Drove South	At its closest point, this receptor is located approximately 350 m from the draft Order Limits and may be affected from adverse noise/vibration, air	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. It is anticipated that there would be a Small change likely given construction activities in the</p>

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	quality/dust, and visual impacts during construction.				surrounding areas which would have a limited impact on the receptor's amenity. It is assumed that access would be maintained at all times.
Eastcote Workshop at School Road	At its closest point, this receptor is located approximately 380 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	It is considered that this receptor possesses some economic value and has potential for substitution. It is unlikely to experience any significant loss or gain due to potential environmental changes, thus it has been assigned a Low 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. It is assumed that access would be maintained at all times.
Toppers Garden Services, St Pauls Road North	At its closest point, this receptor is located approximately 475 m from the draft Order Limits and may be affected from adverse	Low	Small, adverse	Minor adverse, not significant	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

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	noise/vibration, air quality/dust, and visual impacts during construction.				has therefore been assigned a Low 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. It is assumed that access would be maintained at all times.
English Brothers Ltd, Salts Road	At its closest point, this receptor is located approximately 280 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	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. 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. It is assumed that access would be maintained at all times.

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Kenilworth Garden Holiday Accommodation, March Lane	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 likely given the provision of a proposed construction compound adjacent to this receptor. It is not likely to impact this receptors viability but would have a limited impact on the receptor's amenity. It is assumed also that access would be maintained at all times.
Strattons Farm Campsite, West Drove North	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 likely given this receptors proximity to a proposed access track, and other construction activities in the surrounding areas which would have a limited impact on the receptor's amenity. It is

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
					assumed that access would be maintained at all times.
E & D Pet Supplies, West Drove North	At its closest point, this receptor is located approximately 105 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 likely given construction activities in the surrounding areas, including a proposed construction access track in close proximity to this receptor, which would have a limited impact on the receptor's amenity. It is assumed that access would be maintained at all times.</p>
Elysium Beauty Rooms, Walpole Bank	At its closest point, this receptor is located approximately 30 m from the draft Order Limits and may be affected from	Low	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 Low sensitivity. It is anticipated that there would</p>

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	adverse noise/vibration, air quality/dust, and visual impacts during construction.				be a Small change likely given construction activities in the surrounding areas which would have a limited impact on the receptor's amenity. It is assumed that access would be maintained at all times.
The Highwayman, Lynn Road	At its closest point, this receptor is located approximately 415 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a Medium sensitivity. It is anticipated that there would be a Small change likely given construction activities in the surrounding areas which would have a limited impact on the receptor's amenity. It is assumed that access would be maintained at all times.
Norfolk Bullz Dog Breeder, Mill Road	At its closest point, this receptor is located approximately 170 m from the draft Order Limits and may be affected from adverse noise/vibration, air quality/dust, and	Medium	Small, adverse	Minor adverse, not significant	It is considered that this receptor possesses some economic value and has potential for substitution. It has therefore been assigned a Medium sensitivity. It is anticipated that there would be a Small change likely given construction activities in the surrounding areas which would have a limited impact

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
	visual impacts during construction.				on the receptor's amenity. It is assumed that access would be maintained at all times.
Development land					
Above ground renewable energy generating infrastructure (solar farms) not located within the draft Order Limits	The receptors may be indirectly affected from adverse noise/vibration, air quality/dust, and visual impacts during construction.	High	Small, adverse	Likely not significant	It is considered that this receptor group possesses some economic value and has potential for substitution. It has therefore been assigned a High sensitivity. It is anticipated that there would be a Small change likely given construction activities in the surrounding areas which would have a limited impact on the receptor's amenity and usability. It is assumed that access 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 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

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

Receptor	Impact	Sensitivity/Importance/Value of Receptor	Magnitude of Change	Significance	Rationale
Post Office along St Pauls Road North	At its closest point, this receptor is located approximately 420 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>Community facilities have some social and/or community value, however this receptor is considered to have some potential for substitution in the immediate surrounding area and is therefore assigned a Medium sensitivity.</p> <p>It is anticipated that there would be a Small change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>
Walton Club	At its closest point, this receptor is located approximately 295 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	<p>Community facilities have some social and/or community value and would likely have limited potential for substitution in the immediate surrounding area and are therefore assigned a High sensitivity.</p> <p>It is anticipated that there would be a Small change likely given construction activities in the surrounding areas, and it is assumed that access would be maintained at all times.</p>

11.8 Monitoring

- 11.8.1 The control measures set out in section 11.6 will secure a PRowMP as part of the Preliminary CoCP. No further monitoring requirements have been identified at the time of writing over and above this requirement for the Socio-economic, recreation and tourism assessment. This will be reviewed and updated accordingly as part of the ES

References

- Ref 1 Norfolk County Council, 2011. Norfolk Minerals and Waste Development Framework: Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026 [online]. Available at: <https://www.norfolk.gov.uk/article/39049/Adopted-policy-documents> [Accessed 12 November 2024].
- Ref 2 Borough Council of King's Lynn & West Norfolk (2025). King's Lynn and West Norfolk Local Plan 2021-2040 (Adopted March 2025) [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 24 April 2025].
- Ref 3 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 4 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 5 Ordnance Survey, 2024. OS Open Greenspace [online]. Available at: <https://www.ordnancesurvey.co.uk/products/os-open-greenspace> [Accessed 25 September 2024].
- Ref 6 Ordnance Survey, 2024. OS OpenMap Local Important Buildings [online]. Available at: <https://www.ordnancesurvey.co.uk/products/os-open-map-local> [Accessed 25 September 2024].
- Ref 7 Ordnance Survey, 2024. OS AddressBase [online]. Available at: <https://www.ordnancesurvey.co.uk/products/addressbase> [Accessed 25 September 2024].
- Ref 8 Sustrans (no date). Temporary diversions of National Cycle Network routes [online]. Available at: <https://www.sustrans.org.uk/for-professionals/infrastructure/temporary-diversions-of-national-cycle-network-routes/> [Accessed October 2024].
- Ref 9 Sustrans (no date) Sustrans traffic-free routes and greenways design guide [online]. Available at: <https://www.sustrans.org.uk/for-professionals/infrastructure/sustrans-traffic-free-routes-and-greenways-design-guide/> [Accessed October 2024].
- Ref 10 Norfolk County Council (no date). Map and Statement of Public Rights of Way in Norfolk [online]. Available at: <https://www.norfolk.gov.uk/43028> [Accessed 6 March 2025].
- Ref 11 National Grid. The Holford Rules: Guidelines on Overhead Line Routeing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].

- Ref 12 National Grid. NGC Substations and the Environment: Guidelines on Siting and Design. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> [Accessed 20 September 2024].
- Ref 13 National Grid Electricity Transmission (2024). Grimsby to Walpole Corridor Preliminary Routeing and Siting Study [online]. Available at: <https://www.nationalgrid.com/document/352621/download> [Accessed 3 March 2025].

12. Air Quality

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12. Air Quality

12.1 Introduction

- 12.1.1 This chapter presents the Preliminary Environmental Information (PEI) in relation to the Air Quality assessment for the New Walpole B Substation Section (Section 7) 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 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 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 7 (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 7 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 7 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 7 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 7 Chapter 1 Overview of the Section and Description of the Project	A summary of the works within Section 7, 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 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 7 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 7 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 7 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 7 Chapter 13 Summary** provides a concise, consolidated summary of the likely significant effects reported for all topics, based upon preliminary assessment.
 - v. **PEI Report Volume 2 Part C Route-wide Chapter 8 Health and Wellbeing** assesses the potential for Air Quality effects on 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. King's Lynn and West Norfolk Local Plan 2021 - 2040 (Adopted March 2025) (Ref 1):
 - Policy LP04 – Presumption in Favour of Sustainable Development (Strategic Policy): A positive, proactive approach will be taken by the Council in considering development proposals, in accordance with the policies in the National Planning Policy Framework (NPPF);
 - Policy LP06 - Climate Change: Development shall recognise and contribute to the importance of, and future proofing against, the challenges of climate

change. Amongst other factors, this includes minimising and mitigating air pollution so as to reduce the potential for higher temperatures which in turn leads to poorer Air Quality;

- Policy LP18 - Design and Sustainable Development: Development should seek to identify opportunities to improve air quality or mitigate impacts that have been identified, through measures such as traffic and travel management, and green infrastructure provision and enhancement;
- Policy LP21 - Environment, Design and Amenity: Development must conserve and enhance the amenity of the wider environment. Proposals will be assessed against their Air Quality impact on neighbouring uses and (future) occupants as well as the amenity of any future occupiers of the proposed development. Factors against which proposals will be assessed include odour and Air Quality; and
- Policy LP24 - Renewable Energy: Developments Proposals for renewable energy (other than proposals for wind energy development) and associated infrastructure, will be assessed to determine whether the energy benefits outweigh the impact individually or cumulatively upon factors including amenity (in terms of noise, overbearing relationship, Air Quality and light pollution). in terms of Air Quality.

12.3 Scope of Assessment

- 12.3.1 The scope of the assessment has been informed by the Scoping Opinion (Ref 2) provided by the Planning Inspectorate in September 2024 on behalf of the Secretary of State, following the submission of the EIA Scoping Report (Ref 3). A summary of the Scoping Opinion together with a response against each point of relevance to the Air Quality chapter is provided in **PEI Report Volume 3 Part A Appendix 4A Planning Inspectorate Scoping Opinion Responses**.
- 12.3.2 Non-statutory consultation feedback is summarised within the **Grimsby to Walpole Stage 1 Consultation Feedback Report**.
- 12.3.3 The scope of the assessment considers the impact of:
- i. Dust from on-site construction activities (including enabling works) and off-site trackout by construction vehicles on sensitive (human and ecological) receptors. The main potential impacts are dust soiling (which can lead to the loss of amenity) and the deterioration of human health (as a result of increases in concentrations of Particulate Matter (PM₁₀ and PM_{2.5})); and
 - ii. Vehicular tail-pipe emissions containing air pollutants released by construction, operation and maintenance vehicles associated with the Project using the local road network. The emissions from vehicles include but are not limited to Nitrogen Oxides (NO_x) (comprising Nitrogen Monoxide, NO, and Nitrogen Dioxide, NO₂), Ammonia (NH₃) and Particulate Matter (PM₁₀ and PM_{2.5}). Emissions from vehicles also include those associated with brake and tyre wear.
- 12.3.4 The projected number, type and location of plant and Non-Road Mobile Machinery (NRMM) are yet to be determined and are therefore not detailed within the PEI Report. An assessment of any likely significant effects due to use of NRMM will be included in the ES, in accordance with the Scoping Opinion (Ref 2).

- 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 is outlined below.
- 12.4.2 This PEI Report chapter presents a baseline appraisal of Air Quality within Section 7. 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 4). This guidance provides a risk-based approach to the assessment of the potential for dust impacts from four types of activities taking account of the sensitivity of the environment surrounding the works: demolition; earthworks; construction; and trackout (the movement of dust/mud onto the public highway via construction vehicles) on sensitive (human and ecological) receptors.
- 12.4.4 For the purposes of the PEI Report, an initial screening assessment of construction traffic flows has been completed based on 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 5).
- 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 6), and set out below, then detailed dispersion modelling will be undertaken to determine the impact on existing human sensitive receptors:
- i. a change in Light Duty Vehicle (LDV)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

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

- 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 7). There are no road links where the projected change in total traffic (LDV + HDV) flows exceeds the 1000 AADT criteria also given in the IAQM guidance.
- 12.4.8 An initial review of operation/maintenance vehicles movements associated with the Project has also been undertaken against the EPUK/IAQM screening criteria described above (Ref 6) for human sensitive receptors and the IAQM criteria (Ref 7) for ecological sensitive receptors.
- 12.4.9 Once updated construction and operational/maintenance traffic data is made available, projected changes in traffic flows as a result of the Project will be re-screened against the criteria within the EPUK/IAQM and IAQM guidance. A detailed assessment of impacts will be undertaken where traffic flows exceed the criteria and reported within the ES.

Assessment Assumptions and Limitations

- 12.4.10 All general assumptions and limitations for the topic are listed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment 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 the construction phase dust impacts, the Study Area has been defined by the screening criteria from the IAQM guidance (Ref 4) and additional guidance given by Natural England during the Scoping Opinion (Ref 2). The construction dust Study Area is shown within **PEI Report Volume 2 Part B Section 7 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

² Heavy Duty Vehicles = Heavy Goods Vehicles (HGVs) plus Public Service Vehicles, e.g., buses and coaches.

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 4), and has been used following the advice given by Natural England within their Scoping Opinion consultation response (Ref 2).

12.5.2 Background NO_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 8) for the area extending 500 m from the draft Order Limits.

12.5.3 Where ecological receptors have been identified within 200 m of the draft Order Limits, baseline data for pollutants which affect nutrient nitrogen deposition, such as NH₃ concentrations and nitrogen deposition rates, have been taken from Air Pollution Information System (APIS) (Ref 9), along with acid deposition rates and the relevant critical levels and loads for the designated sites.

Road Traffic Emissions

12.5.4 The Section 7 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/IQAM guidance described in section 12.4 Methodology (Ref 6). The Section 7 Study Area comprises any roads where these criteria are exceeded, and any human receptors within 200 m of these roads. The Section 7 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 7 Study Area for the assessment of impacts upon ecological receptors due to road traffic emissions associated with the Project includes ecological sensitive receptors within 200 m of any road links where the projected changes in traffic flow exceed IAQM guidance thresholds (Ref 7).

12.5.6 Roadside concentrations from local authority monitoring sites within 200 m of the routes within the Section 7 Study Area that are expected to be used by construction and operational/maintenance traffic have therefore been used to determine baseline conditions.

Data Collection

12.5.7 The following data has been used to inform the baseline conditions along with those outlined in **PEI Report Volume 2 Part A Chapter 5 Project Description**:

- i. Defra's Background Air Quality Archive (2021-base year) (Ref 8);
- ii. Air Pollution Information System (Ref 9);
- iii. Defra's AQMA dataset (Ref 10);

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.

- iv. Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref 11);
- v. Local Air Quality Management Reports (Ref 12);
- vi. Ordnance Survey (OS) AddressBase Plus dataset;
- vii. Google Earth Imagery; and
- viii. Data on Part A1⁴ Permitted Installations held by the Environment Agency and Part A2 and B⁵ Installations held by the local authority within the Section 7 Study Area (Ref 13, Ref 14).

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 7 Chapter 9 Traffic and Movement** and supporting appendices.

Existing Baseline

- 12.5.9 The following section outlines the Air Quality baseline for the Section 7 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 7 Figure 12.1 Construction Dust Study Area**.
- 12.5.11 The Section 7 Study Area is rural in nature and the proposed works are situated largely within open agricultural land. Section 7 is bounded to the south by Walton Highway, to the north by the residential properties situated along Mill Road, which runs between West Walton and Ingleborough, and to the east by West Drove North.
- 12.5.12 As **PEI Report Volume 2 Part B Section 7 Figure 12.1 Construction Dust Study Area** illustrates, there are human sensitive receptors across the Section 7 Study Area. These are generally located within Walton Highway and along West Drove North. A number of individual properties (farms) are also scattered across the Section 7 Study Area.
- 12.5.13 There are no designated ecological sites within the Section 7 Study Area.

Local Authority Air Quality Monitoring Data

- 12.5.14 Section 7 is located within the administrative area of Borough Council of King's Lynn and West Norfolk (BCKLWN).
- 12.5.15 There are two AQMAs within BCKLWN's administrative area, one on Railway Road (declared in 2003) and another encompassing Wootton Road and Lynn Road (declared in 2009). Both AQMAs were declared due to exceedances of the annual

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).

mean NO₂ objective. The AQMAs are located in the town of King’s Lynn, approximately 13.5 km from the Section 7 Study Area and are not deemed representative of the onsite conditions (Ref 12).

- 12.5.16 BCKLWN monitors pollutant concentrations for NO₂, PM₁₀ and PM_{2.5}. Monitoring of annual mean NO₂ levels is undertaken through a network of passive diffusion tubes and automatic monitoring locations, and is reported in the BCKLWN 2024 Annual Status Report (ASR) which presents the concentrations from the calendar years 2019 to 2023 (Ref 12). There is one roadside diffusion tube in BCKLWN’s administrative area that is within 200 m of construction traffic routes, the annual mean NO₂ concentration is presented in **Table 12.2** and shown in **PEI Report Volume 2 Part B Section 7 Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations**.

Table 12.2 Section 7 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
101	62 Elm High Road, Wisbech	5.3	-	-	27.8	28.3	26.5
Air Quality Objective			40				
Note: - Denotes no data							

- 12.5.17 **Table 12.2** shows that the NO₂ concentration decreased from 2022 to 2023. It must be noted that the 2021 monitoring data will be influenced by social mobility restrictions imposed due to the COVID-19 pandemic. There are no exceedances of the Air Quality Objective (AQO) seen within the scoped-in monitoring locations.
- 12.5.18 BCKLWN routinely monitors PM₁₀ and PM_{2.5}. However, the monitoring locations are over 10 km from the Section 7 draft Order Limits and are therefore not considered to be representative of concentrations within the Section 7 Study Area. The current (2024) levels have therefore been derived from modelled estimates of background concentrations provided by Defra (Ref 8). 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.
- 12.5.19 A review of permitted industrial sources within 2 km of the draft Order Limits was completed (Ref 13, Ref 14). Ten sources have been identified within the Section 7 Study Area, however, they are unlikely to substantially contribute to dust and PM₁₀ levels within the Section 7 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

- 12.5.20 **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 7 Study Area (Ref 8).

Table 12.3 2024 modelled Defra background concentrations within the Section 7 Study Area

Average (Minimum – Maximum) 2024 Annual Mean Concentration µg/m³			
NO _x	NO ₂	PM ₁₀	PM _{2.5}
7.0 (6.8 - 7.3)	5.5 (5.4 - 5.8)	12.7 (11.3 - 13.4)	5.8 (5.8 - 5.9)

- 12.5.21 The background concentrations of NO₂ and PM₁₀ are generally low within the Section 7 Study Area, given they are under half of the limit value of 40 µg/m³ for both pollutants.
- 12.5.22 Background NO_x concentrations (relevant to ecological receptors) are also generally low within the Section 7 Study Area. There are no designated sites of local, national or international importance within the Section 7 Study Area. The average NO_x concentration across the Section 7 Study Area is 7.0 µg/m³ which falls below the critical level for the protection of vegetation of 30 µg/m³.
- 12.5.23 Concentrations of PM_{2.5} are below the relevant limit value (20 µg/m³) where the average concentration within the Section 7 Study Area is 5.8 µg/m³. PM_{2.5} is the pollutant for which background concentrations are closest to the limit value in 2024.

Summary

- 12.5.24 Overall, the Air Quality within the Section 7 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 7 Study Area are low in comparison to the Air Quality objectives.

Future Baseline

- 12.5.25 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 complete prior to construction of the Project.
- 12.5.26 At this preliminary stage, a full assessment of the implications of any committed developments with regard to future baseline conditions has not been undertaken. A list of the currently known developments which are anticipated to be included within the future baseline scenario is provided within **PEI Report Volume 3 Part A 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.
- 12.5.27 Projected Background air pollutant concentrations available from a base year of 2021 (Ref 8) have been used to determine future baseline conditions. Levels of NO_x, NO₂, PM₁₀ and PM_{2.5} are predicted to improve over time due to restrictions in emissions resulting from:
- reductions in transport exhaust gas pollutants due to improvements in fuel efficiency and the uptake of low emission vehicles;

- ii. 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;
- iii. reductions in pollutant emissions from agricultural sources due to improvements in management envisaged in the 2019 Clean Air Strategy (Ref 15); and
- iv. improved emission standards for NRMM and static generators.

12.5.28 As concentrations of air pollutants are projected to decrease with time, the earlier the assessment year the higher the level of projected background pollution. Therefore, the earlier the assumed opening year, the more conserving 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 pollution data have been used to provide a conservative representation of opening year background concentrations (Ref 8).

12.5.29 The arithmetic mean, minimum and maximum of predicted pollution concentrations for the future baseline Section 7 Study Area for 2029 is shown in **Table 12.4**. There are reductions in both NO_x and NO₂ levels within the Section 7 Study Area compared to the 2024 forecast shown in **Table 12.3**. There is a steady reduction in both NO_x and NO₂ concentrations of about 0.7 – 1.1 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 12.4 2029 modelled Defra background concentrations within the Section 7 Study Area

Average (Minimum – Maximum) 2029 Concentration (µg/m ³)			
NO _x	NO ₂	PM ₁₀	PM _{2.5}
5.9 (5.8 - 6.2)	4.8 (4.6 - 5.0)	12.3 (10.9 - 13.0)	5.5 (5.5 - 5.6)

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 16) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 17) 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 18) 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 7. This has further contributed to the avoidance or reduction of the potential environmental impacts of the Project. Specific examples relevant to the assessment include maximising separation between sensitive receptors and the proposed temporary and permanent access roads to the substation site, as far as practicable. This evolving design refinement process has sought to minimise the number of receptors exposed to impact associated with the Project.

Control Mitigation Measures

Construction

- 12.6.3 A Preliminary CoCP is provided in **PEI Report Volume 3 Part A Appendix 5A Preliminary Code of Construction Practice**. The general control measures included within the Preliminary CoCP relevant to the Air Quality assessment of Section 7 include:
- i. GG01: The Project will be compliant with all relevant legislation, consents and permits.
 - ii. GG03: Suitably experienced Environmental Advisers will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerks of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Management Plans. The Environmental Clerks of Works will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The Environmental Clerks of Works will be supported as necessary by appropriate specialists, including ecologists and arboriculturists, soils and land drainage experts.
 - iii. GG04: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include where appropriate:
 - pollution prevention and pollution incident response;
 - dust management and control measures;
 - location and protection of sensitive environmental sites and features;
 - adherence to protected environmental areas around sensitive features;
 - working hours and noise and vibration reduction measures;
 - working with potentially contaminated materials;
 - waste management and storage;
 - flood risk response actions;
 - agreed traffic routes, access points, etc.;
 - soil management; and
 - drainage management.
 - iv. GG06: A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP), a Materials and Waste Management Plan (MWMP), a Construction Traffic Management Plan (CTMP), Emergency Action Plan, Public Rights of Way Management Plan (PRoWMP), Overarching Written Scheme of Investigation (WSI), Biodiversity Management Plan, Noise and Vibration Management Plan, Pollution Prevention Plan, Foundation Works Risk Assessment, Carbon efficiency Plan, Dust Management Plan (DMP), DrMP along with a Soil Management Plan (SMP) will be produced prior to construction. These are collectively referred to as ‘the environmental control Plans.’

- v. GG07: The CEMP will set out site specific measures and construction methodologies to avoid or reduce potential effects of the Project on the environment during construction. The contractor(s) shall undertake regular site inspections to check conformance to the Management Plans.
- vi. GG10: The name and contact details for the Project will be displayed at the entrance to all compounds. This will include an emergency number.
- vii. GG11: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites where practicable.
- viii. GG13: Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. Electric, or other low carbon plant and equipment should be used where available and where practicable.
- ix. GG14: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including excavated materials, drop heights will be limited.
- x. GG18: Wheel washing facilities will be provided at each main compound, where appropriate. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- xi. GG19: Earthworks and stockpiled soil will be managed as per the SMP.
- xii. GG20: Bonfires and the burning of waste material will be prohibited.

12.6.4 The control and management measures included within the Preliminary CoCP specific to Air Quality include:

- i. AQ01: Dust management measures will be set out in the Dust Management Plan (DMP) as part of the CEMP. This will be specific to particular phases of the Project. The DMP, will include, but not be limited to the following:
 - Communications to include display of the name and contact details of person(s) accountable for Air Quality and dust issues on the site boundary;
 - Daily on-site and off-site inspections will be undertaken by the Contractor(s), where receptors are nearby, to monitor dust. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of the site boundary, with cleaning to be provided if necessary. The frequency of site inspections will be increased by the person accountable for Air Quality and dust issues on-site when activities with a high potential to produce dust are being carried out, during prolonged dry or windy conditions or in response to complaints or an incident resulting in dust emissions. Inspection results will be recorded, and an inspection log made available to the local authority upon request;
 - Site management will document all dust and Air Quality complaints, identify causes and take measures to reduce emissions in a timely manner, and record the measures taken;
 - Preparation and management of the site ensuring that machinery and dust causing activities are located as far as possible away from receptors,

screens/barriers are erected around dusty activities/materials and are at least as high as any stockpiles, use wet methods to keep site fencing, barriers and scaffolding clean, remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site where they must be covered, seeded, or fence stockpiles used to prevent wind whipping;

- Monitoring and inspections to include evolving evaluation of Project phases as required and practicable; and
 - Construction operations will only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, for example, suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- ii. AQ03: During construction, bulk cement and other fine powder materials are to be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. Sand and other aggregates are to be stored in bunding areas and not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate control measures to reduce dust are in place. For smaller supplies of fine powder materials, bags are to be sealed after use and stored appropriately. Scabbing (roughening of concrete surfaces) will be avoided if possible.
- iii. AQ04: The contractor is to inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- iv. AQ05: To minimise the impact from trackout, on-site activities will:
- Impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures, subject to the approval of the nominated undertaker and in agreement with the local authority, where appropriate);
 - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
 - Avoid dry sweeping of large areas;
 - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
 - Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
 - Record all inspections of haul routes and any subsequent action in the site log book;

- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
 - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
 - Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
 - 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

- 12.6.5 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.
- 12.6.6 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.
- 12.6.7 It is however noted that additional environmental mitigation which has been proposed to reduce effects upon visual amenity and ecology and biodiversity may also reduce impacts upon Air Quality. This includes screening vegetation which, while primarily included to limit visual intrusion (for landscaping purposes), may further reduce potential Air Quality impacts by filtering dust and air pollutants emitted by construction site activities.
- 12.6.8 No additional mitigation measures specifically relating to Air Quality effects have been assumed within the Preliminary Assessment of Effects reported in the following section.

12.7 Preliminary Assessment of Effects

- 12.7.1 The following section presents the findings of the preliminary assessment of effects upon the relevant Air Quality receptors identified within the Section 7 Study Area, as a result of construction, operational and/or maintenance 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 7 Chapter 13 Summary**. A supplementary summary of all non-significant effects is also included within this section in **Table 12.10**, based upon the assessment scope detailed in **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 12.7.4 It is noted that this is an ongoing assessment and is subject to change due to the ongoing design development of the Project. This is particularly relevant to the further assessment of the likely Air Quality effects of changes in traffic flow due to the Project. A full assessment will be included within the ES submitted with the DCO application.

Likely Significant Effects

Construction

Construction Dust

- 12.7.5 The preliminary assessment presented indicates that no significant effects are likely due to construction dust and 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 Part B Volume 2 Section 7 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 BKKLWN local authority area are shown in **PEI Report Volume 2 Part B Section 7 Figure 12.2 Preliminary Affected Road Network and Local Authority Monitoring Locations** and presented in **Table 12.5**.
- 12.7.8 Based on the initial screening, four road links which form parts of the A47, and Lynn Road and West Drove North in Wisbech are expected to exceed the EPUK/IAQM criteria for human sensitive receptors. Given these links are located outside an AQMA, the relevant criteria are:
- i. a change in LDV flows of more than 500 AADT; and/or
 - ii. a change in HDV flows of more than 100 AADT.
- 12.7.9 The initial screening has also identified road links which exceed the IAQM screening criteria for ecological sensitive receptors. The relevant criteria are:
- i. a change in total traffic flows greater than or equal to 1000 AADT; and/or
 - ii. a change in HDV flows greater than or equal to 200 AADT.

Table 12.5 Road links exceeding the relevant assessment criteria – construction traffic

Link ID	Road Name	2024 Baseline		2031 Future Baseline		2031 Construction		
		AADT (total vehicles /day)	HGV (vehicles /day)	AADT (total vehicles /day)	HGV (vehicles /day)	Change in AADT Flows (total vehicles /day)	Change in LGV Flows (vehicles /day)	Change in HGV Flows (vehicles /day)
CR13-6	A47	17581	1987	18460	2086	233	98	134
CR13-7	A47	17670	1514	18553	1590	183	48	134
LK14	Lynn Road	2416	253	2537	266	225	101	124
LK15	West Drove North	42	3	44	3	392	268	124

Note: All traffic data presented in the table has been rounded to the nearest whole number.

- 12.7.10 Human and ecological sensitive receptors adjacent to road links where the projected changes in traffic flows due to construction of the Project do not exceed the EPUK/IAQM and IAQM criteria, have been screened out of any further assessment and therefore significant effects at these locations are considered unlikely.
- 12.7.11 Finalised traffic projections produced in support of the ES will, however, be rescreened to confirm that changes in traffic flows due to construction of the Project exceed the relevant criteria. Where this is the case, a detailed assessment involving dispersion modelling will be undertaken and reported in the ES, based upon the methodology summarised in section 12.5 and detailed within **PEI Report Volume 3 Part A Appendix 4B Environmental Impact Assessment Methodologies and Scope**.
- 12.7.12 It is noted that vehicle movements during construction of the Project will vary throughout the construction programme, with relatively short peaks in LGV and HGV movements, associated with workforce travel and the import/export of construction materials respectively. It is assumed that any peak in HGV movements will be short in duration.
- 12.7.13 Notwithstanding this, at receptors within 200 m of those road links identified in **Table 12.5**, significant effects due to changes in Air Quality cannot be ruled out at this stage, in the absence of dispersion modelling results.

Operation

- 12.7.14 It is currently predicted that the operational and maintenance traffic flows will fall below the EPUK/IAQM change criteria (for human sensitive receptors) and the IAQM criteria (for ecological sensitive receptors). However, screening against both the EPUK/IAQM and IAQM screening criteria will be undertaken at the ES Stage.

Likely Non-Significant Effects

Construction Dust Assessment

- 12.7.15 **PEI Report Volume 2 Part B Section 7 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 7 Chapter 1 Overview of the Section and Description of the Project**.
- 12.7.16 Construction activities required to construct the New Walpole B Substation, associated accesses and the connecting overhead line within Section 7, 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 routes;
 - establishment of construction compounds;
 - earthworks, including groundworks (soil stripping and excavation for pylon foundations);
 - material handling, storage, stockpiling and disposal;

- vii. exhaust emissions from site plant and NRMM, especially when used at the extremes of their capacity and during mechanical breakdown;
- viii. construction of foundations and substation aprons;
- ix. construction of buildings and areas of hardstanding alongside fabrication processes;
- x. movement of vehicles and construction traffic within the draft Order Limits;
- xi. pylon assembly;
- xii. establishment of scaffolding and crossing protection;
- xiii. conductor stringing;
- xiv. demobilisation of construction compounds and temporary accesses; and
- xv. site reinstatement.

12.7.17 The majority of the dust releases during construction are likely to occur in the 'working week' during which construction activities are undertaken. However, for some potential release sources (e.g. exposed soil or stockpiles), in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day, 7 days per week, until such works are complete and areas reinstated.

12.7.18 The construction dust assessment methodology adopts a worst-case approach and treats all receptors within the Section 7 Study Area consistently. There will however be considerable variation to 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 track out dust emissions.

12.7.19 Therefore, the risk of impacts to local amenity will vary throughout construction and be greater during certain periods (e.g. during the peak of earthwork activities). Several areas within the Section 7 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 locations to the north/south of the substation site is likely to experience impacts for a shorter period than a receptor in proximity to the New Walpole B Substation site. This is due to the greater scale and duration of construction activities associated with the substation construction, relative to the activities required to upgrade the existing overhead line. This assessment will be refined further as more detail is available in the ES submitted with the DCO application.

Assessment of Potential Dust Emission Magnitude

12.7.20 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM₁₀ sources: demolition; earthworks; construction; and trackout. The findings of the assessment are presented below.

Demolition

12.7.21 In Section 7, there is also a requirement to carry out works to reconfigure the existing 400 kV overhead lines, involving both temporary overhead line diversions and

permanent modifications to the existing overhead line alignments. As part of this work, some of the existing 400 kV pylons will be dismantled and removed where they are no longer required following the realignment of the overhead lines, or where the existing pylons need to be removed to provide space for the new overhead line proposed alignments.

- 12.7.22 Based upon precautionary assumptions, the total volume of assumed works is more than 75,000 m³ and is therefore defined as large.

Earthworks

- 12.7.23 The soil type, and thus friability, varies throughout the Section 7 Study Area, between Wallasea 2, Wisbech, Agney and Tanvats. These soil types are predominantly deep clayey or silty soils and are prone to suspension when dry, due to their small particle size. More information on each soil type is reported within **PEI Volume 2 Section 7 Chapter 8 Agriculture and Soils**.
- 12.7.24 The total area of the draft Order Limits falls within the IAQM range for large sites (over 110,000 m²). Therefore, the potential dust emission magnitude is judged to be large for earthwork activities given the scale of the site and the soil types present.

Construction

- 12.7.25 The total volume of buildings⁶ (pylons and construction compounds) to be constructed on the Site will be above 75,000 m³ with potentially dusty construction materials being used, such as aggregates required to construct the New Walpole B Substation apron and associated accesses. Therefore, the potential dust emission magnitude is judged to be large for construction activities.

Trackout

- 12.7.26 There would be more than 50 HDV outward movements in any one day, travelling over potentially dusty surface material. It is considered that the potential dust emission magnitude is large for trackout.

Dust Emission Magnitude Summary

- 12.7.27 **Table 12.6** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 12.6 Potential dust emission magnitude

Activity	Dust Emission Magnitude
Demolition	Large
Earthworks	Large
Construction	Large
Trackout	Large

⁶ For the purposes of the assessment, pylons have been defined as buildings. The Building Act 1984 defines the word “building” as “any permanent or temporary building, and, unless the context otherwise requires, it includes any other structure or erection of whatever kind or nature (whether permanent or temporary)”.

Assessment of Sensitivity of the Study Area

- 12.7.28 The prevailing wind direction is from the south. Therefore, receptors located to the north of the draft Order Limits (specifically the residential properties on West Drove North and Walpole Bank) are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.
- 12.7.29 No ecological receptors have been identified within the Section 7 Study Area.
- 12.7.30 Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. This area mainly comprises arable land, the receptor counts are outlined in **Table 12.7**. There are also sensitive receptors along public highways which could be used as construction routes within 250 m of the Site, including receptors on West Drove North, Walpole Bank, Marsh Road and King John Bank. Background PM₁₀ levels are predicted to be well below the annual mean objective (see **Table 12.4**).

Table 12.7 Count of human sensitive receptors within defined distances

Section Number	Distance from draft Order Limits				
	0-20 m	0-50 m	0-100 m	0-200 m	0-250 m
7	12	62	84	127	160

- 12.7.31 Taking the above number and sensitivity of receptors into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust and PM₁₀ has been derived for each of the construction activities considered. The results are shown in **Table 12.8**.

Table 12.8 Sensitivity of the Section 7 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

Assessment of Dust Risk to Define Site-Specific Mitigation

- 12.7.32 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 12.9** below provides a summary of the risk of dust impacts for the Project. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 12.9 Summary dust risk table

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Low	Low	Low

- 12.7.33 Control measures relevant to dust impacts during construction are set out within the Preliminary CoCP and summarised in section 12.6. Based upon the identified risk, an appropriate suite of dust management measures will be specified within the DMP to be included in the CEMP, which would be adhered to during construction (Preliminary CoCP measure AQ1). Based on 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

- 12.7.34 Where projected changes in vehicle movements due to construction are below the EPUK/IAQM thresholds and IAQM thresholds, changes in Air Quality at relevant receptor locations are unlikely to be significant. However, the change in HGV vehicle trips will be rescreened and assessed as per the EPUK/IAQM guidance (Ref 6) and IAQM guidance (Ref 7) and the outcomes reported within the ES.

Operation and Maintenance

- 12.7.35 The operational traffic flows of the New Walpole B Substation are anticipated to comprise vehicles associated with routine visits and fault maintenance only. It is anticipated that there would typically be two visits per month by two people. With regards to operational visits for the overhead line, based upon existing precedent and current estimates, typical routine maintenance vehicle movements would comprise approximately two vehicle trips per permanent pylon, per year (i.e. one arrival and departure respectively). The movement itself could comprise a LGV access via the permanent access route. Whilst there may be occasional variation in traffic flows associated with maintenance or refurbishment as required, the projected volume of traffic is predicted to be low.
- 12.7.36 The projected vehicle movements during operation and maintenance of the Project are below both the EPUK/IAQM and IAQM screening criteria. Therefore, no likely significant effects are expected upon Air Quality during operation of the Project.
- 12.7.37 This will be confirmed within the ES following re-screening of any updated operational traffic volumes against the screening criteria.

Summary

- 12.7.38 For completeness, **Table 12.10** summarises the findings of the preliminary assessment with respect to those impacts that are not predicted to result in significant Air Quality effects.

Table 12.10 Preliminary summary of non-significant Air Quality effects – Section 7

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 20m 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 would be secured through the CoCP, construction dust impacts are not considered significant.
Receptors sensitive to amenity loss from construction dust	Without mitigation, there may be adverse impacts to receptors sensitive to amenity loss within 250 m of the Draft Order Limits.	There are more than 10 high sensitivity receptors within 20m 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 would be secured through the CoCP, construction dust impacts are not considered significant.
Operation and Maintenance					
Human Health Receptors sensitive to changes in Air Quality Ecological Receptors	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

Receptor	Impact	Sensitivity/ Importance/ Value of Receptor	Magnitude of Change	Significance	Rationale
	sensitive to changes in air quality				operational/maintenance traffic are not predicted to be significant.

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 would be undertaken by the Contractor(s) to monitor dust levels. These inspection findings would 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 would be required during the construction and operational phases of the Project.

References

- Ref 1 Borough Council of King's Lynn & West Norfolk (2025). King's Lynn and West Norfolk Local Plan (Adopted 2025) [online]. Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040 [Accessed 29 April 2025].
- Ref 2 The Planning Inspectorate (2024). Scoping Opinion: Proposed Grimsby to Walpole Project [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000109-Scoping%20Opinion%202017%20EIA%20Regs.pdf> [Accessed 18 October 2024].
- Ref 3 National Grid Electricity Transmission (2024). Grimsby to Walpole Environmental Impact Assessment Scoping Report [online]. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN020036-000004-EN020036%20-%20Scoping%20Report%20Volume%201%20Main%20Report.pdf> [Accessed 18 October 2024].
- Ref 4 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 5 Laxen, D. & Marner, B. (2008). NO₂ Concentrations and Distance from Roads [online]. <https://iaqm.defra.gov.uk/documents/FallOffWithDistanceReptJuly08.pdf> [Accessed 15 January 2025].
- Ref 6 Environmental Protection UK and Institute of Air Quality Management (2017). Land Use Planning & Development Control: Planning for Air Quality v1.2 [online]. Available at: <https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Accessed 19 November 2024].
- Ref 7 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-2020.pdf> [Accessed 18 December 2024].
- Ref 8 Defra (2024). Background Mapping data for local authorities - 2021 [online]. Available at: UK Air Information Resources: <https://uk-air.defra.gov.uk/data/iaqm-background-maps?year=2021> [Accessed 22 November 2024].
- Ref 9 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 10 Defra (2025). AQMAs Interactive Map [online]. Available at: <https://uk-air.defra.gov.uk/aqma/maps/> [Accessed 11 March 2025].
- Ref 11 Defra (2024). Multi-Agency Geographic Information for the Countryside Interactive Map [online]. Available at: <https://magic.defra.gov.uk/> [Accessed 18 October 2024].
- Ref 12 Borough Council of King's Lynn & West Norfolk (2024). 2024 Air Quality Annual Status Report (2024). Available at: https://www.west-norfolk.gov.uk/info/20079/planning_policy_and_local_plan/1207/local_plan_2021-2040

norfolk.gov.uk/downloads/download/346/air_quality_reports [Accessed 27 November 2024].

- Ref 13 UK Pollutant Release and Transfer Register data sets (2024). Public Register of Industrial Pollution Sources. Available at: <https://prtr.defra.gov.uk/map-search> [Accessed 27 November 2024].
- Ref 14 Borough Council of King's Lynn & West Norfolk (2024). Public Register of Permitted Installations [online]. Available at: https://www.west-norfolk.gov.uk/downloads/file/3199/public_register_of_permitted_installations [Accessed 20 November 2024].
- Ref 15 Defra (2019). Clean Air Strategy 2019 [online]. Available at: <https://assets.publishing.service.gov.uk/media/5c3b9debe5274a70c19d905c/clean-air-strategy-2019.pdf> [Accessed 18 October 2024].
- Ref 16 National Grid. The Holford Rules: Guidelines on Overhead Line Routing. [online] Available at: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> [Accessed 20 September 2024].
- Ref 17 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 18 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

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13. Summary for Section 7 New Walpole B Substation

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 Walpole B Substation Section (Section 7). 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 7 Chapter 2 to 12**.
- 13.1.2
- The likely significant effects summarised in **Table 13.2** and **Table 13.3** take into account the design and embedded mitigation measures and control mitigation measures described within Chapter 2-12. Where additional mitigation measures have been determined, these are taken into account, however it is noted that the identification and design of additional mitigation measures is ongoing. As such, likely significant effects identified in **Table 13.2** and **Table 13.3** are based upon confirmed additional mitigation measures only.
- 13.1.3
- Baseline data is also still being collected, surveys are still being undertaken, and the design of the Project will be refined prior to the Development Consent Order (DCO) application being submitted. As such, a confidence rating has been introduced in the summary tables below which provides a rating of high, moderate or low confidence in the prediction of the significance of effects. Definitions of the confidence ratings are provided in **Table 13.1**.
- 13.1.4
- As the design evolves mitigation measures and environmental assessments will be further developed and reported within the Environmental Statement (ES) submitted with the DCO application.

Table 13.1 Confidence level definitions

Confidence Level	Definition
High Confidence	<div><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;• 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.</div>

Confidence Level	Definition
Moderate Confidence	<p>A moderate level of confidence in the prediction of significance of effects can be justified through:</p> <ul style="list-style-type: none"> • 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

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 area (LCA) of LCA D3: Terrington St John would be directly impacted by construction activities associated with the new Walpole B Substation and pylons SW82 and SW83, including the establishment and presence of one construction compound haul roads and temporary pylons, resulting in changes in the character and perception of the landscape.	The new Walpole B Substation and associated works have been located close to areas of existing vegetation to screen views of the substation and the location of access tracks, bellmouths and overhead line alignment refined to minimise loss of mature vegetation. Construction related impacts would be managed through the control measures outlined within the Preliminary Code of Construction Practice (CoCP).	Areas of supplementary woodland planting and tree planting on field boundaries around the new Walpole B Substation to provide visual screening.	Adverse effect	High
Visual				
The community of Walpole Highway Parish would be directly impacted by the main access to the construction compounds; and indirectly impacted by the construction activities associated with the new Walpole B Substation and connecting overhead lines, including the establishment and presence of construction compounds, haul roads and temporary pylons, resulting in	The new Walpole B Substation has been located close to areas of existing vegetation to screen views of the substation and associated works and the location of access tracks, bellmouths and overhead line alignment refined to minimise loss of existing mature vegetation.	Areas of supplementary woodland planting and tree planting on field boundaries around the new Walpole B Substation to provide visual screening.	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)
changes to views from receptor locations.	Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.		Adverse effect	High
The community of West Walton Parish would be directly impacted by construction activities associated with the new Walpole B Substation and connecting overhead lines, including the establishment and presence of construction compounds, haul roads and temporary pylons; and indirectly impacted by views of construction activity in Section 6, resulting in changes to views from receptor locations.				

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"> • The Wash Special Protection Area (SPA) and Ramsar Site; • Nene Washes SPA and Ramsar Site; and 	<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 related impacts would be managed through the control measures outlined within the Preliminary CoCP.</p>	<p>The assessment does not take into account additional mitigation measures which are in the early stages of development and are yet to be confirmed. These measures will be informed by ongoing survey and</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</p>
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Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<ul style="list-style-type: none"> Ouse Washes SPA and Ramsar Site. <p>The Wash and North Norfolk Coast SAC may be indirectly impacted by construction activities resulting in changes in water quantity, level and flow, or impacts upon other species, within watercourses which are hydrologically linked to the SAC.</p>	<p>The positioning of the substation, pylons and access routes has sought to avoid or reduce direct and indirect impacts on high value aquatic habitats.</p> <p>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 related disturbance would be managed through the measures outlined within the Preliminary CoCP.</p>	<p>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>Report to Inform the Habitat Regulations Assessment, informed by discussions with Natural England other statutory bodies.</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)
The Heron colony of the Islington Heronry Site of Special Scientific Interest (SSSI) may be impacted by construction activities within functionally linked land, resulting in disturbance and/or habitat degradation.	The positioning of the substation, pylons and access routes to avoid or reduce direct and indirect impacts on notable species and habitats, including woodland and trees. Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.	The assessment does not take into account additional mitigation measures which are in the early stages of 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 - potential impacts upon the bird assemblage will be assessed once all baseline surveys are complete.
Habitats				
Terrestrial habitats would be directly impacted by construction activities associated with the new Walpole B Substation and overhead line connections, including the establishment and of the construction compound and haul roads, resulting in temporary loss and severance. Terrestrial habitats may also be indirectly impacted through the	The positioning of the substation, pylons and access routes to avoid or reduce direct and indirect impacts on notable terrestrial habitats, including woodland, hedgerow and scrub. Construction related disturbance will be managed	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	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)
release of pollutants during construction.	through the measures outlined within the Preliminary CoCP.	ongoing survey and assessment and are likely to include the creation of replacement habitats where required to avoid significant effects.		
Aquatic habitats would be directly impacted by construction activities associated with the new Walpole B substation and overhead line connections, including watercourse crossings and diversions, resulting in temporary loss or damage to watercourses and ditch habitats.	<p>The positioning of the substation, pylons and access routes to avoid or reduce direct and indirect impacts on high value aquatic habitats.</p> <p>Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.</p>		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.
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; • Wintering and breeding birds; • Badgers; • Bats; • Otters; and • Water Vole. 	<p>Embedded measures include the positioning of pylons and access routes to avoid or reduce direct and indirect impacts on notable habitats, including woodland, ponds and hedgerows.</p> <p>Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.</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	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)
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avoid significant effects.

Historic Environment

Designated Assets

Faulkner House (NHLE 1237331) would be temporarily impacted by construction activities associated with the new Walpole B Substation, gantries and new pylons, resulting in temporary changes to the setting of this Grade II listed building.	The Project has been designed to minimise the extent of land take required to construct temporary and permanent design elements as far as reasonably practicable. The retention and reinforcement of existing vegetation along field boundaries would provide a screening function. Construction related disturbance 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
Faulkner House (NHLE 1237331) would be permanently impacted by the introduction of the new Walpole B Substation and the new pylons, resulting in permanent changes to the setting of this Grade II listed building.	The new Walpole B Substation and associated infrastructure has been located to avoid direct physical impacts upon designated assets and the retention and reinforcement of existing vegetation along field boundaries would provide a screening function.	No additional historic mitigation measures which have been identified for this preliminary assessment. However areas of supplementary woodland planting	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)
		and tree planting on field boundaries around the new Walpole B Substation would provide visual screening.		
Non-Designated Assets				
Buried archaeological remains within the draft Order Limits, including those associated with an undated artificial mound (MNF19805) and the medieval moated site or medieval salt working, may be impacted through establishment of the construction compound and groundworks for screening planting, resulting in potential truncation or loss of part of the asset.	Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.	Appropriate archaeological and geoarchaeological investigation prior to construction works. Establishing a process for dealing with the discovery of archaeological remains.	Moderate adverse effect	High
The site of a medieval moated enclosure and great house (MNF2207) and the field in which it is located, which includes an undated mound (MNF19805), would be temporarily impacted by the establishment of the construction compound, haul routes and wider construction works, resulting in	The Project has been designed to avoid direct impacts within the likely extents of the medieval moated enclosure, including the siting of construction compounds and temporary haul roads. The retention of existing vegetation along field boundaries would	No additional mitigation measures have been identified for this preliminary assessment.	Major adverse effect	High

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
temporary changes to the setting of these assets.	provide a partial screening function during construction. Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.			
The site of a medieval moated enclosure and great house (MNF2207) and the field in which it is located, which includes an undated mound (MNF19805), would be permanently impacted by the presence of the new Walpole B Substation, accesses, gantries, pylons and overhead line, resulting in permanent changes to the setting of these assets.	The Project has been designed to avoid direct impacts within the likely extents of the medieval moated enclosure, including the siting of the substation, permanent accesses and connecting infrastructure. The retention of existing vegetation along field boundaries would provide a partial screening function during operation.	Landscape mitigation to the west of the heritage asset, would partially screen and soften views of the proposed new Walpole B Substation and overhead line, to some degree, but would itself change the setting of the asset.	Moderate adverse effect	High
Water Environment and Flood Risk				
Third party flood risk receptors may be impacted by the presence of temporary works within defended floodplain, including construction compounds, haul roads, stockpiles and watercourse crossings, resulting in the temporary loss of floodplain	Impacts upon floodplain storage and flow conveyance during construction would be managed through the measures outlined within the Preliminary CoCP.	Additional mitigation measures are in the early stages of development and may include provision of compensatory	Moderate to major adverse effect	Low - several factors require further assessment to inform the final Flood Risk Assessment, including review of

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
storage and/or change in floodplain flow conveyance (under conditions of flood defence overtopping or breach)		storage, subject to ongoing discussions with the Environment Agency.		existing flood models, informed by engagement with the Environment Agency.

Geology and Hydrogeology

No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.

Agriculture and Soils

Agricultural Land Classification

50.7 ha of agricultural land (assumed to be BMV land) would be temporarily impacted by construction activities, including establishment of haul roads and temporary compounds, resulting in temporary loss of agricultural land.	The Project has been designed to minimise the extent of land take required to construct, maintain and operate the proposed assets and position infrastructure (such as pylons and haul roads) as close as is practicable to field boundaries to minimise impacts to agricultural operations.	No additional mitigation measures have been identified for this preliminary assessment.	Moderate to Major adverse effect	High
54.2 ha of agricultural land (assumed to be BMV land) would be permanently impacted by the construction of operational infrastructure including the new Walpole B Substation and associated accesses and pylon foundations, resulting in the permanent loss of agricultural land.	Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.		Major adverse effect	High

Soil Function

Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
Soils within the Section 7 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 position infrastructure (such as pylons and access routes) as close as is practicable to field boundaries to minimise impacts to agricultural operations. Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.	No additional mitigation measures have been identified for this preliminary assessment.	Major or moderate adverse effect	High
54.2 ha of soils would be permanently impacted by the construction of operational infrastructure, including the new Walpole B Substation and associated accesses and pylon foundations, resulting in loss of soil quality and ecosystem services.			Major adverse effect	High

Traffic and Movement

Users of Highway Links

Drivers (all vehicles including HGVs and Emergency Services) may be impacted where projected increases in traffic flows exceed the relevant Institute of Environmental Management and Assessment thresholds. Where this is the case, change in traffic flow may result in severance, changes in journey time, driver delay and highway safety effects.	Identified construction traffic routes are based upon classified roads as far as practicable. Haul roads would be used to reduce construction traffic movements on local roads. Construction related disturbance would be managed through the	No additional mitigation measures have been identified for this preliminary assessment.	Significant adverse effects cannot be excluded at this stage	Low - baseline data for some of the identified construction traffic routes is not currently available. Detailed assessment of severance, delay, highway safety and fear and
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Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
<p>Bus passengers may be impacted on those routes where projected increases in traffic flows exceed the relevant Institute of Environmental Management and Assessment thresholds, potentially resulting in delay due to congestion.</p>	measures outlined within the Preliminary CoCP.		Significant adverse effects cannot be excluded at this stage	intimidation, has yet been undertaken to determine the magnitude of impacts upon identified road links.
<p>Pedestrians and cyclists may be impacted on those routes where projected increases in traffic flows exceed the relevant Institute of Environmental Management and Assessment thresholds, potentially resulting in severance, delay, increased journey time, decline in amenity, additional fear and intimidation and safety effects.</p>			Significant adverse effects cannot be excluded at this stage	
<p>All users of the public highways identified as Primary Access Routes may be impacted by the movement of Abnormal Indivisible Loads, resulting in severance, delay or increased journey time, due to potential road closures and/or diversions.</p>	Routing and timing of Abnormal Indivisible Loads and hazardous loads would be informed by engagement with the Local Highway Authorities to minimise potential disruption as far as reasonably practicable.	No additional mitigation measures have been identified for this preliminary assessment.	Significant adverse effects cannot be excluded at this stage	Low - the requirements and routing of Abnormal Indivisible Loads are still being determined and therefore detail to inform the assessment is not available at this stage. Planned routes will be confirmed based
<p>All users of the public highways identified as Primary Access Routes may be impacted by the movement of hazardous loads, resulting in</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)
additional fear and intimidation and safety effects.				upon further engagement with the relevant local highway authorities

Noise and Vibration

No likely significant effects are predicted as a result of the construction phase of the Project, based upon the preliminary assessment.

Socio-economics, recreation and tourism

The Rose and Crown Solar Farm would be temporarily impacted by construction activities, including establishment of haul roads and temporary compounds, resulting in temporary loss of land.	The Project will be designed to minimise the extent of land take required to construct, maintain and operate the proposed assets and position infrastructure. The positioning of pylons and access routes will seek to avoid or reduce direct and indirect impacts receptors through minimising land permanent and temporary land take.	No additional mitigation measures have been identified for this preliminary assessment.	Significant adverse effects cannot be excluded at this stage	Low – further assessment work and landowner consultation is required in order to determine the magnitude of impacts upon the receptor.
The Crown and Rose Solar Farm would be permanent impacted by a loss of land associated with the land required to operate the Project including the new Walpole B Substation and associated accesses and pylon foundations.	Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.			Low – further assessment work and landowner consultation is required in order to determine the magnitude of impacts upon the receptor.

Air Quality

Human sensitive receptors (including residential properties, schools, care	Maximising separation between sensitive receptors	No additional mitigation measures	Significant adverse effects cannot be	Low - Dispersion modelling will be
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Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
homes and hospitals) which are within 200 m 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.	and the proposed temporary and permanent access roads as far as reasonably practicable. Construction related disturbance would be managed through the measures outlined within the Preliminary CoCP.	have been identified for this preliminary assessment.	excluded at this stage	undertaken for the ES and will inform further assessment of impacts and effects and the design of any required mitigation measures.
Ecological sensitive receptors which are within 200m of road links projected to experience increases in traffic flow which are above the Environmental Protection UK/Institute of Air Quality Management and Assessment thresholds, could be exposed to increased pollutant concentrations during the construction phase.			Significant adverse effects cannot be excluded at this stage	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

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 LCA of LCA D3: Terrington St John would be directly impacted by the presence of the new Walpole B Substation, and pylons SW82 and SW83, resulting in changes in the character and perception of the landscape.	The new Walpole B Substation has been located close to areas of existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the new Walpole B Substation to provide visual screening.	Adverse effect	High
Visual				
The community of Walpole Highway Parish would be impacted by the presence of the new Walpole B Substation and pylons in Section 7, resulting in changes to views from receptor locations.	The new Walpole B Substation has been located close to areas of existing vegetation to provide screening of views of the substation.	Areas of supplementary woodland planting and tree planting on field boundaries around the new Walpole B Substation to provide visual screening.	Adverse effect	High
The community of West Walton Parish would be impacted by the presence of the new Walpole B Substation, approximately 500 m of overhead line and pylons SW82, resulting in			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)
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changes to views from receptor locations.

Ecology and Biodiversity

Designated Sites

<p>Birds species which are qualifying features of the following designated sites may be impacted by the presence of overhead line resulting in collision mortality:</p> <ul style="list-style-type: none"> • The Wash Special Protection Area (SPA) and Ramsar Site; • Nene Washes SPA and Ramsar Site; • Ouse Washes SPA and Ramsar Site; and • Islington Heronry SSSI. 	<p>The new Walpole B Substation, pylons and permanent access routes have been positioned to avoid or reduce direct and indirect impacts on notable habitats, as far as reasonably practicable.</p>	<p>Additional mitigation measures are in the early stages of development and may include the use of bird diverters to reduce collision risk.</p>	<p>Significant adverse effects cannot be excluded at this stage.</p>	<p>Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures. The potential for LSE upon European Sites will be assessed within the Report to Inform the Habitat Regulations Assessment, informed by discussions with Natural England other statutory bodies.</p>
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Protected and Notable Species

<p>Wintering and breeding birds may be impacted by the presence of overhead line resulting in collision mortality.</p>	<p>The new Walpole B Substation, pylons and permanent access routes have been positioned to avoid or reduce direct and indirect impacts on notable</p>	<p>Additional mitigation measures are in the early stages of development and may include the use of bird diverters to reduce collision risk.</p>	<p>Significant adverse effects cannot be excluded at this stage.</p>	<p>Low - survey works are ongoing and will inform further assessment of impacts and effects and the design of any required mitigation measures.</p>
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Description of receptor and potential impact	Key embedded and control measures	Proposed additional mitigation measures	Preliminary likely significant effects	Confidence rating (high/moderate/low)
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habitats, as far as reasonably practicable.

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

Third party flood risk receptors may impacted by the new Walpole B Substation within defended floodplain, resulting in the permanent loss of floodplain storage and/or change in floodplain flow conveyance (under conditions of flood defence overtopping or breach).	Substation surface water drainage systems would provide attenuation of runoff from impermeable surfaces to greenfield rates and incorporate appropriate pollution prevention measures, incorporating the use of Sustainable Urban Drainage Systems (SuDS) as far as practicable.	Additional mitigation measures are in the early stages of development and may include provision of compensatory flood storage, subject to ongoing discussions with the Environment Agency.	Moderate to major adverse effect	Low - several factors require further assessment to inform the final Flood Risk Assessment, including review of existing flood models, informed by engagement with the Environment Agency.
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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.

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 an adopted unsurfaced road providing a 'cut-through' link of the West Walton Jubilee Walk would be impacted by the new Walpole B Substation resulting in permanent closure or diversion of this route.	Where permanent closures are required, diversions would be via the most appropriate alternative route and agreed with the Local Highway Authority.	No additional mitigation measures have been identified for this preliminary assessment.	Significant adverse effects cannot be excluded at this stage.	Low - further engagement with the Local Highway Authority will be undertaken to confirm any requirements for permanent diversion of existing routes.
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.				
Socio-economics, recreation and tourism				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				
Air Quality				
No likely significant effects are predicted as a result of the operation and maintenance of the Project, based upon the preliminary assessment.				

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